

NASHUA-MANCHESTER 40818 (CAPITOL CORRIDOR)

APPENDIX G Transportation Technical Report

Prepared for:

New Hampshire Department of Transportation



January 2022



Prepared by:
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Appendix G Transportation Technical Report

Appendix G-1 Traffic Impact Study for South Nashua, Nashua, Bedford,
and Manchester Stations

Appendix G-2 Traffic Volume

Appendix G-3 Intersection Capacity Analysis

APPENDIX G-1

Traffic Impact Study for South Nashua,
Nashua, Bedford, and Manchester Stations

Nashua-Manchester 40818 Capitol Corridor

Traffic Impact Study for South Nashua, Nashua, Bedford,
and Manchester Stations

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Introduction

AECOM has prepared this Traffic Impact Study to determine the potential traffic related impacts of the added proposed commuter rail stations in South Nashua, Nashua, Bedford, and Manchester. The Nashua-Manchester (Capitol-Corridor Rail) Project proposes to extend the rail line from Lowell, Massachusetts to Manchester, New Hampshire along an existing freight rail line. The extended rail line would provide commuter rail service between Boston, MA and Manchester, NH. A locus map showing stop locations in New Hampshire is shown in Figure 1.

The primary purpose of this report was to quantify impacts to nearby intersections of proposed commuter rail stations. A Synchro traffic model was developed to do a comparison between Existing, No-Build, Build, and Build Mitigated.



Figure 1 - Locus Map of Station Locations in New Hampshire

Study Area

The study area includes significant intersections located near each proposed station location. These intersections were chosen based on existing traffic patterns, anticipated traffic demands, and anticipated future traffic circulation.

South Nashua

The proposed South Nashua commuter rail station is located behind the Pheasant Lane Mall. There were seven study intersections identified at this location. The study intersections are:

- Middlesex Rd at Smokey Bones/Mall Entrance
- Route 3 Ramps at Daniel Webster (DW) Highway/Middlesex Rd (State Line)
- Pheasant Lane at DW Highway
- Dan Chan St at DW Highway

- Danforth Rd at DW Highway
- Silver Dr at DW Highway
- Spit Brook Rd at DW Highway

Nashua

The proposed Nashua commuter rail station access point is on Crown St. There were four study intersections identified at this location. The study intersections are:

- East Hollis St at Chase St
- East Hollis St at Arlington St
- Crown St at Arlington St
- Crown St at Chase St

Bedford

The proposed Bedford commuter rail station access point is along South River Rd south of the Raymond Wieczorek Dr EB Entrance/Exit ramps. There were three study intersections identified at this location. The study intersections are:

- Raymond Wieczorek Dr EB Ramps at South River Rd
- South River Rd (Route 3 DW Highway) at Somerville Dr
- South River Rd (Route 3 DW Highway) at East Point Dr

Manchester

The proposed Manchester commuter rail station is located west of Elm St and South of Granite St. There were five study intersections identified at this location. The study intersections are:

- Elm St at Valley St
- Elm St at Market Basket Dr
- Elm St at Auburn St
- Elm St at Granite St/Lake Ave
- Granite St at Canal St

Methodology

Multiple scenarios were investigated to do a comparative analysis of the results, including:

- **Existing Conditions** (Year 2022)
- **No-Build Conditions** (Year 2040) – Assumes no geometric changes are made to the existing roadway, but volumes are grown at 0.5% per year for eighteen years.
- **Build Conditions** (Year 2040) – Matches the No-Build condition, but project generated trips are added to the model.
- **Build Mitigated Conditions** (Year 2040) - Matches the Build condition, but mitigation measures are taken to reduce impact to study intersections.

To understand traffic impacts at a signalized intersection, a deterministic traffic model is developed following methodologies described in the Highway Capacity Manual. Synchro is one such deterministic software that takes collected traffic data and calculates an expected Level of Service (LOS) for an intersection, which is a qualitative measurement of traffic conditions. The LOS of an intersection is designated on a scale of A to F, with A representing

the best operating conditions and F the worst. The LOS is determined using the calculated delay of the intersection. Table 1 below shows the LOS according to the calculated delay ranges for a signalized and unsignalized intersection.

Table 1. LOS for Intersections

LOS	Signalized Intersection	Unsignalized Intersection
A	≤ 10 seconds	≤ 10 seconds
B	10 – 20 seconds	10 – 15 seconds
C	20 – 35 seconds	15 – 25 seconds
D	35 – 55 seconds	25 – 35 seconds
E	55 – 80 seconds	35 – 50 seconds
F	> 80 seconds	> 50 seconds

Source: Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis

Existing (2022) Condition

This section documents the condition of the roadways and intersections located in the study area.

Roadway Descriptions

Middlesex Rd/Daniel Webster Highway, South Nashua – Middlesex Rd is under MassDOT jurisdiction and classified as urban minor arterial. Middlesex Rd becomes Daniel Webster Highway at the New Hampshire state line. The roadway runs in the north-south direction. Middlesex Rd is a two-way, four lane roadway through the Massachusetts portion of the study area. There are no sidewalks provided in the Massachusetts section of the study area. Daniel Webster Highway is a two-way, six lane roadway through the New Hampshire portion of the study area. The roadway widens at signalized intersections to provide turning lanes. Sidewalks are provided on both sides of the roadway in New Hampshire.

Route 3 Ramps, South Nashua – These ramps are under MassDOT jurisdiction and classified as urban minor arterials. These ramps provide access to Route 3 northbound and southbound. There is access to the ramps from Route 3 northbound and no access is provided from Route 3 southbound. These ramps are a limited access roadway with no bicycle or pedestrian access.

Various Pheasant Lane Mall Access Roads, South Nashua – The Pheasant Lane Mall Access is a private roadway providing access to Pheasant Lane Mall via Middlesex Rd and Daniel Webster Highway. There are three access roads that provide to the Pheasant Lane Mall. These access roadways are:

- A two-way, four lane roadway in New Hampshire.
- A two-way, four lane roadway in Massachusetts at the Route 3 Ramps.
- A two-way, two-lane roadway in Massachusetts near the Smokey Bones site driveway.

No sidewalks are provided on any of the Pheasant Lane Mall Access Rds.

Pheasant Lane, South Nashua –Pheasant Lane is a private roadway providing access to Costco via Daniel Webster Highway. This is a two-way, two-lane roadway. The roadway has a sidewalk on one side of the roadway.

Dan Chan St, South Nashua – Dan Chan St is classified as a local roadway under the City of Nashua jurisdiction. This roadway provides another access point to the Pheasant Lane Mall as well as another shopping plaza and several shops via Daniel Webster Highway. This is a two-way, four lane roadway with sidewalk provided on one side of the roadway.

Danforth Rd, South Nashua – Danforth Rd is classified as a local roadway under the City of Nashua jurisdiction. This roadway provides access to multiple shops and shopping plazas via Daniel Webster Highway. This is a two-way, two-lane roadway with sidewalk provided on one side of the roadway.

Silver Dr, South Nashua – Silver Dr is classified as a local roadway under the City of Nashua jurisdiction. This roadway provides access to commercial and residential land uses via Daniel Webster Highway. This is a two-way, two-lane roadway with no sidewalk provided.

Spit Brook Rd, South Nashua – Spit Brook Rd is classified as a Minor Arterial under the City of Nashua jurisdiction. This is a two-way, four lane roadway which provides a connection between Daniel Webster Highway to the Everett Turnpike. Sidewalk is provided on both sides of the roadway.

East Hollis St, Nashua - East Hollis St is classified as a Principal Arterial under the City of Nashua jurisdiction. This is a two-way, two-lane roadway with pedestrian sidewalks on both sides of the Rd. East Hollis St runs in the east-west providing a connection across the Merrimack River and into downtown Nashua. There is an at grade rail crossing near the intersection with Temple St.

Arlington St, Nashua – Arlington St is classified as a Major Collector and is under the City of Nashua jurisdiction. It is a two-way, two-lane roadway with pedestrian sidewalks on both sides of the Rd. Arlington St runs in the north-south direction along a primarily residential neighborhood. The Dr. Norman W. Crisp Elementary School is located on this St and there is a significant amount of school busses that use this roadway.

Crown St, Nashua – Crown St is classified as a Local roadway under the City of Nashua jurisdiction. It is a two-way, two-lane roadway with sidewalk provided on one side. The St runs east-west serving a residential neighborhood. There is an at grade rail crossing near the intersection with Chase St.

Chase St, Nashua – Chase St is classified as a Local roadway under the City of Nashua jurisdiction. It is a one-way, one lane roadway with no sidewalks provided. This roadway is a connection between East Hollis St and Crown St.

South River Rd (US Route 3), Bedford – South River Rd is classified as a Minor Arterial under New Hampshire District 5 jurisdiction. This is a two-way four lane roadway running in the north-south direction with sidewalk provided on one side. The roadway runs parallel to the Merrimack River and the Everett Turnpike. The section of section of South River Rd within our study area is in the vicinity of Raymond Wieczorek Dr which provides a crossing of Merrimack River.

Raymond Wieczorek Dr Ramp to South River Rd, Bedford – The Raymond Wieczorek Dr Ramp is a Principal Arterial under New Hampshire District 5 jurisdiction. These ramps provided access from the Everett Turnpike. These ramps are limited access facilities with no pedestrian and bicycle access.

Somerville Dr, Bedford – Somerville Dr is a private dead-end Rd which terminates at a private business. This roadway is two-way, two lanes with no pedestrian sidewalks. It primarily gives access to a U-Haul Moving and Storage company.

East Point Dr, Bedford - East Point Dr is a local roadway under New Hampshire District 5 jurisdiction. This is a dead-end roadway that provides access to a state police barracks, a DOT facility, and a few private businesses. It is a two-way, two-lane roadway with no sidewalks provided.

Elm St, Manchester – Elm St is classified as a Principal Arterial under the City of Manchester jurisdiction. This is a north-south two-way, four-lane roadway with sidewalks on both sides. A bicycle lane is provided between Valley St and Auburn St in both directions.

Valley St, Manchester – Valley St is classified as a Principal Arterial under the City of Manchester jurisdiction. This is an east-west two-way, two-lane roadway with sidewalks on both sides.

Market Basket Dr, Manchester - Market Basket Dr is a private roadway and is a two-way, two-lane roadway with a sidewalk provided on one side. This roadway provides access to the Market Basket grocery store via Elm St.

Auburn St, Manchester - Auburn St is classified as a Major Collector under the City of Manchester jurisdiction. This is an east-west two-way, two-lane roadway with sidewalks on both sides. The western portion of Auburn St provides a connection to Market Basket grocery store via Elm St.

Lave Ave, Manchester – Lake Ave is classified as a Minor Arterial under the City of Manchester jurisdiction. This is an east-west two-way, two-lane roadway with sidewalks on both sides. Lake Ave runs between Granite St and Hanover St.

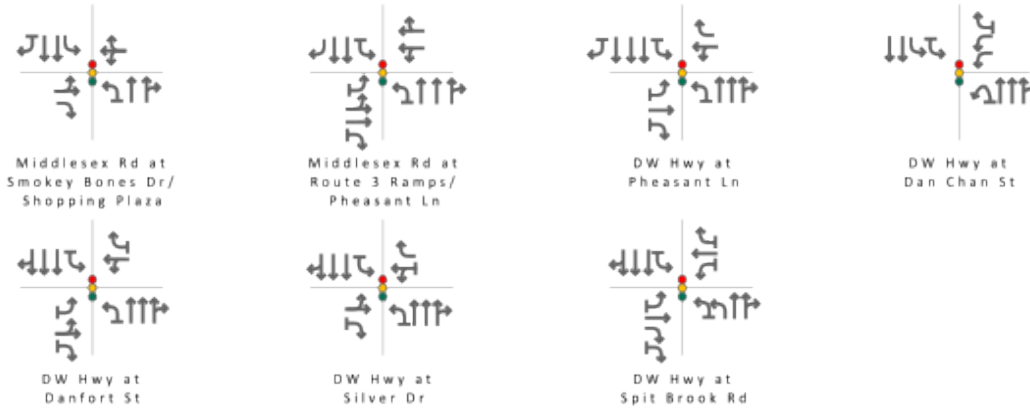
Canal St, Manchester – Canal St is classified as a Minor Arterial under the City of Manchester jurisdiction. Canal St is a north-south two-way, two-lane roadway with sidewalks on both sides. Canal St provides access to various private shops and businesses via Granite St.

Granite St, Manchester – Granite St is classified as a Principal Arterial under the City of Manchester jurisdiction. Granite St is an east-west two way, four-lane roadway with sidewalks provided on both sides. Granite St provides a crossing over the Merrimack River and provides a connection to I-293.

Intersection Descriptions

A diagram of each intersection showing approach lanes and intersection control is shown in Figure 2.

South Nashua, NH



Nashua, NH



Bedford, NH



Manchester, NH

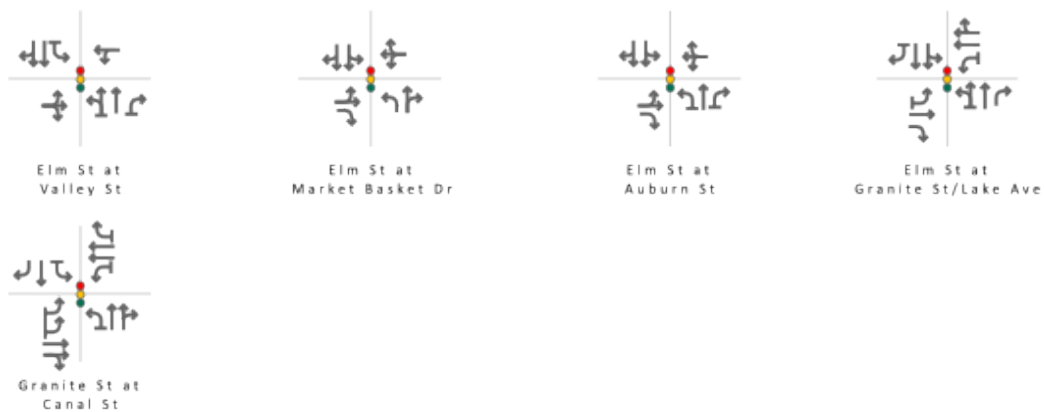


Figure 2 - Intersection Layout Diagrams

Traffic Data Collection

Traffic data was collected from a variety of sources and processed to create year 2022 traffic volumes for each study intersection. Volume data from years prior to the start of the Covid-19 pandemic were grown by 0.5% per year to the year 2020 and then 0% growth to year 2022. This is to account for the drop in traffic volumes during the pandemic.

South Nashua, NH

The following intersections in South Nashua are equipped with loop detectors capable of counting vehicles. Data at these intersections were collected in December 2021.

- Daniel Webster Highway (DW Highway) at Silver Dr
- DW Highway at Danforth Rd
- DW Highway at Dan Chan St
- DW Highway at Pheasant Ln

Turning movement count data was collected in the field in April 2022 for the following intersections:

- Route 3 Off-ramp at Middlesex Rd
- Smokey Bones Dr at Middlesex Rd

Network traffic volumes were then balanced between intersections in close proximity with few entry/exit points between intersections. See Figure 3 for volume network diagram.

South Nashua primarily consists of commercial land use with many retail stores along DW Highway. Many of these stores do not open until 9AM and the Pheasant Lane Mall is not open until 10AM which does not overlap with the typical morning peak commute times of 7AM to 9AM. Therefore, for the purpose of this traffic study, only PM Peak Hour was analyzed.

Nashua, NH

Turning movement count data was collected in the field in April 2022 for the following intersections:

- E. Hollis St at Chase St
- E. Hollis St at Arlington St
- Arlington St at Crown St
- Crown St at Chase St

Traffic volumes were then balanced between the E. Hollis St at Arlington St intersection and the Arlington St at Crown St intersection. See Figure 4 for volume network diagram.

Bedford, NH

Turning movement count data was collected in the field in April 2022 for the following intersections:

- South River Rd at East Point Dr
- South River Rd at Somerville Dr
- South River Rd at Raymond Wiczorek Dr Off-Ramps

Traffic volumes were then balanced between all intersections. See Figure 5 for volume network diagram.

Manchester, NH

Traffic volumes for study intersections in Manchester, NH were provided by the City of Manchester as part of their RAISE Grant model application. Traffic volumes from this model were from year 2019. Traffic volumes were grown by one year at 0.5% and then 0% for two years. Traffic volumes from StreetLight data along Elm St indicated that AM

peak hour traffic volumes were almost 50% lower than the PM Peak: therefore, only the PM Peak hour was analyzed. See Figure 6 for volume network diagram.

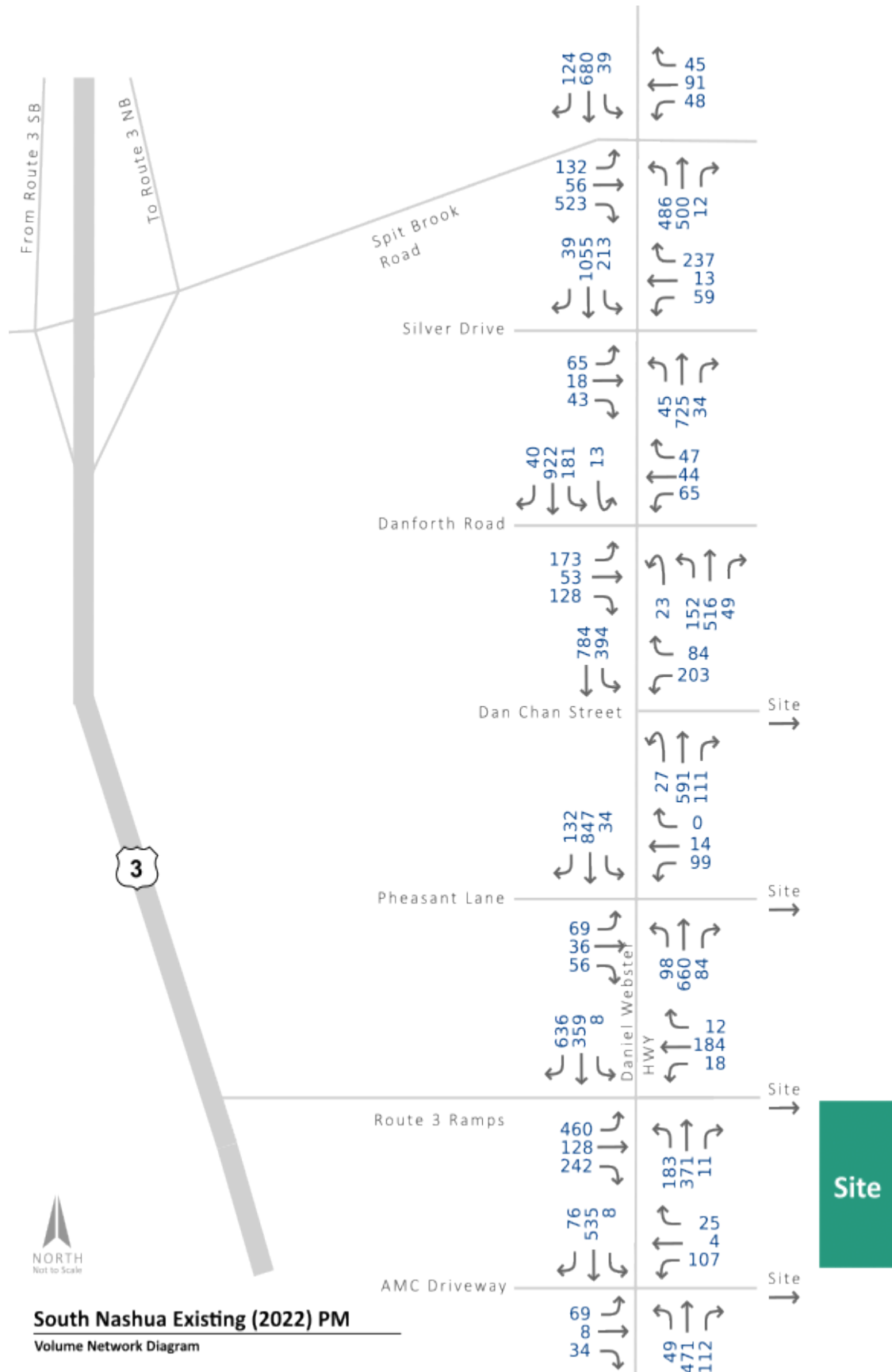
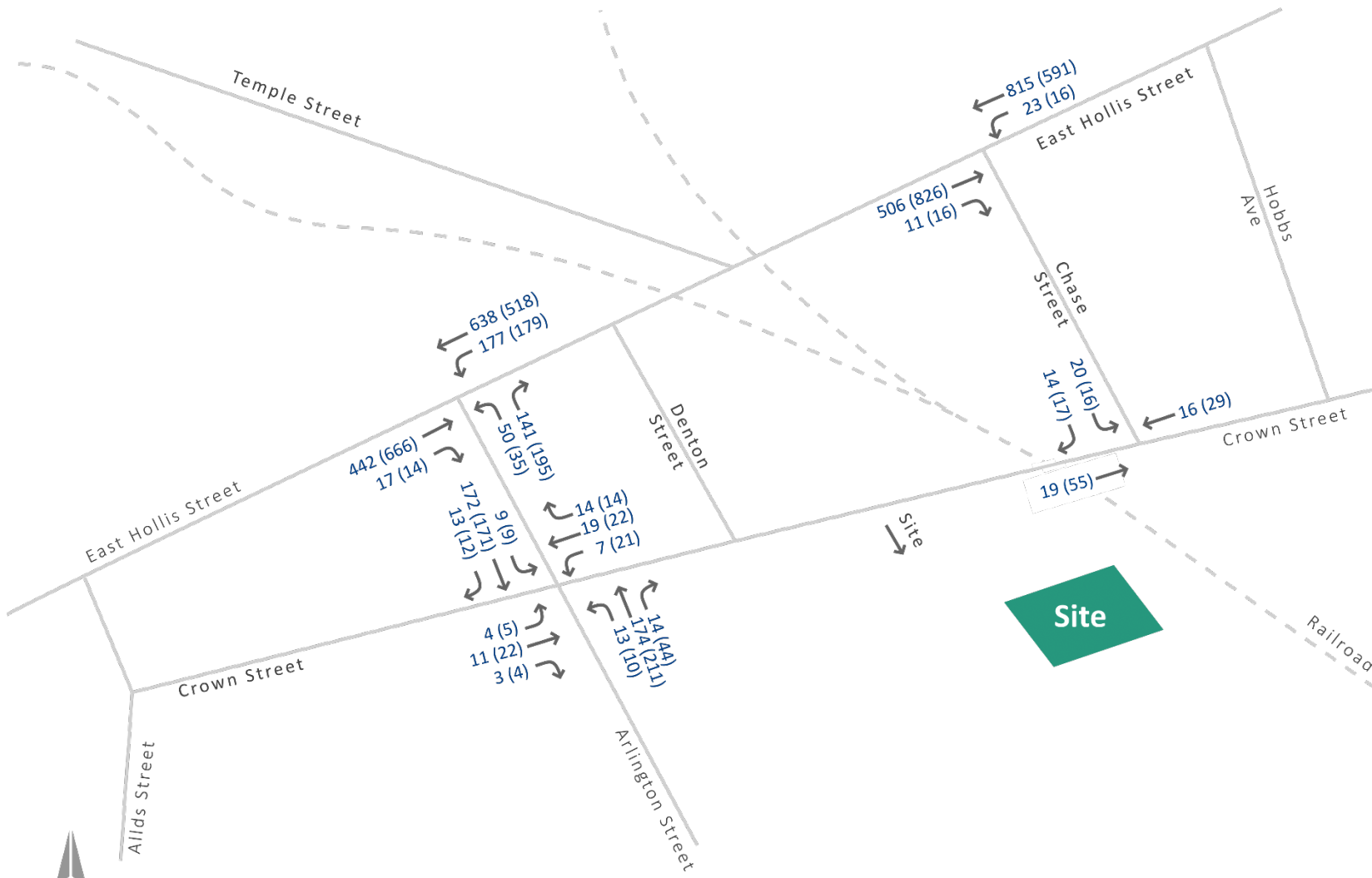


Figure 3 - South Nashua Existing (2022) Volume Network Diagram



NORTH
Not to Scale

Nashua Existing (2022) AM (PM)

Volume Network Diagram

Figure 4 - Nashua Existing (2022) Volume Network Diagram

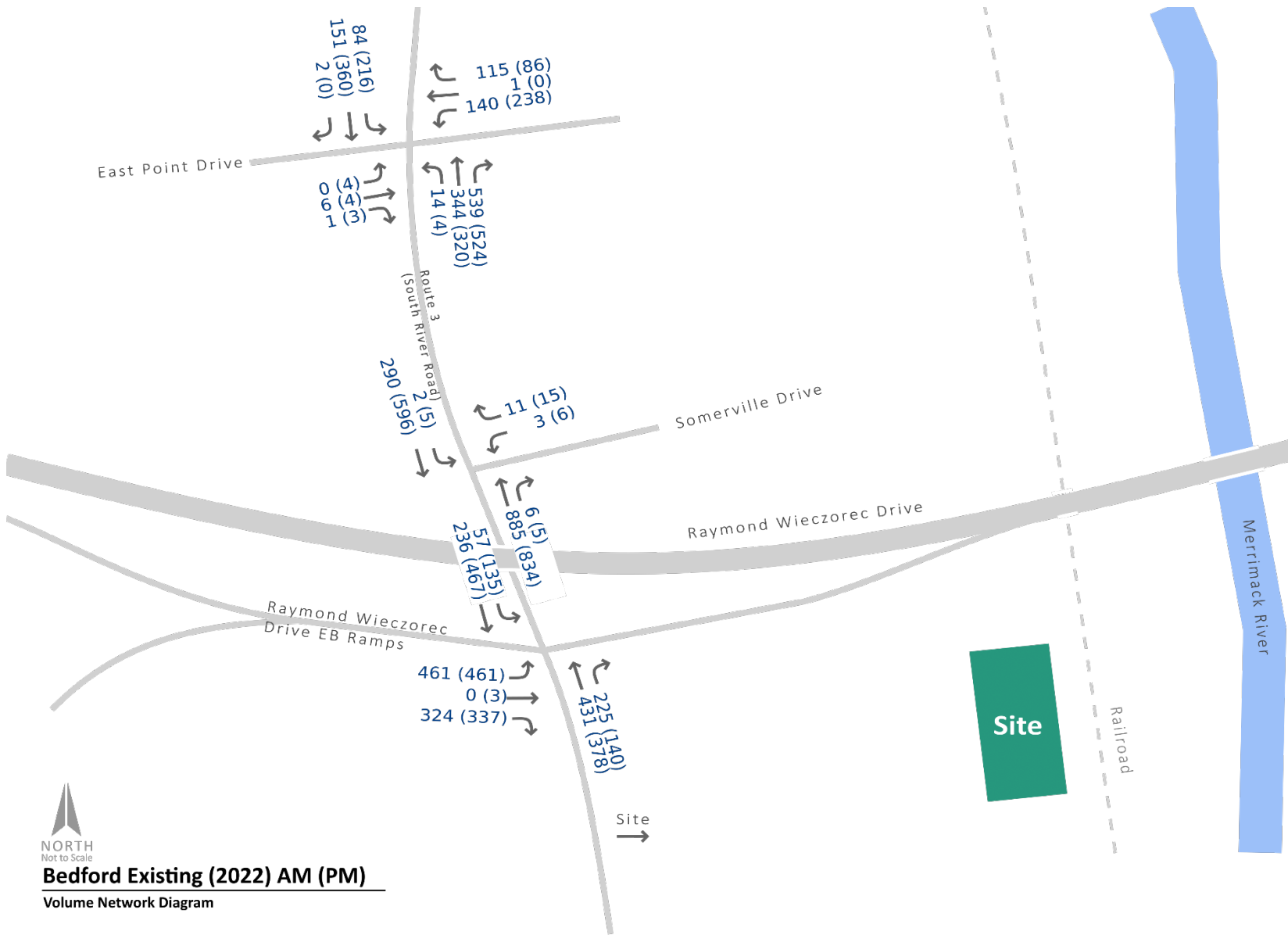


Figure 5 - Bedford Existing (2022) Volume Network Diagram

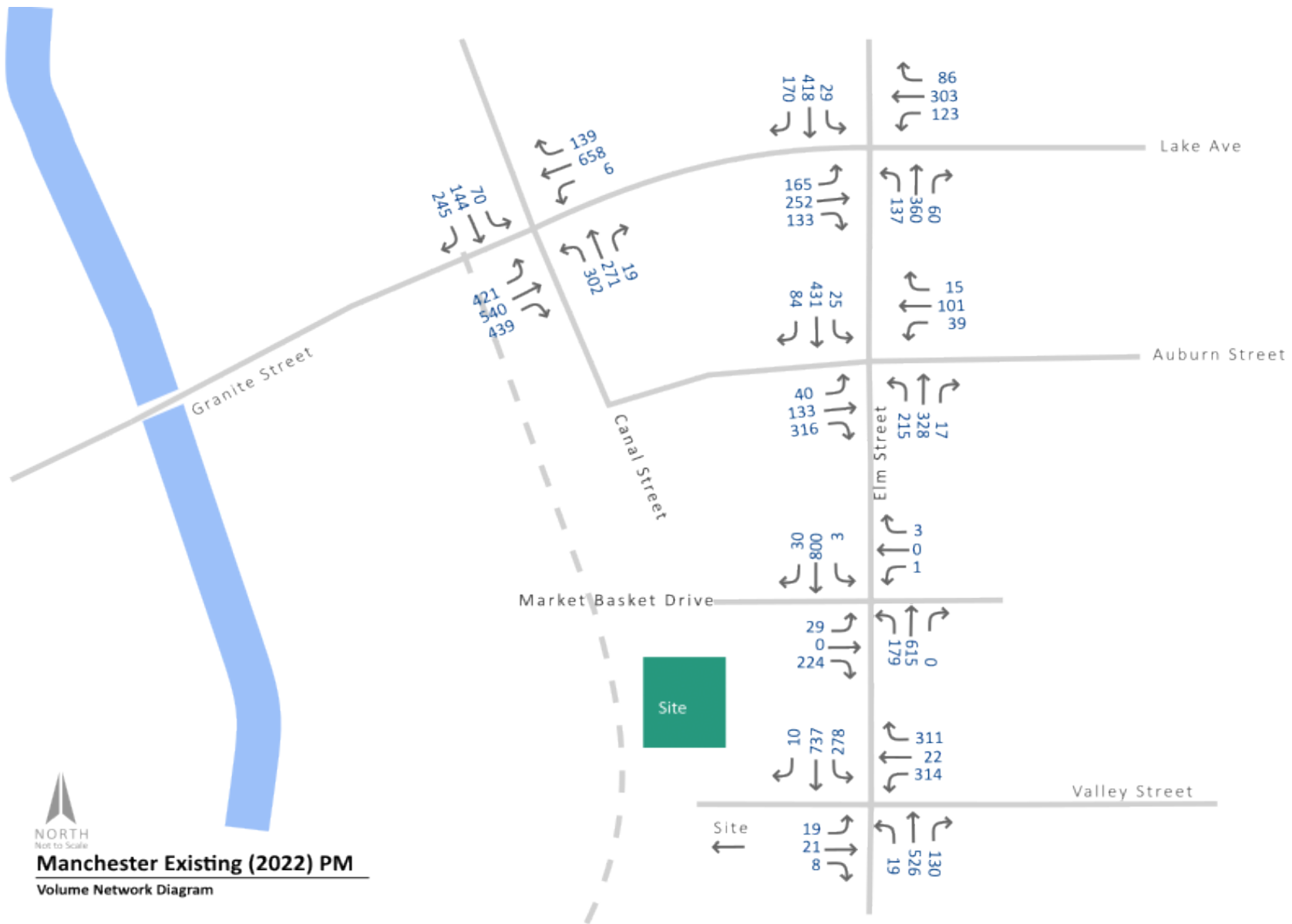


Figure 6 - Manchester Existing (2022) Volume Network Diagram

Existing (2022) Condition Operations Analysis

Peak hour turning movements were used in development of a Synchro traffic model. Peak-hour factors for each approach were calculated using the turning movement count data and following MassDOT and NHDOT guidelines. The percentage of heavy vehicles was entered for each movement that had available data; a 2% heavy vehicle percentage was assumed for movements that did not have heavy vehicle data. LOS was calculated using Synchro which is based upon HCM standard methodologies. Refer to Table 1 for LOS ranges based upon average stopped delay per vehicle. Table 2 through Table 7 summarize the results of the capacity analysis.

Table 2 - South Nashua Existing (2022) PM Capacity Analysis Results

Intersection	South Nashua Existing (2022)				
	4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Middlesex Rd at Shopping Plaza Dr/Smokey Bones	B	12.4	0.51		
Middlesex Rd NB Left	C	26.1	0.2	15	54
Middlesex Rd NB Thru Thru/Right	A	6.4	0.34	41	92
Shopping Plaza Dr EB Thru/Left	C	21.1	0.3	23	64
Shopping Plaza Dr EB Right	A	1.6	0.09	0	3
Middlesex Rd SB Thru/Left Thru	B	14.8	0.48	86	148
Middlesex Rd SB Right	A	4.4	0.13	0	21
Smokey Bones Dr WB Left/Thru/Right	C	23.9	0.51	40	101
Middlesex Rd at Route 3 Ramps/Pheasant Lane	C	30.5	0.86		
Middlesex Rd NB Left	D	50.9	0.69	138	207
Middlesex Rd NB Thru Thru Thru/Right	B	16.1	0.19	58	94
Route 3 Ramps EB Left	D	53.3	0.76	184	#328
Route 3 Ramps EB Thru/Left	D	39.5	0.58	136	201
Route 3 Ramps EB Right	A	7.8	0.5	0	53
Middlesex Rd SB Left	D	51.4	0.08	6	23
Middlesex Rd Thru Thru	C	33.4	0.44	115	179
Middlesex Rd SB Right	C	20.2	0.86	88	#347
Pheasant Lane WB Left/Thru Thru/Right	D	47.4	0.58	85	126
Daniel Webster Hwy at Pheasant Lane	B	14	0.46		
Daniel Webster Hwy NB Left	C	28.6	0.36	33	94
Daniel Webster Hwy NB Thru Thru Thru/Right	A	8.8	0.27	38	119
Pheasant Lane EB Left	C	26.5	0.31	22	69
Pheasant Lane EB Thru	C	22.8	0.11	11	41
Pheasant Lane EB Right	A	4.7	0.16	0	19
Daniel Webster Hwy SB Left	C	29.6	0.17	12	45
Daniel Webster Hwy SB Thru Thru Thru	B	14.2	0.37	88	159
Daniel Webster Hwy SB Right	A	8.5	0.18	16	58
Pheasant Lane WB Left/Thru Right	C	29.4	0.46	38	105
Daniel Webster Hwy at Dan Chan St	B	16.9	0.56		
Daniel Webster Hwy NB U-Turn	C	28	0.14	10	35
Daniel Webster Hwy NB Thru Thru Thru/Right	B	18.1	0.52	77	128
Daniel Webster Hwy SB Left Left	C	24	0.56	70	129
Daniel Webster Hwy SB Thru Thru	B	11	0.45	66	196
Dan Chan St WB Left Left	C	25.6	0.4	37	76
Dan Chan St WB Right	A	2.7	0.11	0	20

Table 2 (Continued)

Intersection	South Nashua Existing (2022)				
	LOS	4PM to 5PM			95% Queue Length (ft)
		Delay (s)	V/C	50% Queue Length (ft)	
Daniel Webster Hwy at Danforth Rd	C	21.1	0.67		
Daniel Webster Hwy NB Left	D	38.9	0.67	68	#171
Daniel Webster Hwy NB Thru Thru Thru/Right	C	22	0.54	72	108
Danforth Rd EB Left	C	32.6	0.52	42	#113
Danforth Rd Left/Thru	C	29.8	0.48	44	104
Danforth Rd EB Right	A	3.5	0.3	0	21
Daniel Webster Hwy SB Left	C	22.1	0.44	65	127
Daniel Webster Hwy SB Thru Thru Thru/Right	B	17.2	0.59	112	148
Danforth RD WB Left/Thru	C	28.8	0.44	39	93
Danforth Rd WB Right	A	0.5	0.11	0	0
Daniel Webster Hwy at Silver Dr	C	25.7	0.75		
Daniel Webster Hwy NB Left	D	53.7	0.36	33	70
Daniel Webster Hwy NB Thru Thru Thru/Right	C	22.2	0.36	140	219
Silver Dr EB Left/Thru	E	55.3	0.51	61	110
Silver Dr EB Right	A	1	0.15	0	0
Daniel Webster Hwy SB Left	D	48.8	0.75	158	250
Daniel Webster Hwy SB Thru Thru Thru/Right	C	21.8	0.41	255	323
Silver Dr WB Left/Thru	D	53.6	0.46	53	97
Silver Dr WB Right	B	14.4	0.66	0	73
Daniel Webster Hwy at Spit Brook Rd	C	28.2	0.72		
Daniel Webster Hwy NB Left Left	C	33.1	0.47	72	248
Daniel Webster Hwy NB Thru Thru/Right	B	16	0.41	152	61
Spit Brook Rd EB Left	D	50.5	0.58	101	152
Spit Brook Rd EB Thru	D	40.6	0.23	41	74
Spit Brook Rd EB Right Right	A	5.6	0.41	38	60
Daniel Webster Hwy SB Left	D	44.3	0.13	26	64
Daniel Webster Hwy SB Thru Thru Thru/Right	D	39.5	0.72	198	234
Spit Brook Rd WB Left	D	48.9	0.33	40	69
Spit Brook Rd WB Thru	E	58.3	0.59	79	115
Spit Brook Rd WB Right	A	1.3	0.18	0	0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

Table 3 - Nashua Existing (2022) AM Capacity Analysis Results

Intersection	Nashua Existing (2022)				
	7AM to 8AM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
E. Hollis St at Chase St	A	0.1	0.028		
E. Hollis St WB Left/Thru	A	8.9	0.028		2.5
Arlington St at E. Hollis St	B	15.7	0.76		
Arlington St NB Left/Right	C	21.4	0.61	49	98
E. Hollis St EB Thru/Right	C	24.2	0.76	164	260
E. Hollis St WB Left	A	7.7	0.43	26	51
E. Hollis St WB Thru	A	9.6	0.61	134	234
Arlington St at Crown St	A	2.1	0.146		
Arlington St NB Left/Thru/Right	A	7.9	0.018		2.5
Crown St EB Left/Thru/Right	B	14.9	0.055		5.0
Arlington St SB Left/Thru/Right	A	8	0.011		0.0
Crown St WB Left/Thru/Right	B	14.7	0.146		12.5
Crown St at Chase St	A	3.6	0.046		
Crown St EB Thru	-	0	0		0.0
Chase St SB Left/Right	A	8.8	0.046		2.5
Chase St WB Thru	-	0	0		0.0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

Table 4 - Nashua Existing (2022) PM Capacity Analysis Results

Intersection	Nashua Existing (2022)				
	4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
E. Hollis St at Chase St	A	0.1	0.025		
E. Hollis St WB Left/Thru	A	9.9	0.025		2.5
Arlington St at E. Hollis St	B	16.5	0.83		
Arlington St NB Left/Right	B	19.6	0.68	35	89
E. Hollis St EB Thru/Right	C	24.9	0.83	251	436
E. Hollis St WB Left	B	12.2	0.54	24	75
E. Hollis St WB Thru	A	6.3	0.47	91	159
Arlington St at Crown St	A	2.9	0.194		
Arlington St NB Left/Thru/Right	A	7.8	0.01		0.0
Crown St EB Left/Thru/Right	B	14.9	0.113		10.0
Arlington St SB Left/Thru/Right	A	7.9	0.011		0.0
Crown St WB Left/Thru/Right	C	15.3	0.194		17.5
Crown St at Chase St	A	2.5	0.045		
Crown St EB Thru	-	0	0		0.0
Chase St SB Left/Right	A	8.9	0.045		2.5
Chase St WB Thru	-	0	0		0.0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

Table 5 - Bedford Existing (2022) AM Capacity Analysis Results

Intersection	Bedford Existing (2022)				
	7AM to 8AM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
South River Rd at Raymond Wieczorek Dr Off Ramps	B	15.3	0.65		
South River Rd NB Thru Thru	B	17.9	0.51	68	103
South River Rd NB Right	A	4.7	0.42	0	37
Raymond Wieczorek Dr Off Ramp EB Left	C	27.7	0.65	74	#162
Raymond Wieczorek Dr Off Ramp EB Thru	C	27.7	0.65	74	#162
Raymond Wieczorek Dr Off Ramp EB Right	A	6.3	0.56	0	50
South River Rd SB Left Left	C	22.8	0.15	9	24
South River Rd SB Thru Thru	A	6.7	0.15	21	34
South River Rd at Somerville Dr	A	0.2	0.039		
South River Rd SB Left	B	10.1	0.003		0.0
Somerville Dr WB Left/Right	B	14	0.039		2.5
South River Rd at East Point Dr	B	10.9	0.53		
South River Rd NB Left	C	29.2	0.11	5	24
South River Rd NB Thru Thru	B	14.9	0.35	47	93
South River Rd NB Right	A	2.1	0.51	0	17
East Point Dr EB Left/Thru	C	28.5	0.08	3	11
East Point Dr EB Right	A	0	0.01	0	0
South River Rd SB Left Left	C	23.9	0.2	13	38
South River Rd SB Thru Thru/Right	A	7.7	0.1	10	39
East Point Dr WB Left/Thru	C	31.7	0.53	48	#137
East Point Dr WB Right	A	4	0.21	0	23

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

Table 6 - Bedford Existing (2022) PM Capacity Analysis Results

Intersection	Bedford Existing (2022)				
	4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
South River Rd at Raymond Wieczorek Dr Off Ramps	B	15.9	0.61		
South River Rd NB Thru Thru	B	19.8	0.48	77	103
South River Rd NB Right	A	5.1	0.31	0	28
Raymond Wieczorek Dr Off Ramp EB Left	C	23.5	0.56	85	158
Raymond Wieczorek Dr Off Ramp EB Thru	C	23.6	0.57	87	161
Raymond Wieczorek Dr Off Ramp EB Right	B	10.8	0.61	32	94
South River Rd SB Left Left	C	26.2	0.34	29	51
South River Rd SB Thru Thru	A	9.6	0.36	65	79
South River Rd at Somerville Dr	A	0.4	0.11		
South River Rd SB Left	B	10.1	0.008		0.0
Somerville Dr WB Left/Right	C	16.3	0.11		10.0
South River Rd at East Point Dr	B	19	0.94		
South River Rd NB Left	C	29	0.04	1	11
South River Rd NB Thru Thru	B	18	0.38	44	89
South River Rd NB Right	A	2.6	0.54	0	22
East Point Dr EB Left/Thru	C	30.5	0.13	5	13
East Point Dr EB Right	A	0	0.02	0	0
South River Rd SB Left Left	C	26.3	0.49	39	78
South River Rd SB Thru Thru/Right	A	9.4	0.25	29	85
East Point Dr WB Left/Thru	E	69.7	0.94	82	#257
East Point Dr WB Right	A	2.2	0.13	0	14

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

Table 7 - Manchester Existing (2022) PM Capacity Analysis Results

Intersection	Manchester Existing (2022)				
	4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Elm St at Valley St	D	50.4	1.29		
Elm St NB Left/Thru Thru	C	30.7	0.7	106	#291
Elm St NB Right	A	7.6	0.28	3	48
Valley St EB Left/Thru/Right	C	24.2	0.27	20	63
Elm St SB Left	F	189.1	1.29	~149	#428
Elm St SB Thru Thru/Right	B	14.9	0.46	94	267
Valley St WB Left/Thru	F	111	1.11	~174	#425
Valley St WB Right	A	2.6	0.36	0	30
Elm St at Market Basket Dr	C	24	0.85		
Elm St NB Left	D	43.7	0.7	58	#276
Elm St NB Thru/Right	B	16.5	0.6	90	#624
Market Basket Dr EB Left/Thru	C	30.7	0.2	12	56
Market Basket Dr EB Right	A	4.5	0.36	0	37
Elm St SB Left/Thru Thru/Right	C	31.5	0.85	123	#502
Driveway WB Left/Thru/Right	A	0.2	0.05	0	0
Elm St at Auburn St	B	18.1	0.71		
Elm St NB Left	C	28.3	0.71	34	#205
Elm St NB Thru	B	15.2	0.47	65	223
Elm St NB Right	A	0.1	0.03	0	0
Auburn St EB Left/Thru	C	23.2	0.44	40	#170
Auburn St EB Right	A	4.5	0.44	0	40
Elm St SB Left/Thru Thru/Right	C	21	0.66	66	186
Auburn St WB Left/Thru/Right	C	25	0.52	46	131
Elm St at Granite St/Lake Ave	D	49.9	0.96		
Elm St NB Left/Thru Thru	E	75.1	0.96	264	#388
Elm St NB Right	A	3.9	0.15	0	16
Granite St EB Left	E	67.6	0.76	168	#309
Granite St EB Thru	C	31	0.54	227	281
Granite St EB Right	A	3.1	0.28	14	25
Elm St SB Left/Thru Thru	D	48.7	0.7	216	284
Elm St SB Right	C	21.7	0.57	35	108
Lake Ave WB Left	F	96.8	0.88	163	#211
Lake Ave WB Thru Thru/Right	D	40.9	0.49	175	217

Table 7 (Continued)

Intersection	Manchester Existing (2022)				
	4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Granite St at Canal St	D	43.4	1.13		
Canal St NB Left	F	144.5	1.13	~345	#540
Canal St NB Thru Thru/Right	E	66.5	0.7	145	192
Granite St EB Left Left	D	48.7	0.51	192	257
Granite St EB Thru Thru/Right	B	17.2	0.53	249	391
Canal St SB Left	E	57.7	0.29	62	118
Canal St SB Thru	F	88	0.79	141	#245
Canal St SB Right	A	4.5	0.33	0	59
Granite St WB Left	D	53.8	0.07	6	m12
Granite St WB Thru Thru	C	34.3	0.67	204	m244
Granite St WB Right	A	1.7	0.19	1	m12

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

NA - Results not reported or available.

[XXXX] - Movement is only available in the build condition.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

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

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

No-Build (2040) Condition

Year 2040 has been selected as the project design year. The year 2040 No-Build traffic volumes were developed by applying a compound growth rate of 0.5% per year from the base year 2022. These volumes were then rounded to the nearest five vehicles and used to establish a future 2040 baseline No-Build model. This growth rate over an eighteen-year period is intended to include and account for planned project developments not associated with this proposed project. No geometric changes are made between the Existing Condition and No-Build Condition.

Volume network diagrams for the No-Build Condition are shown in Figure 7 to Figure 10.

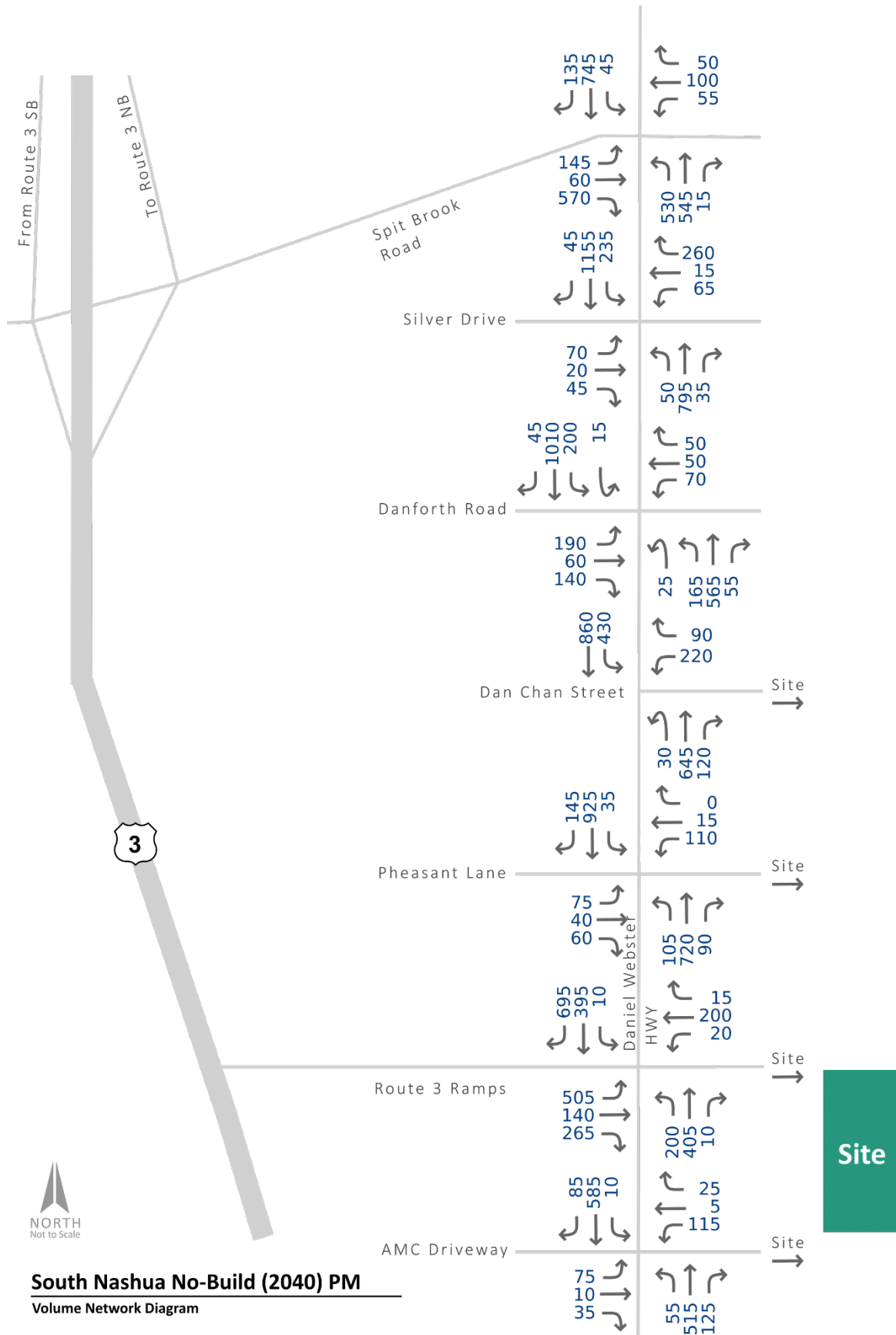
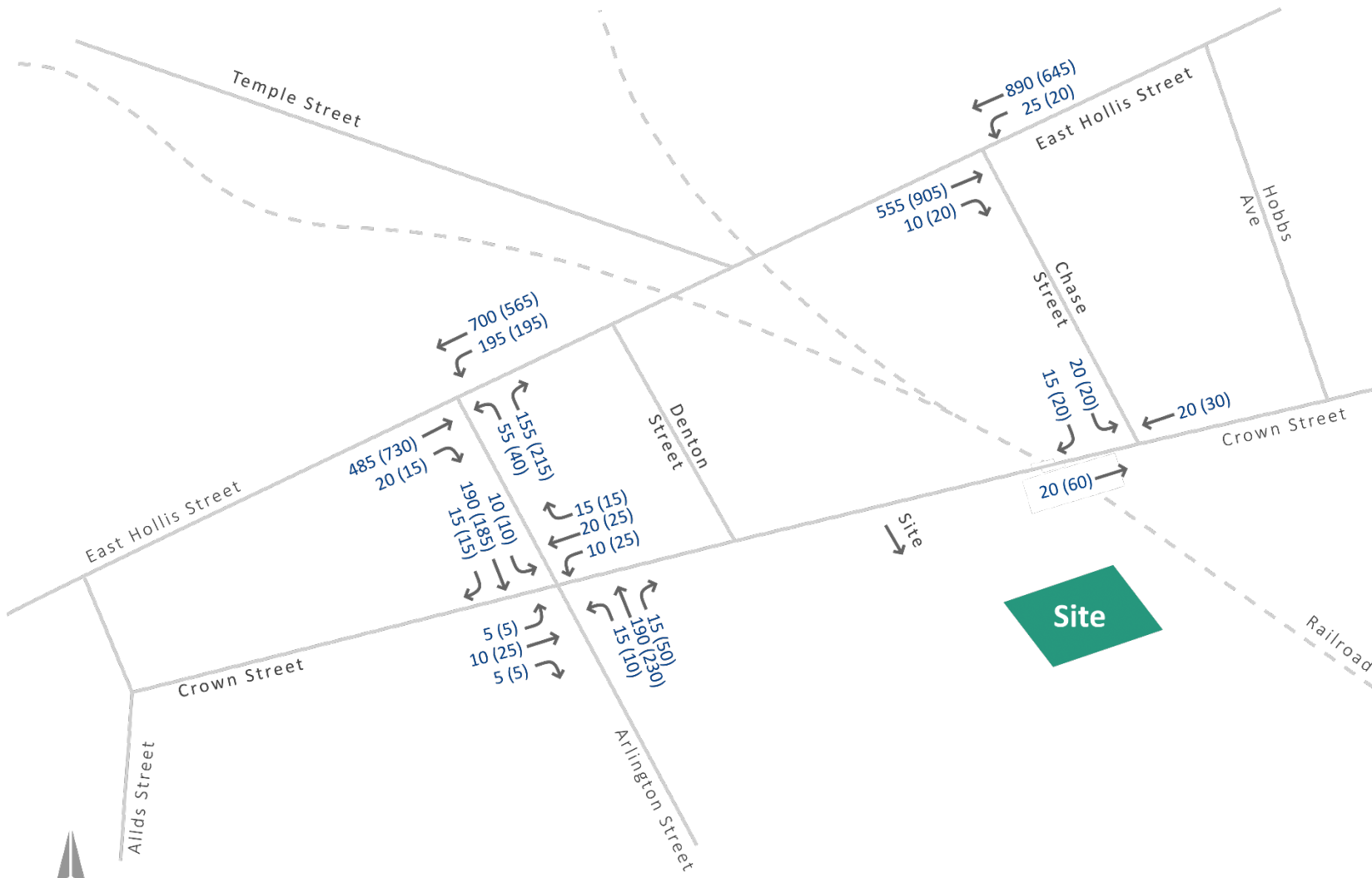
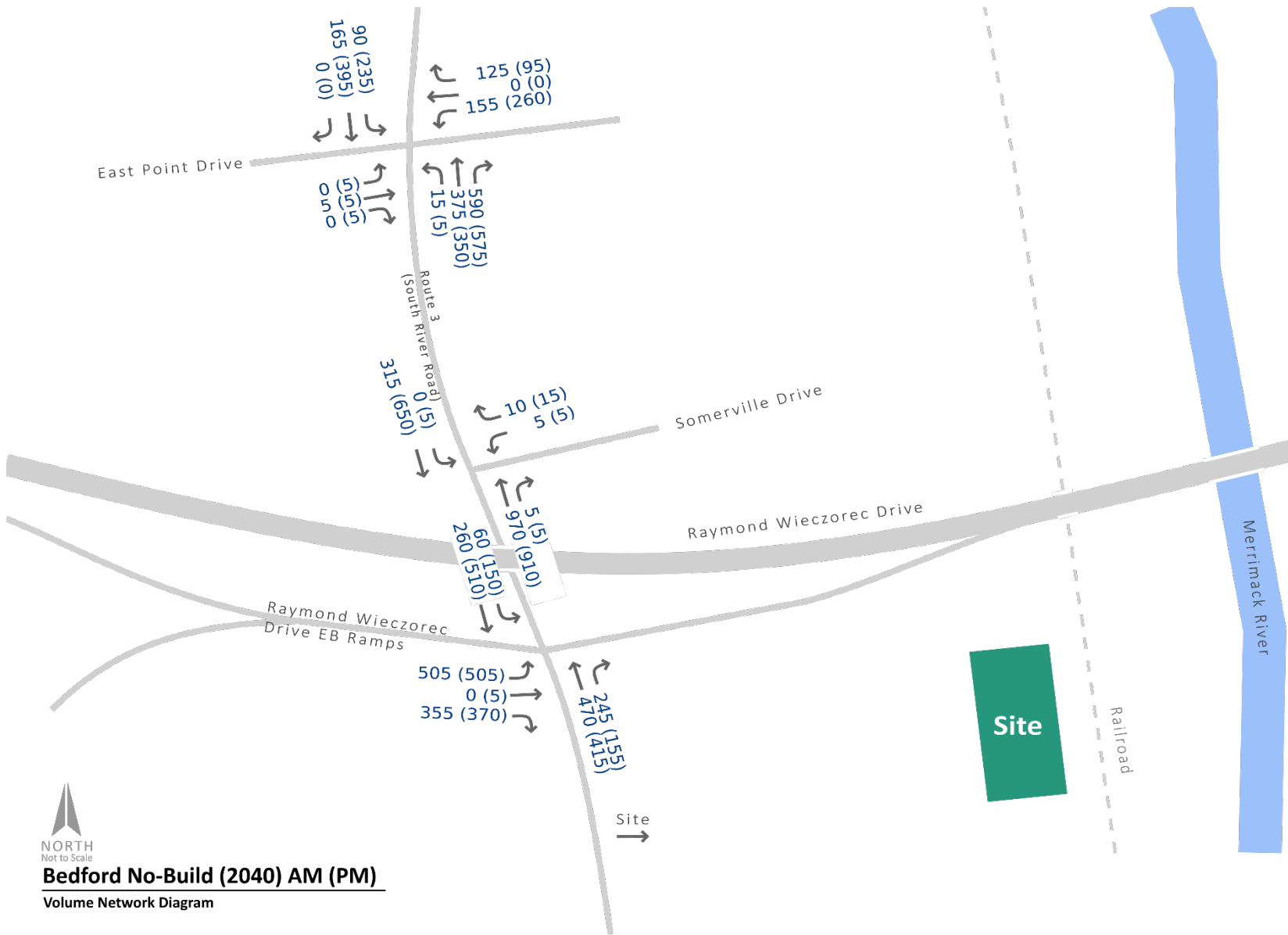


Figure 7 - South Nashua No-Build (2040) Volume Network Diagram



Nashua No-Build (2040) AM (PM)
Volume Network Diagram

Figure 8 - Nashua No-Build (2040) Volume Network Diagram



Bedford No-Build (2040) AM (PM)
Volume Network Diagram

Figure 9 - Bedford No-Build (2040) Volume Network Diagram

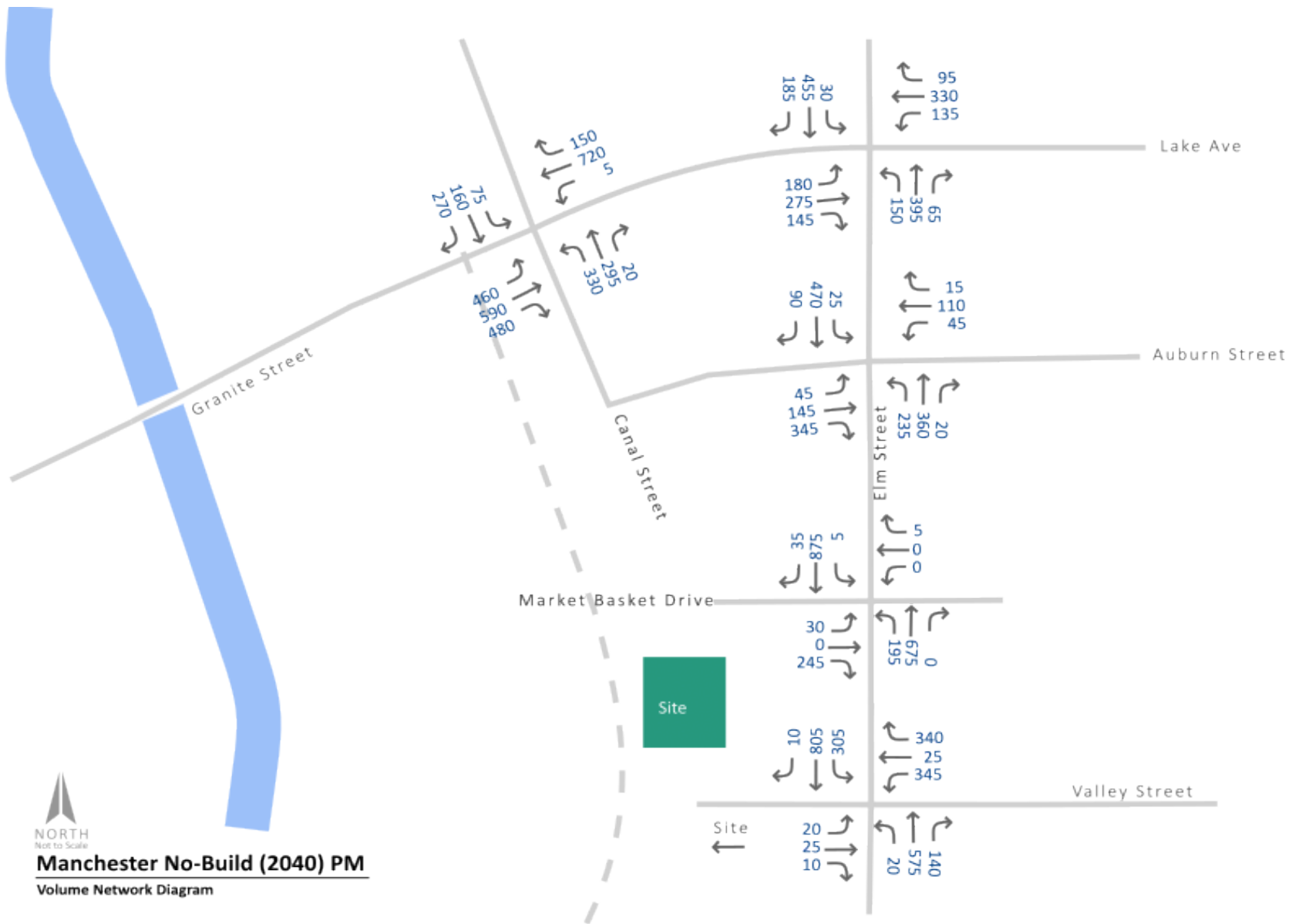


Figure 10 - Manchester No-Build (2040) Volume Network Diagram

Build (2040) Condition

Project Description

The project will extend existing commuter rail service on the MBTA Lowell line from Lowell to South Nashua, Nashua, Bedford (Manchester Airport) and Manchester. A total of 32 weekday trains (16 round trips) will serve these New Hampshire communities.

Trip Generation Methodology

Ridership forecasts were developed using the latest version (v2.5) of the Federal Transit Administration’s STOPS forecasting model. Daily ridership forecasts for each new station location were calculated for anticipated 2040 conditions. Average weekday boardings at each of the four new stations are shown below in Table 8:

Table 8 - Average Weekday Boardings

Station Location	Average Weekday Boardings
South Nashua	906
Nashua / Crown St	690
MHT Bedford	769
Manchester	462
Total	2,827

In addition to the daily ridership forecasts, mode shares for each station were developed. These mode shares, shown below in Table 9, were used to calculate vehicle trips to and from each station location.

Table 9 - Modes Share by Station

Station Location	Park & Ride	Kiss & Ride	Walk / Bike	Arrive by Transit Connection	Total
South Nashua	60%	20%	10%	10%	100%
Nashua / Crown St	18%	6%	66%	10%	100%
MHT Bedford	81%	19%	0%	0%	100%
Manchester	36%	10%	50%	4%	100%

It should be noted that these ridership forecasts and subsequent traffic analyses represent a scenario unconstrained by the impacts of COVID-19 on ridership levels and workplace attendance. Sensitivity analyses were conducted to provide guidance on potential changes to ridership demand associated with the pandemic. The following scenarios were analyzed:

- Baseline, 0% Decrease, Assumes pre-COVID level trip rates;
- Low Impact, 15% Decrease, a “Quick Recovery” COVID scenario for 2025 that assumed 10% more telework and 0.5% fewer jobs compared to pre-COVID levels, leading to a reduction in overall trips of approximately 5%. The resulting impact was a 15% decrease in transit trips (which also includes shifts from existing transit trips to auto);
- Medium Impact, 22% Decrease, a “Second Wave” COVID scenario for 2025 that assumed 10% more telework and 6% fewer jobs compared to pre-COVID levels, leading to a reduction in overall trips of approximately 15%. The resulting impact was a 22% decrease in transit trips (which also includes shifts from existing transit trips to auto); and
- High Impact, 44% Decrease, a “Cautious Recovery” COVID scenario for 2025 that assumed 15% more telework and 2% fewer jobs compared to pre-COVID levels, leading to an overall reduction in trips of

approximately 10%. The resulting impact was a 44% decrease in transit trips (which also includes shifts from existing transit trips to auto).

Interim steps were conducted to convert the ridership forecasts to peak hour trip generation. Train-by-train boarding and alighting counts for the MBTA Lowell Commuter Rail line (<https://www.mass.gov/lists/2018-commuter-rail-counts>) were reviewed to determine peaking characteristics over the course of an entire weekday. The Lowell Station was used as a proxy for the New Hampshire stations, matching the proposed 32-train schedule as an extension of that service. Two assumptions were included: one, that the forecast boardings would have a corresponding return trip to the originating station, and secondly, that the peak hour would include no more than two arrival or departure trains for purposes of trip generation calculations. In addition, park and ride users would be represented by a single entering or exiting trip per boarding or alighting, while kiss and ride and transit trips would be represented by both an entering and exiting trip for each boarding or alighting shown in Table 10 and Table 11.

Table 10 - Boarding and Alighting Trips

Station Location	AM Peak Hour Boardings and Alightings	PM Peak Hour Boardings and Alightings
South Nashua	AM Boardings:322 AM Alightings:14	PM Boardings: 36 PM Alightings: 281
Nashua / Crown St	AM Boardings: 245 AM Alightings: 11	PM Boardings: 28 PM Alightings: 214
MHT Bedford	AM Boardings: 273 AM Alightings: 13	PM Boardings: 31 PM Alightings: 239
Manchester	AM Boardings: 164 AM Alightings: 8	PM Boardings: 19 PM Alightings: 143

Table 11 - Ride Share Boarding and Alighting Trips

Station Location	Park & Ride	Kiss & Ride	Walk / Bike	Arrive by Transit Connection
South Nashua	AM Boardings:193 AM Alightings: 21 PM Boardings:9 PM Alightings:169	AM Boardings: 65 AM Alightings: 7 PM Boardings:3 PM Alightings:56	AM Boardings: 32 AM Alightings: 4 PM Boardings: 1 PM Alightings: 129	AM Boardings: 32 AM Alightings: 4 PM Boardings: 1 PM Alightings: 29
Nashua / Crown St	AM Boardings:44 AM Alightings: 2 PM Boardings:5 PM Alightings:39	AM Boardings: 15 AM Alightings: 1 PM Boardings:1 PM Alightings:13	AM Boardings: 162 AM Alightings: 7 PM Boardings: 19 PM Alightings: 142	AM Boardings: 24 AM Alightings: 1 PM Boardings: 3 PM Alightings: 21
MHT Bedford	AM Boardings:221 AM Alightings: 11 PM Boardings:26 PM Alightings:194	AM Boardings: 52 AM Alightings: 2 PM Boardings:5 PM Alightings:45	AM Boardings: 0 AM Alightings: 0 PM Boardings: 0 PM Alightings: 0	AM Boardings: 0 AM Alightings: 0 PM Boardings: 0 PM Alightings: 0
Manchester	AM Boardings:59 AM Alightings: 3 PM Boardings:7 PM Alightings:51	AM Boardings: 17 AM Alightings: 1 PM Boardings:1 PM Alightings:15	AM Boardings: 82 AM Alightings: 4 PM Boardings: 9 PM Alightings: 72	AM Boardings: 6 AM Alightings: 0 PM Boardings: 2 PM Alightings: 6

Trip Distribution

Project generated trips are shown in Figure 11 to Figure 14. Build volume network diagrams are shown Figure 15 to Figure 18.

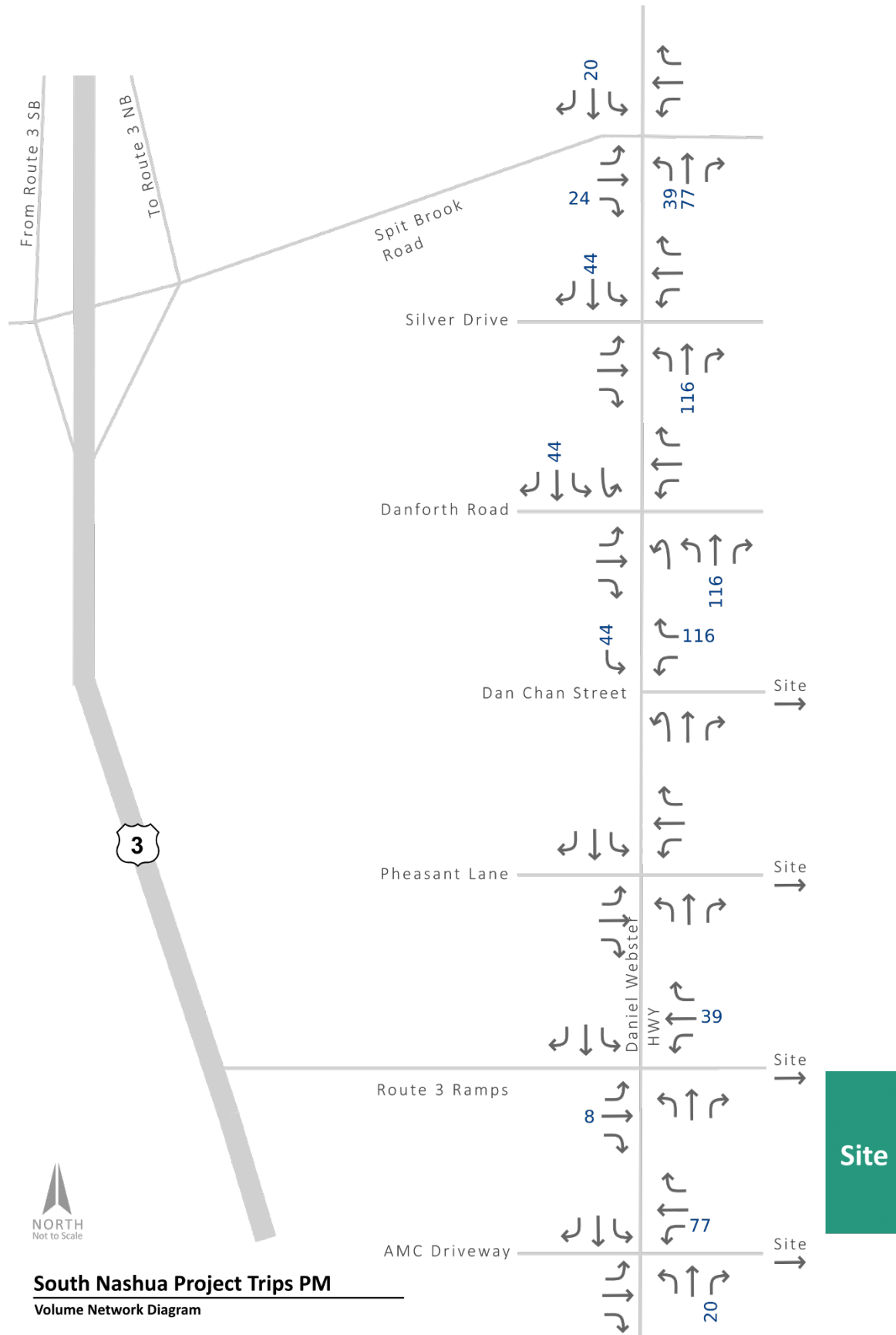
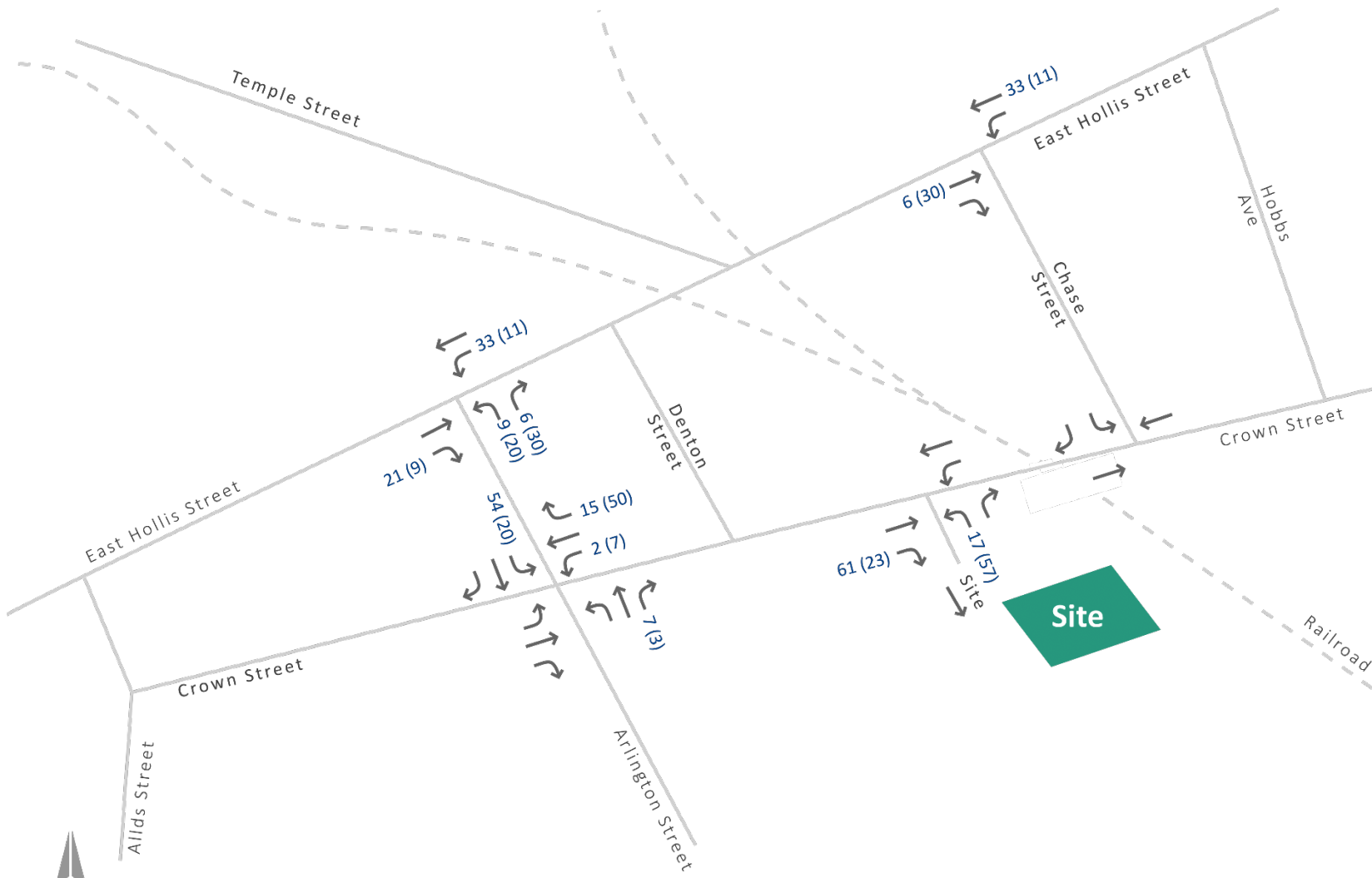
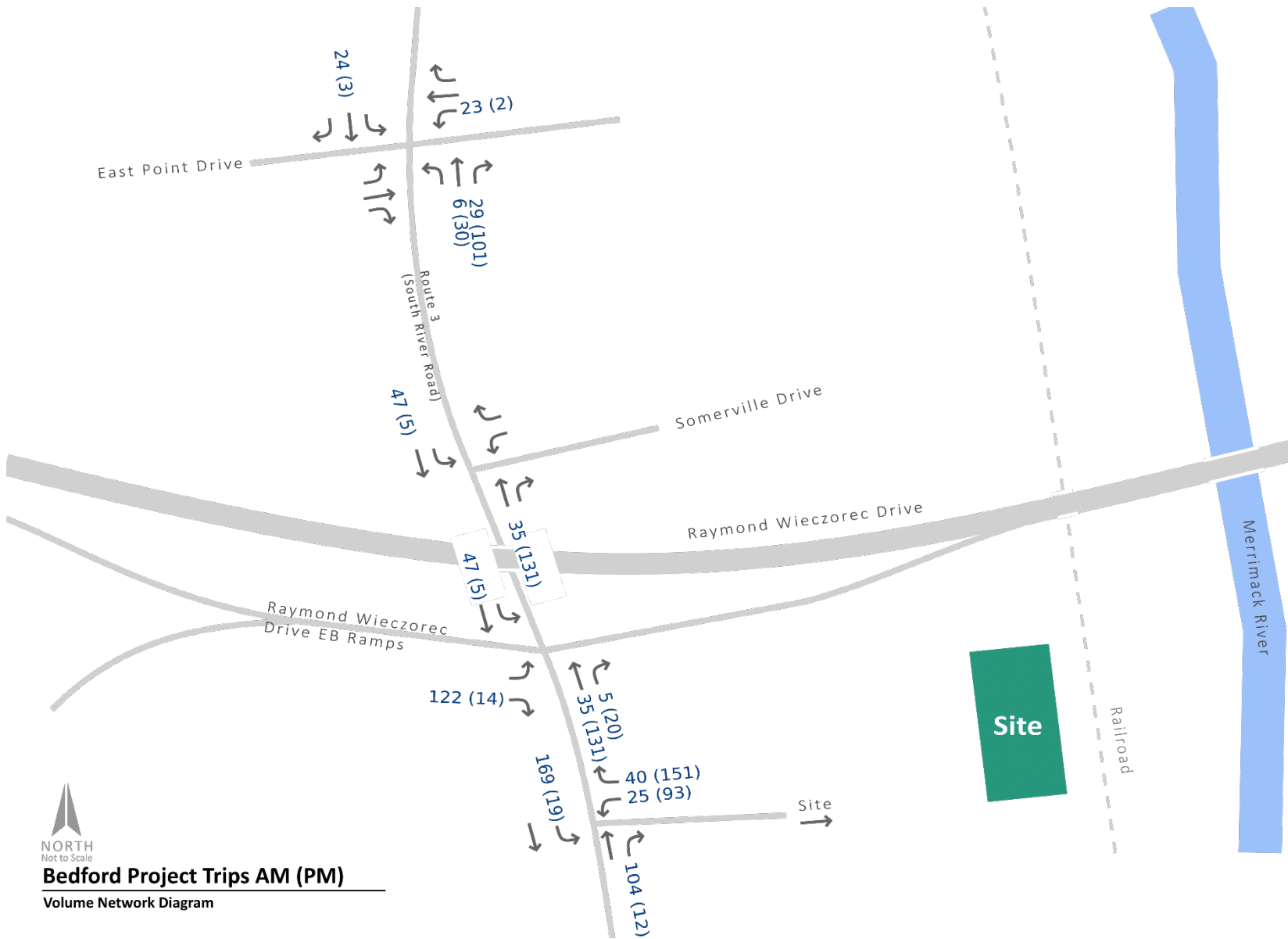


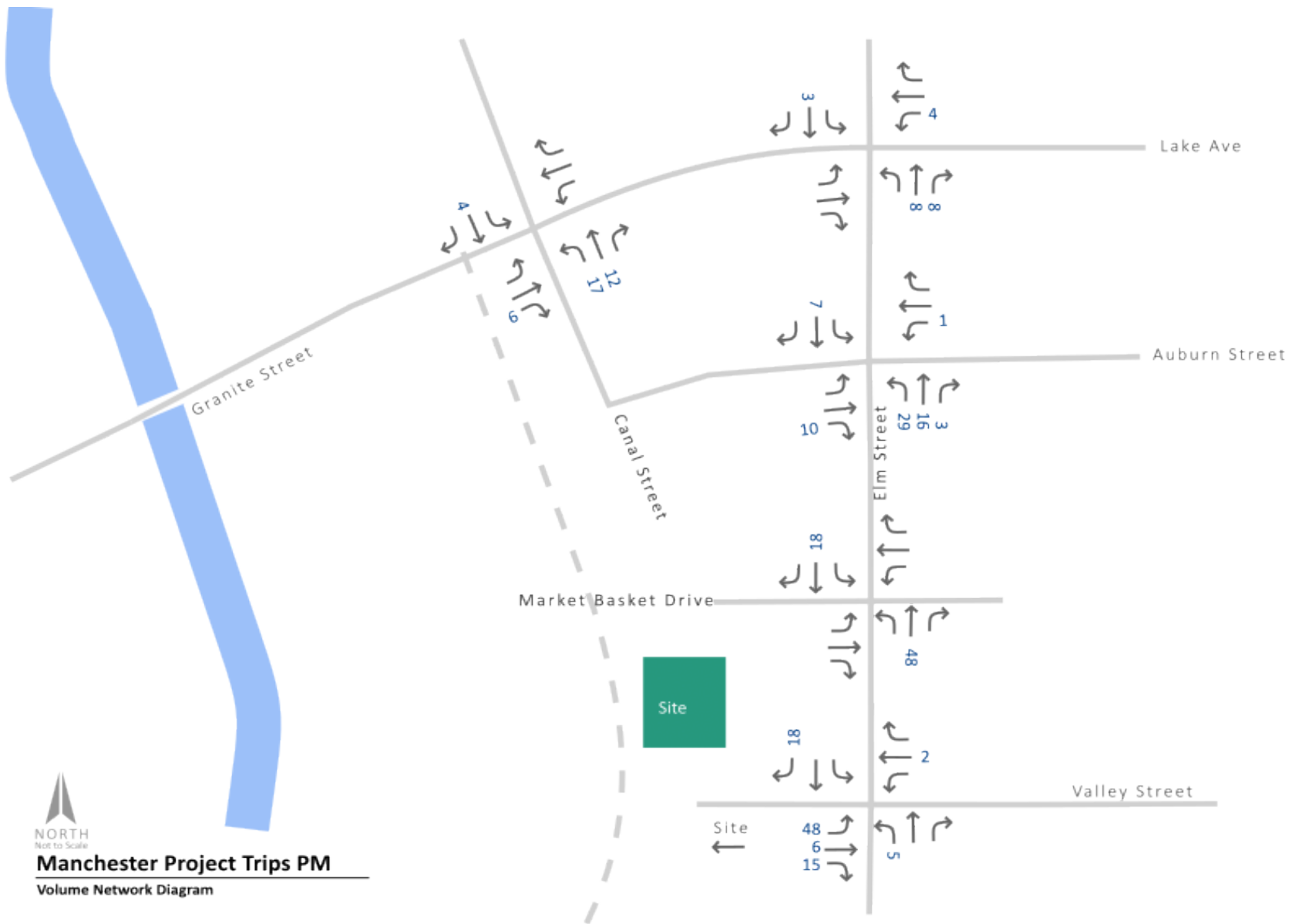
Figure 11 - South Nashua Project Generated Trips Volume Diagram



Nashua Project Trips AM (PM)
Volume Network Diagram

Figure 12 - Nashua Project Generated Trips Volume Diagram





Manchester Project Trips PM
Volume Network Diagram

Figure 14 - Manchester Project Generated Trips Volume Diagram

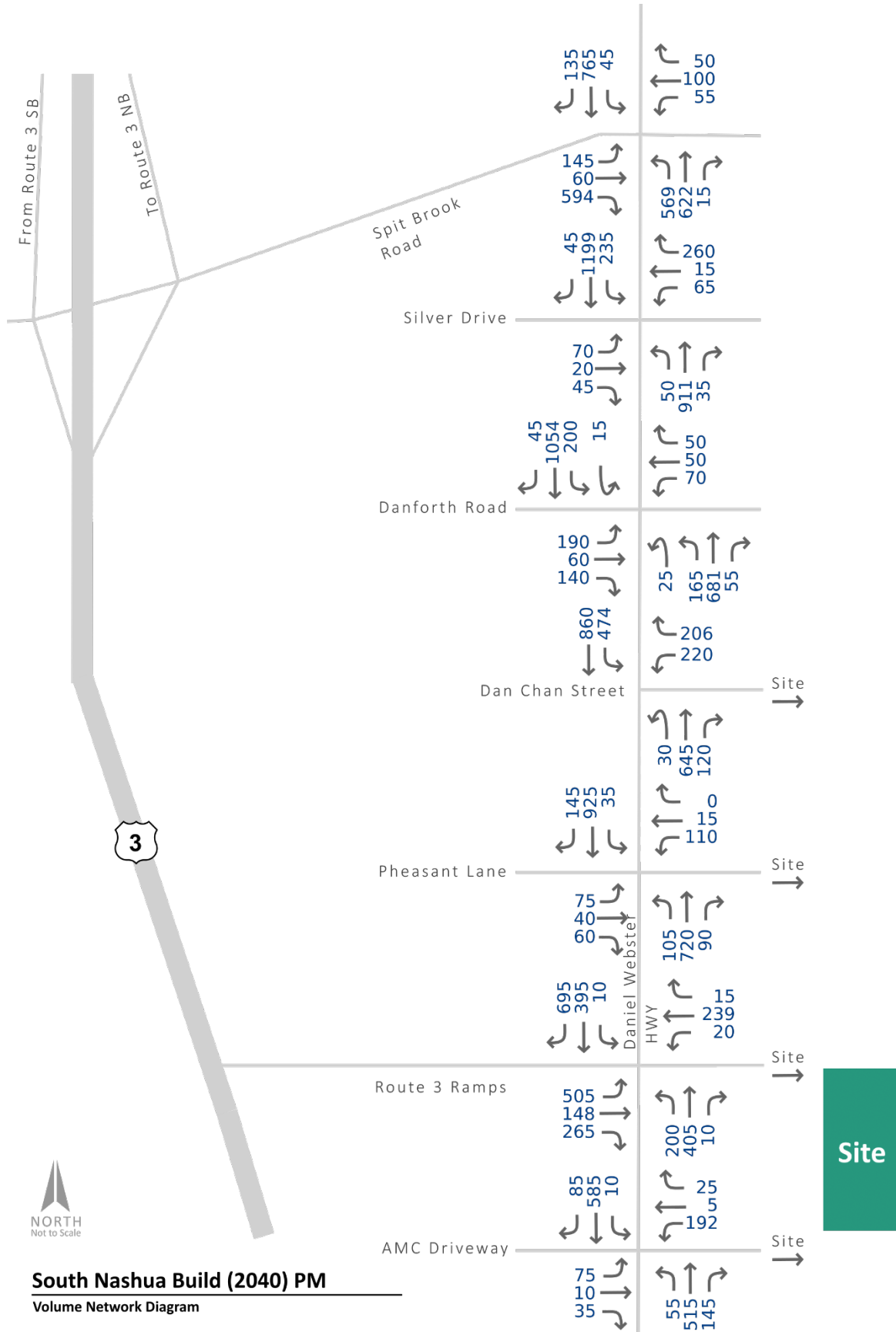
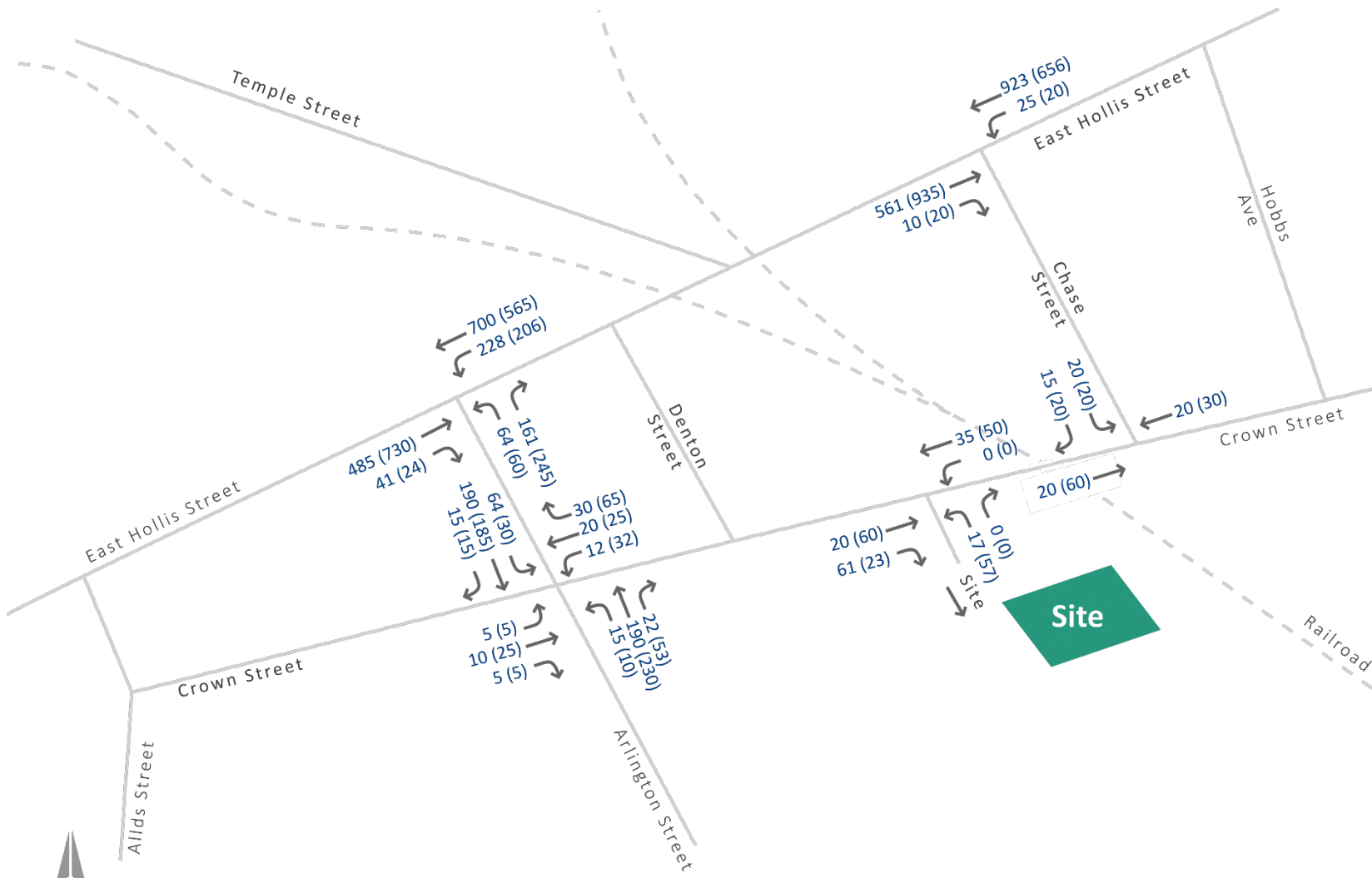


Figure 15 - South Nashua Build (2040) Volume Network Diagram



Nashua Build (2040) AM (PM)
Volume Network Diagram

Figure 16 - Nashua Build (2040) Volume Network Diagram

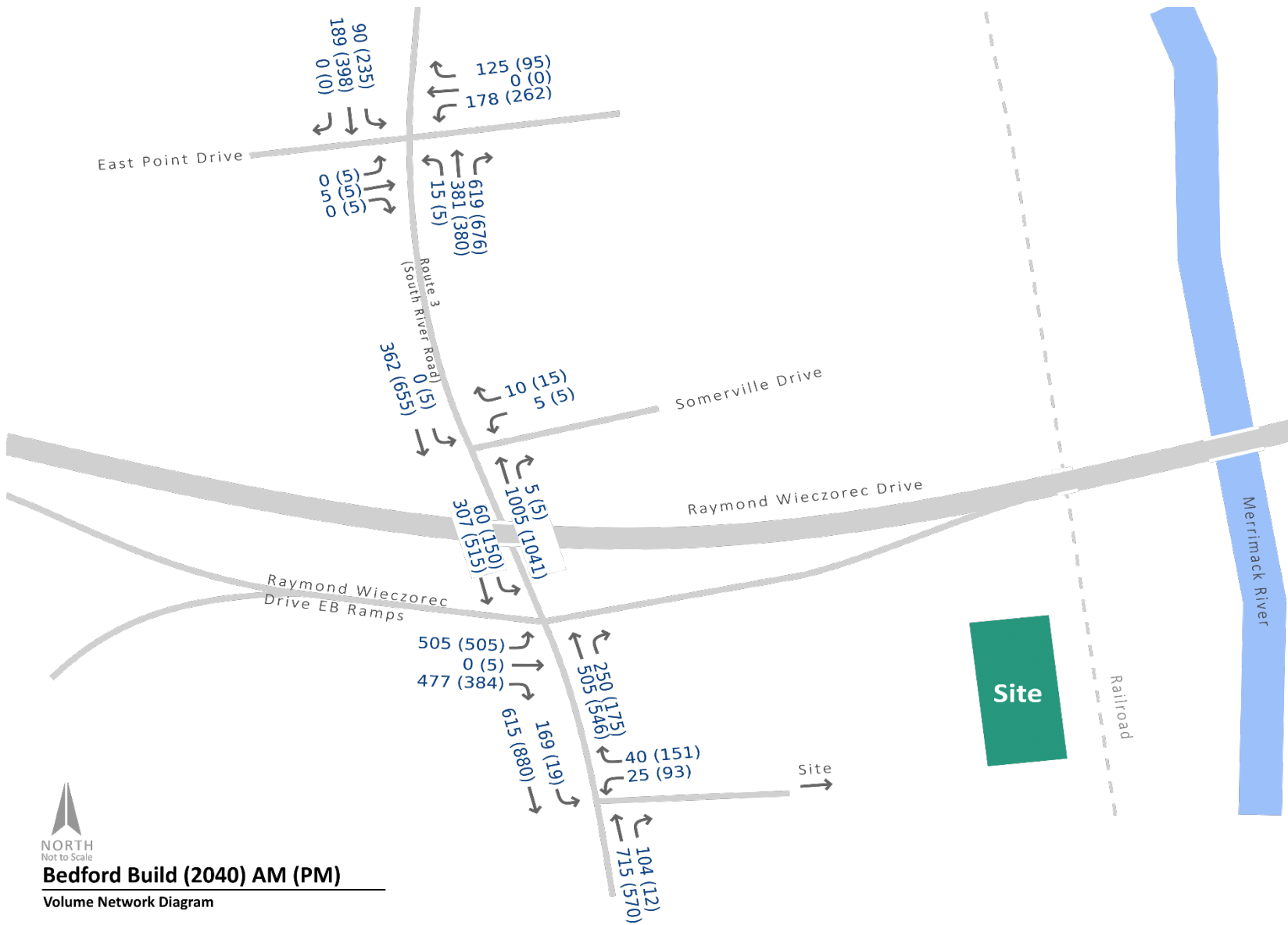


Figure 17 - Bedford Build (2040) Volume Network Diagram

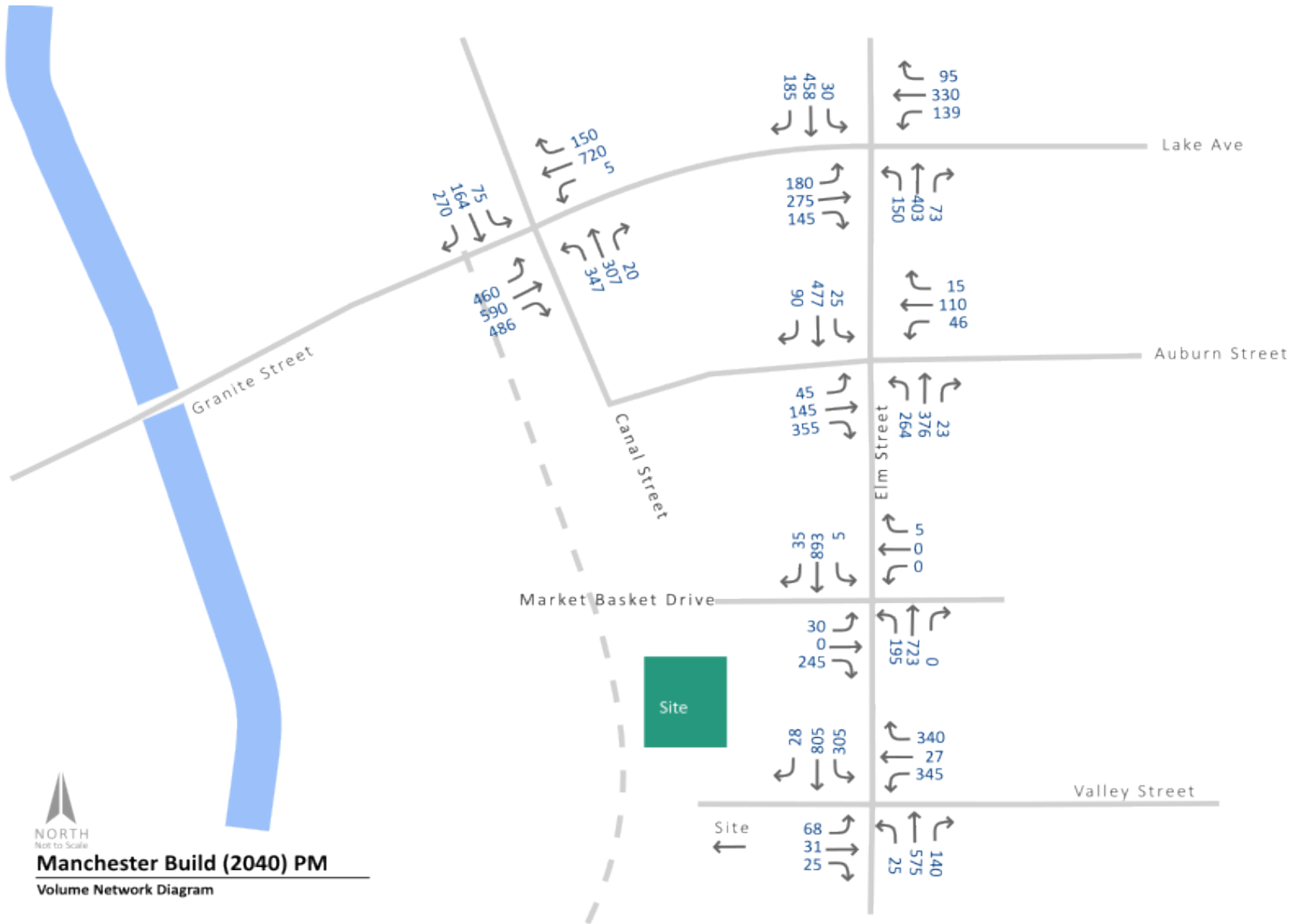


Figure 18 - Manchester Build (2040) Volume Network Diagram

No-Build (2040) and Build (2040) Condition Operations Analysis

Traffic analysis of the No-Build (2040) and Build (2040) conditions were done using the same methodology described in the Existing (2022) conditions section. Results comparing the No-Build to the Build are summarized in Table 12 to Table 17.

Traffic Signal Warrant Analysis (Peak Hour)

A peak hour traffic signal warrant analysis was done for the proposed station driveway in Bedford, NH. A 70% Factor is not used to determine thresholds due to proximity to the nearby signal at Raymond Wieczorek Dr Ramps and South River Rd. Right turns from the minor St were excluded from the minor St volume. Due to the high number of left-turning vehicles into the proposed driveway, a check of the southbound left-turn volume against the northbound approach volume was also done. Results of the Warrant analysis are shown in Figure 19.

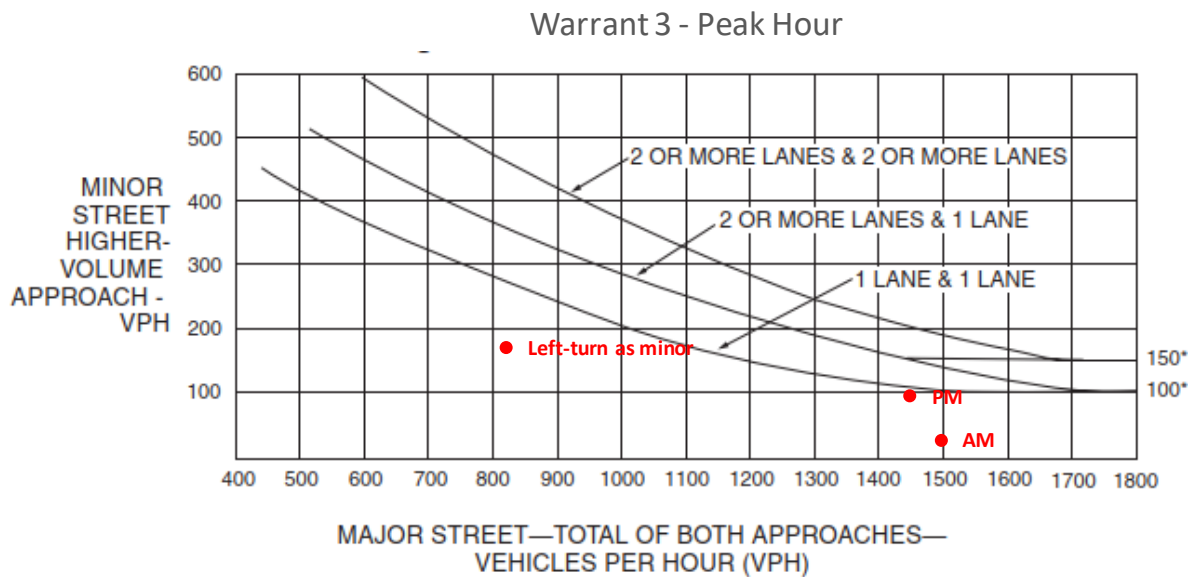


Figure 19 - Traffic Signal Warrant Analysis Bedford, NH

The peak hour volumes were not high enough to justify a traffic signal under minimum standards of Warrant 3.

SimTraffic Queuing Analysis

To understand queuing impacts in more detail at the Bedford, NH proposed site driveway, a queuing analysis was done using SimTraffic. The purpose of the queuing analysis is to determine driveway placement on South River Rd. Based on the results of the analysis, the driveway should be placed with far enough distance to not impact the operations of the existing traffic signal at Raymond Wieczorek Dr Ramps at South River Rd. An average of ten one-hour simulations were done for the morning and afternoon peak hours. Results of the queuing analysis are shown in Figure 20 and Figure 21.

Table 12 - South Nashua No-Build (2040) vs. Build (2040) PM Capacity Analysis Results

Intersection	South Nashua No-Build (2040)					South Nashua Build (2040)				
	4PM - 5PM					4PM - 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Middlesex Rd at Shopping Plaza Dr/Smokey Bones	B	13.1	0.55			B	16.4	0.67		
Middlesex Rd NB Left	C	28.8	0.24	18	63	C	32.7	0.24	22	67
Middlesex Rd NB Thru Thru/Right	A	6.8	0.36	50	108	A	9.1	0.42	70	129
Shopping Plaza Dr EB Thru/Left	C	23.1	0.33	28	75	C	21.2	0.26	30	74
Shopping Plaza Dr EB Right	A	1.7	0.09	0	3	A	1.3	0.08	0	3
Middlesex Rd SB Thru/Left Thru	B	15.4	0.51	101	172	B	19	0.57	124	191
Middlesex Rd SB Right	A	4.1	0.14	0	22	A	4.7	0.16	0	23
Smokey Bones Dr WB Left/Thru/Right	C	26.4	0.55	47	116	C	30.2	0.67	89	187
Middlesex Rd at Route 3 Ramps/Pheasant Lane	D	35.6	0.94			D	37	0.95		
Middlesex Rd NB Left	D	54.7	0.73	159	225	E	55.7	0.74	162	225
Middlesex Rd NB Thru Thru Thru/Right	B	16.4	0.2	65	102	B	16.6	0.2	68	102
Route 3 Ramps EB Left	E	62.4	0.84	218	#384	E	64.6	0.85	223	#384
Route 3 Ramps EB Thru/Left	D	43.4	0.64	162	226	D	44.7	0.66	169	230
Route 3 Ramps EB Right	A	8	0.53	0	55	A	8	0.53	0	55
Middlesex Rd SB Left	D	53	0.1	7	27	D	53.2	0.1	8	27
Middlesex Rd Thru Thru	C	35	0.46	133	202	D	35.3	0.46	136	202
Middlesex Rd SB Right	C	32.8	0.94	187	#488	C	34.1	0.95	202	#499
Pheasant Lane WB Left/Thru Thru/Right	D	51.3	0.64	98	139	D	54.1	0.71	116	161
Daniel Webster Hwy at Pheasant Lane	B	14.8	0.51			B	14.8	0.51		
Daniel Webster Hwy NB Left	C	31.9	0.4	40	109	C	31.9	0.4	40	109
Daniel Webster Hwy NB Thru Thru Thru/Right	A	9	0.28	46	137	A	9	0.28	46	137
Pheasant Lane EB Left	C	29	0.34	27	79	C	29	0.34	27	79
Pheasant Lane EB Thru	C	24.9	0.12	14	47	C	24.9	0.12	14	47
Pheasant Lane EB Right	A	5.6	0.17	0	23	A	5.6	0.17	0	23
Daniel Webster Hwy SB Left	C	32.9	0.18	14	50	C	32.9	0.18	14	50
Daniel Webster Hwy SB Thru Thru Thru	B	14.8	0.39	104	186	B	14.8	0.39	104	186
Daniel Webster Hwy SB Right	A	9.2	0.19	20	68	A	9.2	0.19	20	68
Pheasant Lane WB Left/Thru Right	C	32.8	0.51	47	124	C	32.8	0.51	47	124
Daniel Webster Hwy at Dan Chan St	B	17.8	0.6			B	17.8	0.63		
Daniel Webster Hwy NB U-Turn	C	30.3	0.16	12	40	C	30.6	0.16	12	40
Daniel Webster Hwy NB Thru Thru Thru/Right	B	19	0.55	90	149	B	19.6	0.55	93	154
Daniel Webster Hwy SB Left Left	C	25.8	0.6	81	150	C	26.3	0.63	93	167
Daniel Webster Hwy SB Thru Thru	B	11.3	0.49	77	227	B	11.5	0.48	78	233
Dan Chan St WB Left Left	C	27.6	0.43	42	88	C	28.5	0.43	44	90
Dan Chan St WB Right	A	2.8	0.12	0	22	A	5.1	0.26	17	58

Table 12 (Continued)

Intersection	South Nashua No-Build (2040)					South Nashua Build (2040)				
	4PM - 5PM					4PM - 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Daniel Webster Hwy at Danforth Rd	C	22.7	0.76			C	22.8	0.77		
Daniel Webster Hwy NB Left	D	47.2	0.76	80	#200	D	49.4	0.77	82	#200
Daniel Webster Hwy NB Thru Thru Thru/Right	C	23.2	0.57	84	124	C	21.9	0.59	101	135
Danforth Rd EB Left	D	39.1	0.6	51	#137	D	40.4	0.61	52	#137
Danforth Rd Left/Thru	D	35.2	0.56	53	#135	D	36.3	0.57	54	#135
Danforth Rd EB Right	A	4.6	0.34	0	28	A	4.7	0.34	0	28
Daniel Webster Hwy SB Left	C	22.5	0.47	76	143	C	25.9	0.52	80	157
Daniel Webster Hwy SB Thru Thru Thru/Right	B	16.8	0.6	127	164	B	16.7	0.61	134	173
Danforth RD WB Left/Thru	C	32.9	0.52	47	#116	C	33.9	0.53	49	#116
Danforth Rd WB Right	A	0.5	0.12	0	0	A	0.6	0.12	0	0
Daniel Webster Hwy at Silver Dr	C	27.4	0.79			C	28.1	0.79		
Daniel Webster Hwy NB Left	E	55	0.4	37	77	E	55	0.4	37	77
Daniel Webster Hwy NB Thru Thru Thru/Right	C	24.4	0.43	164	235	C	25.3	0.49	193	273
Silver Dr EB Left/Thru	E	55.5	0.53	67	117	E	55.5	0.53	67	117
Silver Dr EB Right	A	1	0.16	0	0	A	1	0.16	0	0
Daniel Webster Hwy SB Left	D	48.6	0.79	170	#300	D	49.1	0.79	168	#298
Daniel Webster Hwy SB Thru Thru Thru/Right	C	24.1	0.48	284	349	C	25.4	0.5	297	360
Silver Dr WB Left/Thru	D	53.9	0.49	59	104	D	53.9	0.49	59	104
Silver Dr WB Right	B	14.2	0.68	0	76	B	14.2	0.68	0	76
Daniel Webster Hwy at Spit Brook Rd	C	29.3	0.74			C	29.5	0.75		
Daniel Webster Hwy NB Left Left	D	38.7	0.55	86	268	D	42.2	0.6	94	286
Daniel Webster Hwy NB Thru Thru/Right	B	13.7	0.43	164	65	B	13	0.48	188	66
Spit Brook Rd EB Left	D	51.1	0.61	110	166	D	51.1	0.61	110	166
Spit Brook Rd EB Thru	D	40.3	0.23	42	78	D	40.3	0.23	42	78
Spit Brook Rd EB Right Right	A	7.3	0.47	56	79	A	7.8	0.49	62	86
Daniel Webster Hwy SB Left	D	46.1	0.17	31	70	D	46.4	0.18	31	70
Daniel Webster Hwy SB Thru Thru Thru/Right	D	39.5	0.74	215	260	D	39.5	0.75	221	267
Spit Brook Rd WB Left	D	50.1	0.37	46	77	D	50.1	0.37	46	77
Spit Brook Rd WB Thru	E	61.2	0.65	87	125	E	61.2	0.65	87	125
Spit Brook Rd WB Right	A	1.4	0.2	0	0	A	1.4	0.2	0	0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

Table 13 - Nashua No-Build (2040) vs. Build (2040) AM Capacity Analysis Results

Intersection	Nashua No-Build (2040)					Nashua Build (2040)				
	7AM to 8AM					7AM to 8AM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
E. Hollis St at Chase St	A	0.1	0.03			A	0.1	0.03		
E. Hollis St WB Left/Thru	A	9.1	0.03		2.5	A	9.1	0.03		2.5
Arlington St at E. Hollis St	B	17.3	0.79			B	19.3	0.81		
Arlington St NB Left/Right	C	25.1	0.66	61	121	C	28.9	0.69	76	147
E. Hollis St EB Thru/Right	C	25.4	0.79	206	296	C	27.1	0.81	217	317
E. Hollis St WB Left	A	9.7	0.51	34	60	B	15.4	0.63	40	101
E. Hollis St WB Thru	B	10.7	0.67	184	268	B	11	0.67	184	264
Arlington St at Crown St	A	2.3	0.18			A	3.7	0.29		
Arlington St NB Left/Thru/Right	A	8	0.02		2.5	A	8	0.02		2.5
Crown St EB Left/Thru/Right	C	15.6	0.06		5.0	C	20.1	0.09		7.5
Arlington St SB Left/Thru/Right	A	8	0.01		0.0	A	8.3	0.08		7.5
Crown St WB Left/Thru/Right	C	16.2	0.18		17.5	C	19.8	0.29		30.0
Crown St at Chase St	A	3.4	0.05			A	3.4	0.05		
Crown St EB Thru	-	0	0		0.0	-	0	0		0.0
Chase St SB Left/Right	A	8.9	0.05		5.0	A	8.9	0.05		5.0
Chase St WB Thru	-	0	0		0.0	-	0	0		0.0
Crown St at Site Driveway						A	1.2	0.02		
Site Driveway NB Left						A	9.1	0.02		2.5
Site Driveway NB Right						A	0	0		0.0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend


 Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

Table 14 - Nashua No-Build (2040) vs. Build (2040) PM Capacity Analysis Results

Intersection	Nashua No-Build (2040)					Nashua Build (2040)				
	4PM to 5PM					4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
E. Hollis St at Chase St	A	0.1	0.03			A	0.1	0.03		
E. Hollis St WB Left/Thru	B	10.3	0.03		2.5	B	10.5	0.03		0.1
Arlington St at E. Hollis St	B	19.7	0.85			C	27.2	0.94		
Arlington St NB Left/Right	C	28.3	0.77	61	135	E	56.3	0.94	130	#295
E. Hollis St EB Thru/Right	C	26.5	0.85	336	516	C	28.9	0.87	345	551
E. Hollis St WB Left	C	20.4	0.64	41	113	C	28.3	0.72	58	140
E. Hollis St WB Thru	A	6.7	0.5	135	175	A	7.2	0.51	136	174
Arlington St at Crown St	A	3.3	0.24			A	5.1	0.41		
Arlington St NB Left/Thru/Right	A	7.9	0.01		0.0	A	7.9	0.01		0
Crown St EB Left/Thru/Right	C	15.9	0.14		12.5	C	17.9	0.16		0.6
Arlington St SB Left/Thru/Right	A	8	0.01		0.0	A	8.1	0.04		0.1
Crown St WB Left/Thru/Right	C	17	0.24		22.5	C	18.6	0.41		1.9
Crown St at Chase St	A	2.8	0.06			A	2.8	0.06		
Crown St EB Thru	-	0	0		0.0	-	0	0		-
Chase St SB Left/Right	A	9	0.06		5.0	A	9	0.06		0.2
Chase St WB Thru	-	0	0		0.0	-	0	0		-
Crown St at Site Driveway						A	2.9	0.07		
Site Driveway NB Left						A	9.5	0.07		0.2
Site Driveway NB Right						A	0	0		-

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

Table 15 - Bedford No-Build (2040) vs. Build (2040) AM Capacity Analysis Results

Intersection	Bedford No-Build (2040)					Bedford Build (2040)				
	7AM to 8AM					7AM to 8AM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
South River Rd at Raymond Wieczorek Dr Off Ramps	B	16.3	0.71			B	16.5	0.73		
South River Rd NB Thru Thru	B	18.2	0.54	76	113	B	18.7	0.57	83	122
South River Rd NB Right	A	4.7	0.43	0	38	A	4.6	0.44	0	38
Raymond Wieczorek Dr Off Ramp EB Left	C	31.2	0.71	88	#195	C	31	0.7	90	#195
Raymond Wieczorek Dr Off Ramp EB Thru	C	31.2	0.71	88	#195	C	31	0.7	90	#195
Raymond Wieczorek Dr Off Ramp EB Right	A	6.5	0.59	0	53	B	10.6	0.73	16	91
South River Rd SB Left Left	C	23.3	0.16	10	25	C	23.4	0.17	10	25
South River Rd SB Thru Thru	A	6.8	0.16	24	37	A	6.9	0.19	28	44
South River Rd at Somerville Dr	A	0.2	0.05			A	0.2	0.06		
South River Rd SB Left	A	0	0		0.0	A	0	0		0.0
Somerville Dr WB Left/Right	C	16.2	0.05		5.0	C	16.9	0.06		5.0
South River Rd at East Point Dr	B	11.3	0.6			B	12.1	0.7		
South River Rd NB Left	C	29.5	0.12	5	25	C	29.9	0.12	5	25
South River Rd NB Thru Thru	B	14.9	0.37	52	102	B	14.8	0.37	53	104
South River Rd NB Right	A	2.3	0.54	0	17	A	2.4	0.56	0	17
East Point Dr EB Left/Thru	C	28.6	0.07	3	10	C	29	0.07	3	10
East Point Dr EB Right										
South River Rd SB Left Left	C	24.2	0.22	14	40	C	24.6	0.22	15	40
South River Rd SB Thru Thru/Right	A	7.7	0.11	11	42	A	7.7	0.13	13	47
East Point Dr WB Left/Thru	C	34.7	0.6	56	#157	D	39.7	0.7	68	#186
East Point Dr WB Right	A	4	0.23	0	24	A	4	0.23	0	24
South River Rd at Site Driveway						A	3.4	0.42		
South River Rd SB Left						C	18.8	0.42	NA	50.0
Site Driveway WB Left						F	74	0.35	NA	32.5
Site Driveway WB Right						B	13.3	0.09	NA	7.5

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

Table 16 - Bedford No-Build (2040) vs. Build (2040) PM Capacity Analysis Results

Intersection	Bedford No-Build (2040)					Bedford Build (2040)				
	4PM to 5PM					4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
South River Rd at Raymond Wieczorek Dr Off Ramps	B	18.1	0.71			C	20.1	0.77		
South River Rd NB Thru Thru	C	21.2	0.55	88	112	C	21	0.61	123	147
South River Rd NB Right	A	5	0.34	0	28	A	4.2	0.34	0	27
Raymond Wieczorek Dr Off Ramp EB Left	C	26.8	0.64	98	182	C	32.1	0.69	113	202
Raymond Wieczorek Dr Off Ramp EB Thru	C	27.3	0.65	102	186	C	32.6	0.7	116	207
Raymond Wieczorek Dr Off Ramp EB Right	B	16.5	0.71	57	142	C	21.4	0.77	74	#175
South River Rd SB Left Left	C	28	0.41	34	58	C	31.3	0.44	38	63
South River Rd SB Thru Thru	A	9.5	0.37	74	86	A	8.8	0.35	75	85
South River Rd at Somerville Dr	A	0.4	0.11			A	0.5	0.13		
South River Rd SB Left	B	10.5	0.01		0.0	B	11.3	0.01		0.0
Somerville Dr WB Left/Right	C	17.1	0.11		10.0	C	19.5	0.13		10.0
South River Rd at East Point Dr	C	23	1.05			C	24.4	1.11		
South River Rd NB Left	C	30.6	0.05	2	13	C	32.2	0.05	2	14
South River Rd NB Thru Thru	B	17.5	0.39	49	96	B	16.9	0.38	54	103
South River Rd NB Right	A	2.8	0.57	0	22	A	3.1	0.63	0	22
East Point Dr EB Left/Thru	C	32.5	0.17	7	15	C	34.3	0.17	7	16
East Point Dr EB Right	A	0.2	0.04	0	0	A	0.2	0.04	0	0
South River Rd SB Left Left	C	28.8	0.55	44	87	C	31	0.57	48	92
South River Rd SB Thru Thru/Right	A	9.1	0.27	33	92	A	8.7	0.26	33	92
East Point Dr WB Left/Thru	F	98.9	1.05	95	#296	F	116.3	1.11	~114	#318
East Point Dr WB Right	A	2.9	0.14	0	19	A	3.1	0.15	0	20
South River Rd at Site Driveway						A	3.2	0.47		
South River Rd SB Left						B	11.4	0.04		2.5
Site Driveway WB Left						E	35.5	0.47		57.5
Site Driveway WB Right						B	13.7	0.28		30.0

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend



Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

Table 17 - Manchester No-Build (2040) vs. Build (2040) PM Capacity Analysis Results

Intersection	Manchester No-Build (2040)					Manchester Build (2040)				
	4PM to 5PM					4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Elm St at Valley St	E	63.8	1.41			F	87	1.51		
Elm St NB Left/Thru Thru	C	33.4	0.77	119	#331	D	36.1	0.82	122	#346
Elm St NB Right	A	8.6	0.3	7	57	A	8.8	0.3	7	58
Valley St EB Left/Thru/Right	C	26.6	0.35	23	71	F	287.4	1.51	~114	#269
Elm St SB Left	F	238.7	1.41	~173	#470	F	238.7	1.41	~173	#470
Elm St SB Thru Thru/Right	B	15.5	0.5	105	296	B	15.7	0.52	112	312
Valley St WB Left/Thru	F	156.2	1.24	~209	#477	F	203.6	1.35	~223	#491
Valley St WB Right	A	2.6	0.39	0	31	A	2.6	0.39	0	31
Elm St at Market Basket Dr	D	43.1	1.07			E	62.1	1.19		
Elm St NB Left	D	47.8	0.76	63	#303	D	47.8	0.76	63	#303
Elm St NB Thru/Right	B	18.1	0.65	105	#715	B	19.6	0.7	118	#784
Market Basket Dr EB Left/Thru	C	30.8	0.2	12	57	C	30.8	0.2	12	57
Market Basket Dr EB Right	A	4.5	0.38	0	37	A	4.5	0.38	0	37
Elm St SB Left/Thru Thru/Right	E	74.5	1.07	151	#595	F	118.9	1.19	~191	#624
Driveway WB Left/Thru/Right	A	0	0.03	0	0	A	0	0.03	0	0
Elm St at Auburn St	C	20.2	0.83			C	22.7	0.94		
Elm St NB Left	D	39.3	0.83	37	#245	E	57.1	0.94	43	#292
Elm St NB Thru	B	15.8	0.51	73	248	B	16.1	0.53	77	261
Elm St NB Right	A	0.1	0.03	0	0	A	0.1	0.03	0	0
Auburn St EB Left/Thru	C	24.9	0.48	49	#197	C	25	0.48	49	#197
Auburn St EB Right	A	4.6	0.47	0	41	A	4.6	0.48	0	42
Elm St SB Left/Thru Thru/Right	C	21.9	0.69	74	#221	C	22	0.69	75	#225
Auburn St WB Left/Thru/Right	C	27.2	0.57	56	#157	C	27.5	0.58	57	#158
Elm St at Granite St/Lake Ave	E	61.4	1.09			E	63.1	1.1		
Elm St NB Left/Thru Thru	F	109.4	0	~330	#454	F	114.4	0	~339	#463
Elm St NB Right	A	5	0.16	0	21	A	6.7	0.18	0	29
Granite St EB Left	E	75.8	0.85	190	#345	E	75.6	0.85	190	#345
Granite St EB Thru	C	30.4	0.58	249	290	C	30.3	0.58	248	289
Granite St EB Right	A	2.9	0.3	13	23	A	2.8	0.3	13	23
Elm St SB Left/Thru Thru	D	54.2	0.79	243	319	D	54.8	0.8	245	323
Elm St SB Right	C	26.6	0.62	52	130	C	26.6	0.62	52	130
Lake Ave WB Left	F	124.8	1	~206	#244	F	130.2	1.03	~215	#251
Lake Ave WB Thru Thru/Right	D	41.3	0.53	188	240	D	41.3	0.53	188	240

Table 17 (Continued)

Intersection	Manchester No-Build (2040)					Manchester Build (2040)				
	4PM to 5PM					4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Granite St at Canal St	D	48.3	1.24			D	51.3	1.3		
Canal St NB Left	F	180.3	1.24	~404	#604	F	203.1	1.3	~438	#642
Canal St NB Thru Thru/Right	E	66.4	0.72	158	205	E	66.6	0.73	164	213
Granite St EB Left Left	D	47.5	0.53	207	276	D	47.6	0.53	207	276
Granite St EB Thru Thru/Right	B	18.6	0.59	289	449	B	18.7	0.59	291	453
Canal St SB Left	E	59.1	0.33	68	127	E	59.5	0.33	68	127
Canal St SB Thru	F	94.5	0.85	157	#283	F	96.7	0.87	161	#290
Canal St SB Right	A	4.2	0.35	0	59	A	4.2	0.35	0	59
Granite St WB Left	D	53.4	0.05	4	m8	D	53.4	0.05	4	m8
Granite St WB Thru Thru	D	39.1	0.77	233	m263	D	39	0.77	233	m263
Granite St WB Right	A	1.7	0.21	0	m10	A	1.7	0.21	0	m10


Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

 Movement has degraded to LOS E or F from No-Build to Build due to project related trips.

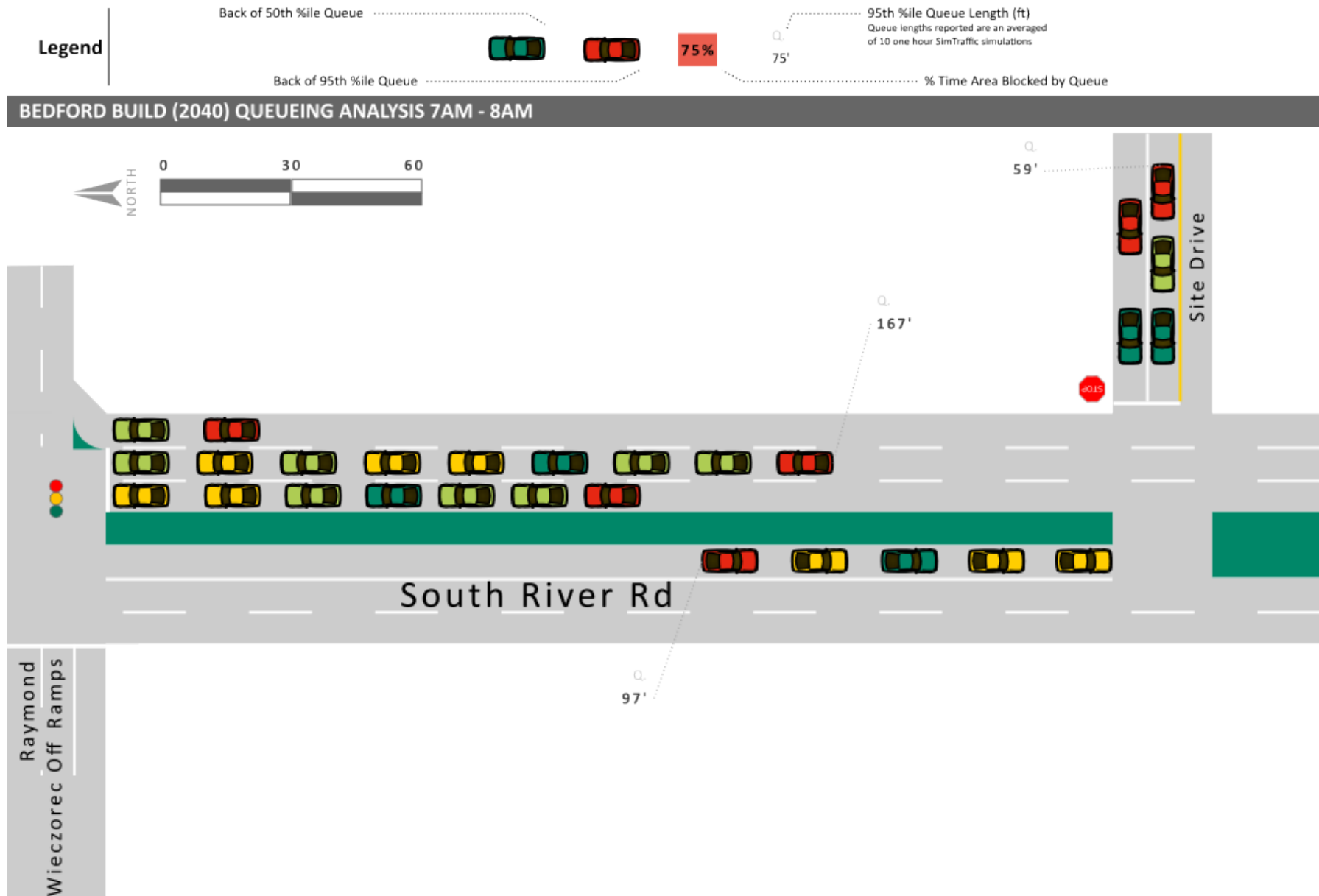


Figure 20 - Bedford Queuing Analysis (2040) AM Peak Hour

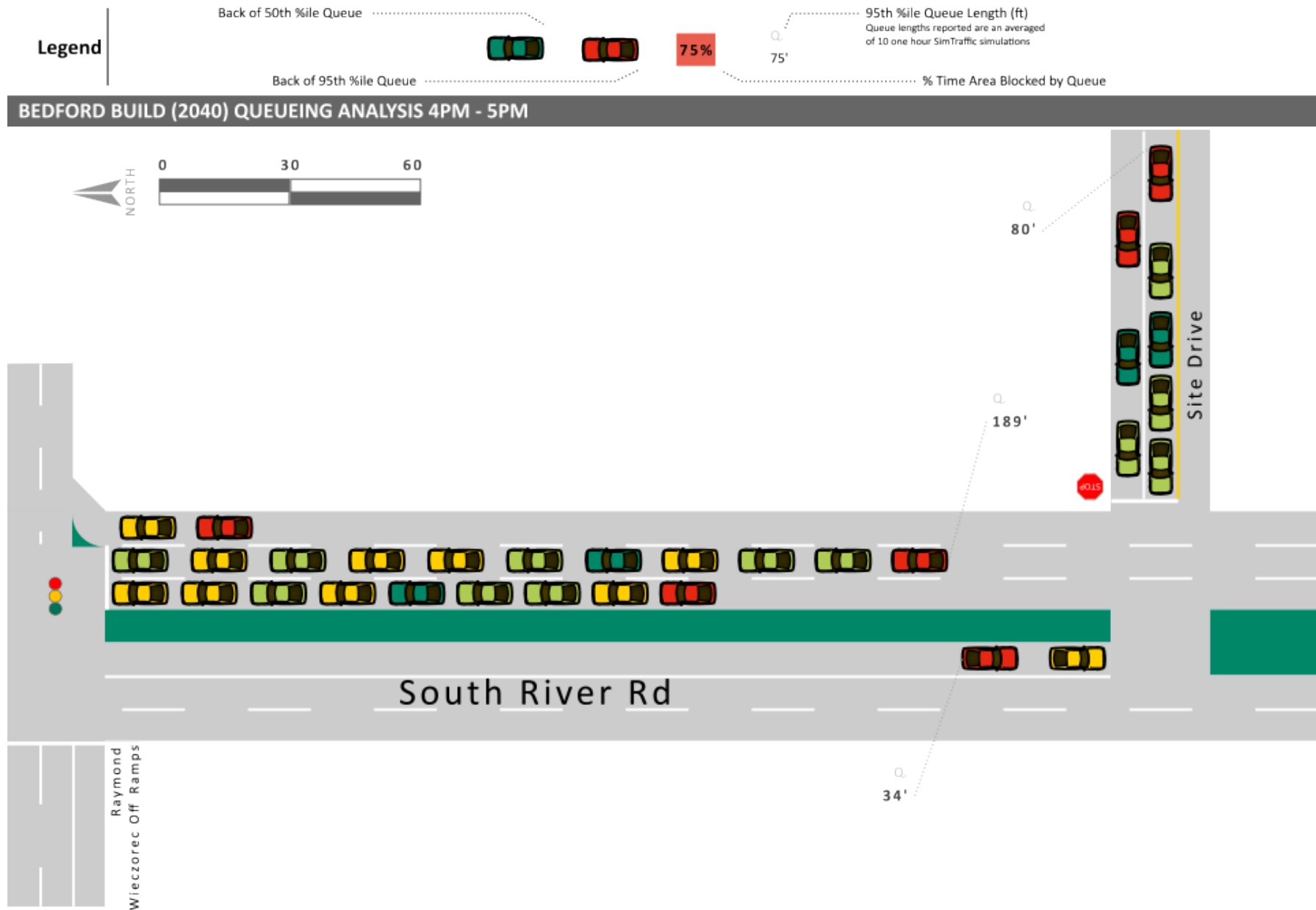


Figure 21 - Bedford Queuing Analysis (2040) PM Peak Hour

No-Build (2040) Condition Operation Analysis Summary

South Nashua, NH

All study intersection movements operate at LOS D or better except for the following movements:

- The westbound thru movement at the Spit Brook Rd operates at an LOS E. This movement LOS does not change between the Existing Condition and the No-Build Condition.
- The northbound left movement at the Silver Dr intersection operates at LOS E. This movement LOS changes from LOS D to LOS E between Existing Condition and No-Build Condition.
- The eastbound left/thru movement at the Silver Dr intersection operates at LOS E. This movement LOS does not change between the Existing Condition and the No-Build Condition.
- The eastbound left movement at the Route 3 Off-ramp and Middlesex Rd intersection operates at LOS E. This movement changes from LOS D to LOS E between the Existing Condition and No-Build Condition.

Nashua, NH

All study intersection movements operate at LOS D or better during both morning and afternoon peak hours.

Bedford, NH

All study intersection movements operate at LOS D or better during both the morning and afternoon peak hours except for the following:

- The westbound left/thru movement at the East Point Dr intersection operates at LOS F in the afternoon peak hour. The movement LOS changes from LOS E to LOS F between Existing Condition and No-Build Condition.

Manchester, NH

All study intersection movements operate at LOS D or better during both the morning and afternoon peak hours except for the following:

- The northbound left and the southbound thru movement at the Canal St and Granite St intersection operate at LOS F. These movements do not change LOS between the Existing Condition and the No-Build condition.
- The northbound thru/right and the southbound left movement at the Canal St and Granite St intersection operates at LOS E. These movements do not change LOS between the Existing Condition and the No-Build condition.
- The northbound thru/left and the westbound left movement at the Elm St and Granite St intersection operate at LOS F. The northbound thru/left movement changes from LOS E to LOS F between Existing Condition and the No-Build Condition. The westbound left movement does not change between Existing Condition and the Build Condition.
- The eastbound left movement at the Elm St and Granite St intersection operates at an LOS E. This movement LOS does not change between the Existing Condition and the No-Build condition.
- The Elm St and Granite St intersection operates at an LOS E overall. This intersection LOS changes from LOS D to LOS E between Existing Condition and No-Build Condition.
- The southbound approach at the Market Basket Dr and Elm St operates at an LOS E. This movement LOS changes from LOS C to LOS E between Existing Condition and No-Build Condition.
- The southbound left and the westbound left/thru at the Valley St and Elm St intersection operates at an LOS F. These movements do not change LOS between the Existing Condition and the No-Build condition.
- The Elm St and Valley St intersection operates at an LOS E overall. This intersection LOS changes from LOS D to LOS E between Existing Condition and No-Build Condition.

Build (2040) Condition Operation Analysis Summary

South Nashua, NH

All study intersection movements operate at LOS D or better and do not degrade in LOS between No-Build Condition and Build Condition except for the following:

- The northbound left movement at the Route 3 Off-ramp and Middlesex Rd operates degrades from LOS D in the No-Build Condition to LOS E in the Build Condition.

Nashua, NH

All study intersection movements operate at LOS D or better and do not degrade in LOS between No-Build Condition and Build Condition. The site driveway operates at an LOS A overall and the minor St approach operates at an LOS A.

Bedford, NH

All study intersection movements operate at LOS D or better and do not degrade in LOS between No-Build Condition and Build Condition.

- The new proposed site driveway operates at LOS A overall for the morning and afternoon hours.
- The westbound left movements operate at LOS F and LOS E in the morning and afternoon hours. While the LOS indicates a sub-standard movement, the left turning volumes are relatively low. The volume to capacity ratio is less than 0.5 for both morning and afternoon peak hours, indicating that the movement is well below capacity.
- The queuing analysis shows that the northbound approach has a 189' 95th percentile queue length in the afternoon peak hour. Location of the driveway will have to take this into consideration during design.
- The new proposed driveway left turn has an 80' 95th percentile queue length.

Manchester, NH

All study intersection movements operate at LOS D or better and do not degrade in LOS between No-Build Condition and Build Condition except for the following:

- The northbound left turn at the Auburn St and Elm St intersection degrades from LOS D in the No-Build Condition to LOS E in the Build Condition.
- The southbound approach at the Market Basket Dr and Elm St intersection degrades from LOS E in the No-Build Condition to LOS F in the Build Condition.
- The overall intersection operations of Market Basket Dr and Elm St degrade from LOS D in the No-Build Condition to LOS E in the Build Condition.
- The eastbound approach at the Valley St and Elm St intersection degrades from LOS C in the No-Build Condition to LOS F in the Build Condition. This is a significant change in operations as a significant amount of projected related trips are added to a single lane approach.
- The overall intersection operations of Valley St and Elm St intersection degrades from LOS E in the No-Build Condition to LOS F in the Build Condition.

Build-Mitigated (2040) Condition Operations Analysis

The project proposes mitigation measures for movements where projected related trips have degraded the movement to LOS E or worse when compared to the No-Build Condition. Below in Table 18 are a summary of mitigation measures and corresponding results for each location. Capacity analysis results for intersections where mitigation measures are proposed are summarized in Table 19 and Table 20.

Table 18. Summary of Mitigation Measures and Impacts

Intersection	Proposed Mitigation	Impact to Traffic
Route 3 Off-ramp and Middlesex Rd	Revise signal timings to accommodate additional traffic at the intersection.	The northbound left movement improves from LOS E in the Build Condition to LOS D in the Build Mitigated Condition.
Elm St and Valley St	Provide additional EB left turn lane and revise WB approach to a WB left thru/right configuration. Revise signal timing and phasing.	Intersection movements that are LOS F in the Build Condition improve to LOS E or better after mitigations.
Elm St and Market Basket Dr	Revising signal timing for better coordination with Elm St at Valley St.	Overall intersection LOS improves from LOS E in the Build Condition to LOS C in the Build Mitigated Condition. Southbound approach improves from LOS F in the Build Condition to LOS C in the Build Mitigated Condition.
Elm St and Auburn St	Revise signal timings to accommodate additional traffic at the intersection.	Revising the traffic signal timing at this intersection improves the northbound left from LOS E in the Build Condition to LOS C in the Build Mitigated condition.

Table 19 - South Nashua Build (2040) vs. Build Mitigated (2040) PM Capacity Analysis Results

Intersection	South Nashua Build (2040)					South Nashua Build Mitigated (2040)				
	4PM - 5PM					4PM - 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Middlesex Rd at Route 3 Ramps/Pheasant Lane	D	37	0.95			D	35.5	0.96		
Middlesex Rd NB Left	E	55.7	0.74	162	225	D	54.1	0.73	162	225
Middlesex Rd NB Thru Thru Thru/Right	B	16.6	0.2	68	102	B	19.3	0.22	76	112
Route 3 Ramps EB Left	E	64.6	0.85	223	#384	D	50.1	0.75	206	316
Route 3 Ramps EB Thru/Left	D	44.7	0.66	169	230	D	38.4	0.59	156	214
Route 3 Ramps EB Right	A	8	0.53	0	55	A	6.9	0.5	0	51
Middlesex Rd SB Left	D	53.2	0.1	8	27	D	53.2	0.1	8	27
Middlesex Rd Thru Thru	D	35.3	0.46	136	202	D	40.1	0.54	147	216
Middlesex Rd SB Right	C	34.1	0.95	202	#499	C	34.4	0.96	168	#459
Pheasant Lane WB Left/Thru Thru/Right	D	54.1	0.71	116	161	D	52.5	0.7	116	161

Refer to Table 18 for summary and description of mitigation measures taken.

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

- Movement has degraded to LOS E or F from No-Build to Build due to project related trips.
- Movement has improved in LOS from Build to Build Mitigated due to proposed mitigation measures.

Table 20 - Manchester Build (2040) vs. Build Mitigated (2040) PM Capacity Analysis Results

Intersection	Manchester Build (2040)					Manchester Build Mitigated (2040)				
	4PM to 5PM					4PM to 5PM				
	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)	LOS	Delay (s)	V/C	50% Queue Length (ft)	95% Queue Length (ft)
Elm St at Valley St	F	87	1.51			D	43.8	0.91		
Elm St NB Left/Thru Thru	D	36.1	0.82	122	#346	D	52.7	0.78	241	#448
Elm St NB Right	A	8.8	0.3	7	58	A	7.2	0.28	0	48
Valley St EB [Left]						E	63.4	0.71	73	90
Valley St EB Thru/Right	F	287.4	1.51	~114	#269	E	77.5	0.72	45	#108
Elm St SB Left	F	238.7	1.41	~173	#470	E	78.8	0.87	240	#516
Elm St SB Thru Thru/Right	B	15.7	0.52	112	312	C	24.1	0.47	192	386
Valley St WB [Left]	F	203.6	1.35	~223	#491	E	69.1	0.91	273	#507
Valley St WB Thru/Right	A	2.6	0.39	0	31	C	22.4	0.74	63	140
Elm St at Market Basket Dr	E	62.1	1.19			C	21.5	0.7		
Elm St NB Left	D	47.8	0.76	63	#303	D	48.4	0.58	96	#381
Elm St NB Thru/Right	B	19.6	0.7	118	#784	B	13.2	0.59	131	685
Market Basket Dr EB Left/Thru	C	30.8	0.2	12	57	D	54.9	0.27	21	82
Market Basket Dr EB Right	A	4.5	0.38	0	37	A	6	0.39	0	40
Elm St SB Left/Thru Thru/Right	F	118.9	1.19	~191	#624	C	26.1	0.7	196	496
Driveway WB Left/Thru/Right	A	0	0.03	0	0	A	0.2	0.04	0	0
Elm St at Auburn St	C	22.7	0.94			C	20.3	0.74		
Elm St NB Left	E	57.1	0.94	43	#292	C	21.8	0.66	52	#219
Elm St NB Thru	B	16.1	0.53	77	261	B	15.3	0.46	92	274
Elm St NB Right	A	0.1	0.03	0	0	A	0.4	0.03	0	2
Auburn St EB Left/Thru	C	25	0.48	49	#197	C	27.9	0.48	67	#203
Auburn St EB Right	A	4.6	0.48	0	42	A	2.8	0.43	0	21
Elm St SB Left/Thru Thru/Right	C	22	0.69	75	#225	C	28.7	0.74	107	#270
Auburn St WB Left/Thru/Right	C	27.5	0.58	57	#158	C	30.4	0.58	78	163

Refer to Table 18 for summary and description of mitigation measures taken.

Notes:

1. Synchro version 11.1.1.6 was used to calculate results.
2. Signalized intersection results are based on the Lanes, Volumes, and Timings report from Synchro.
3. Unsignalized intersection results are based on the HCM 6 reports.
4. Queue lengths for unsignalized intersections are based on a 25' vehicle length.

Symbols:

- NA - Results not reported or available.
- [XXXX] - Movement is only available in the build condition.
- ~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
- # - 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles.

Shading legend

- Movement has degraded to LOS E or F from No-Build to Build due to project related trips.
- Movement has improved in LOS from Build to Build Mitigated due to proposed mitigation measures.

Conclusion and Recommendations

There are minor impacts to traffic in Nashua, NH and Bedford, NH intersections and no proposed mitigation measures are recommended for intersections at those locations. South Nashua, NH intersections may require signal re-timing under future conditions.

The intersection of Route 3 Off-ramp/Pheasant Lane and Middlesex Rd should be monitored once the commuter rail station becomes operational. The monitoring program should include updated traffic counts at the intersection and recommended adjusted signal timings.

AECOM recommends that the eastbound approach of the intersection of Elm St at Valley St will need to be reconfigured to include an exclusive left-turn lane and a thru/right lane. Currently this approach serves only a local business with a single lane in each direction. The westbound approach at this intersection should be revised to a left-turn lane and a thru-right lane. The current configuration of a left/thru and right lane currently operates primarily as a left turn lane and right turn lane with very little traffic going through the intersection.

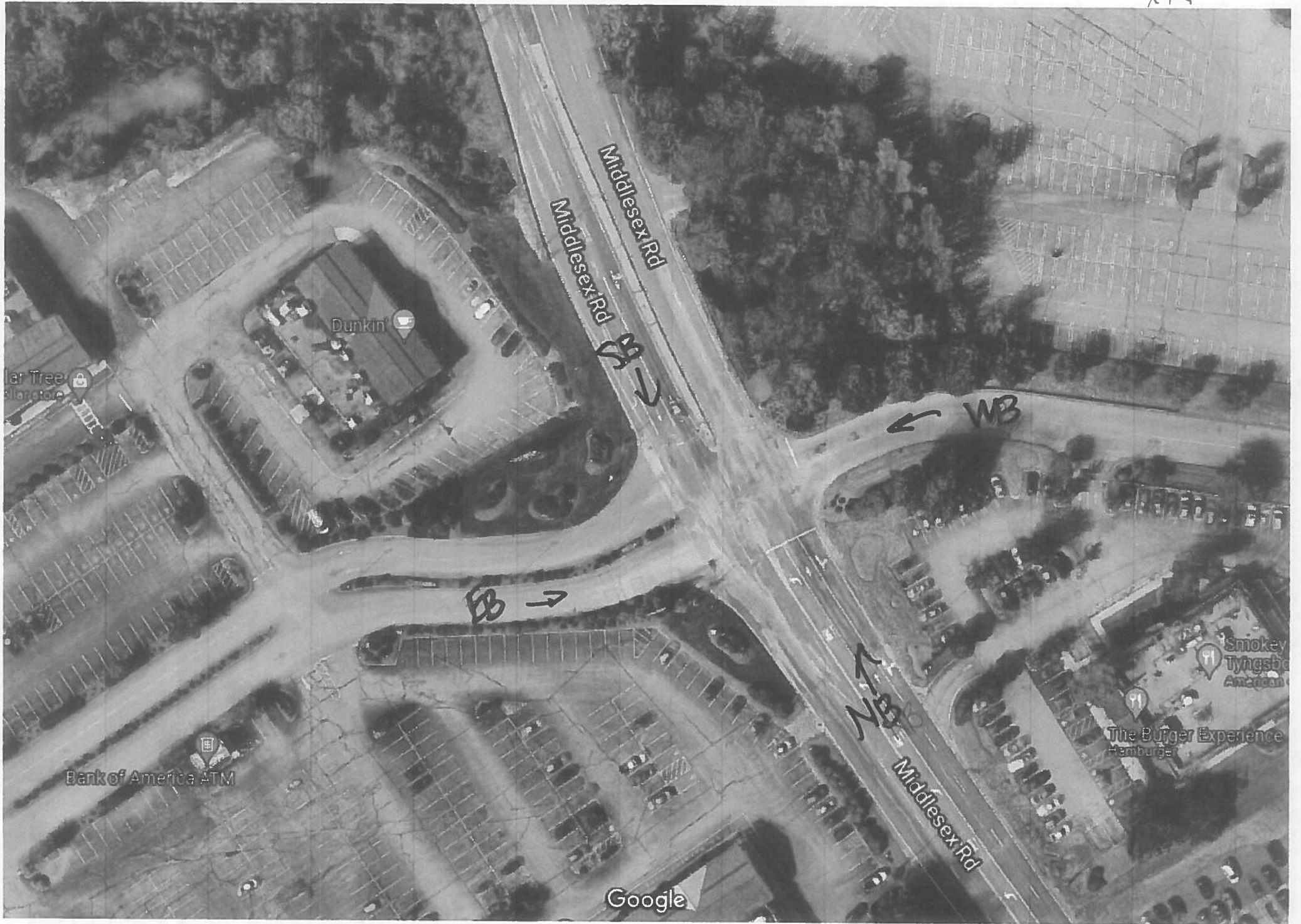
The intersections of Elm St at Market Basket Dr and Elm St at Auburn St should be monitored after the commuter rail station becomes operational. In the future conditions, there are movements at these intersections that are failing or close to failure in a few instances. There are planned projects in the area such as implementation of adaptive signal control along Elm St that could mitigate future traffic conditions and projected project trips impacts.

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APPENDIX G-2

Traffic Volume

↑N



Maple Tree
Blanchard

Dunkin'

Bank of America ATM

Smokey
Tyngsboro
American

The Burger Experience
Hamburg

Google

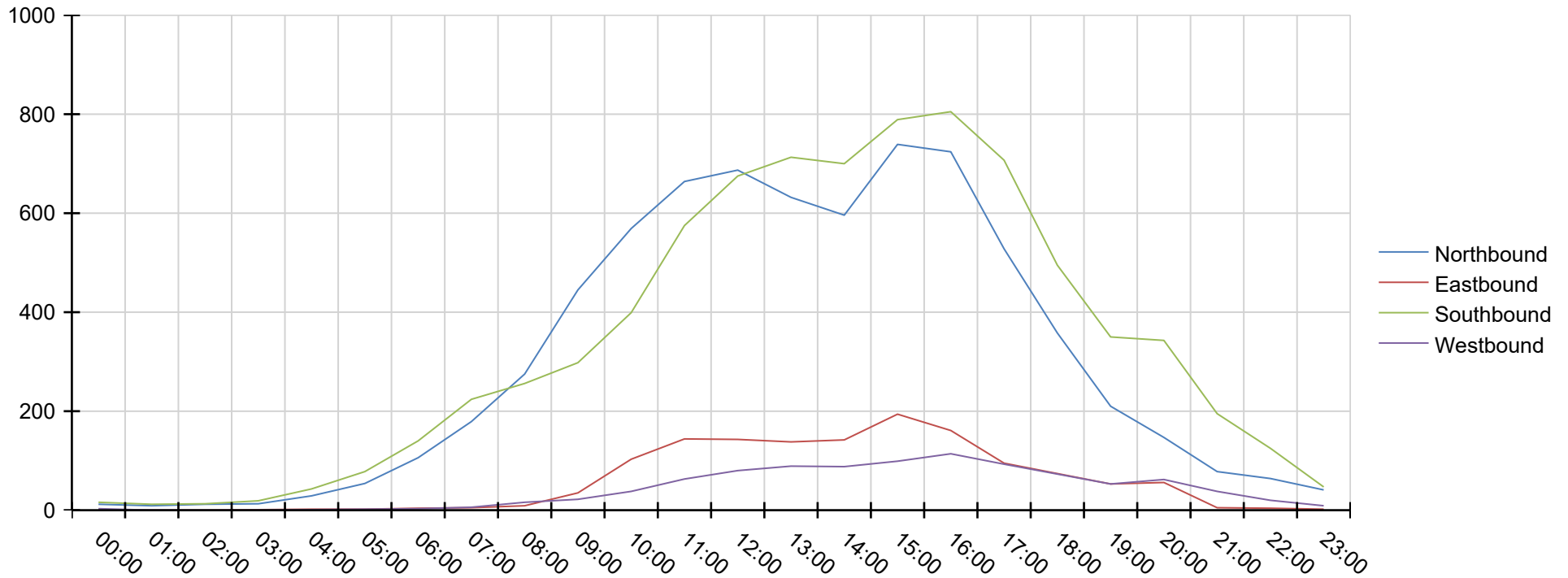
GRIDSMART

Turning Movement Counts - Average

Intersection Daniel Webster Hwy & Costco Drive @ Pheasant Lane Mall

Date 12/6/2021-12/10/2021

	Right	Through	Left	UTurn	Total
Northbound	663	5522	967	28	7181
Eastbound	357	322	702	0	1383
Southbound	7	7637	315	70	8029
Westbound	7	121	851	0	981
Total	1036	13603	2837	98	17574





Turning Movement Counts - Average

Intersection Daniel Webster Hwy & Costco Drive @ Pheasant Lane Mall

Date 12/6/2021-12/10/2021

	Northbound				Eastbound				Southbound				Westbound			
	R	T	L	U	R	T	L	U	R	T	L	U	R	T	L	U
00:00		12	0		0	0				15	0	0	0	0	2	
01:00	0	9	0	0	0	0				10	1	0			0	
02:00	0	9	2	0	0	0			0	9	3	0		0	0	
03:00	0	12	1		0	0	0			15	3	0				
04:00	0	23	5		2	0	0		0	35	5	2		0	1	
05:00	1	49	2	0	1	0	0	0	0	72	4	1	0	0	1	
06:00	6	92	8	0	1	1	1			132	5	2	0	0	2	
07:00	9	157	12	0	2	1	2		0	215	3	6	0	1	4	
08:00	20	241	12	1	2	2	4		0	246	5	3	0	1	14	
09:00	41	344	56	3	12	5	18		0	276	16	4	0	3	18	
10:00	48	394	124	1	25	19	58		0	370	26	3	0	8	29	
11:00	67	466	127	3	34	32	77		0	542	27	6		9	53	
12:00	70	490	123	3	23	37	82		0	635	33	6	0	14	66	
13:00	58	468	102	3	31	28	79		0	681	24	7	0	10	78	
14:00	54	441	97	2	47	26	68		0	671	23	5	1	10	76	
15:00	75	554	105	4	86	30	77		0	758	22	7	1	12	86	
16:00	72	565	84	1	56	36	69		1	768	31	4	0	14	99	
17:00	56	423	47	1	11	30	53		0	676	28	2		11	81	
18:00	35	290	32	0	5	29	39		0	476	18	1	0	10	62	
19:00	17	176	16		4	20	28			339	9	1	0	6	46	0
20:00	17	126	2	0	5	17	33			335	7	0		3	59	
21:00	6	72		0	0	1	3			189	4	0	0	1	37	
22:00	3	60	0		2	0	1		0	118	6	1	0	0	19	
23:00	1	39	0	0	0	0	1			42	4	1		0	8	
Total	663	5522	967	28	357	322	702	0	7	7637	315	70	7	121	851	0

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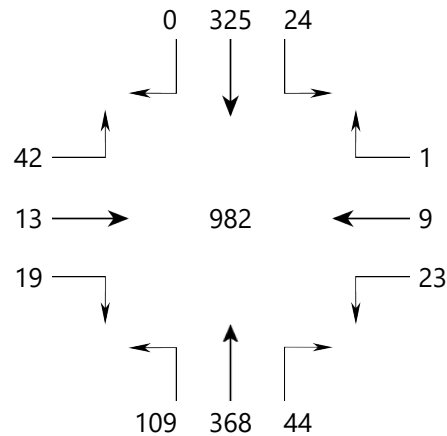
Turning Movement Counts - Average

Intersection Daniel Webster Hwy & Costco Drive @ Pheasant Lane Mall

Date 12/6/2021-12/10/2021

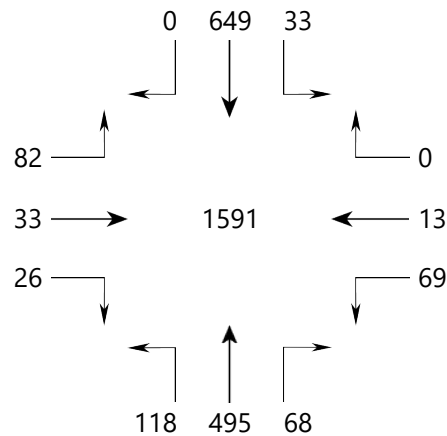
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 09:45 TO 10:45



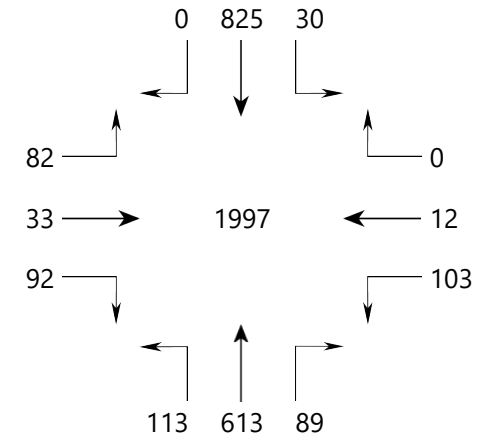
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:15 TO 13:15



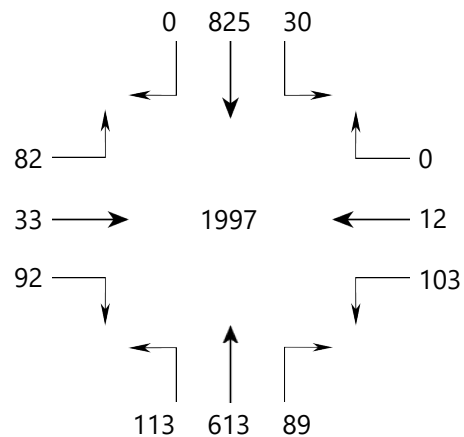
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 15:30 TO 16:30



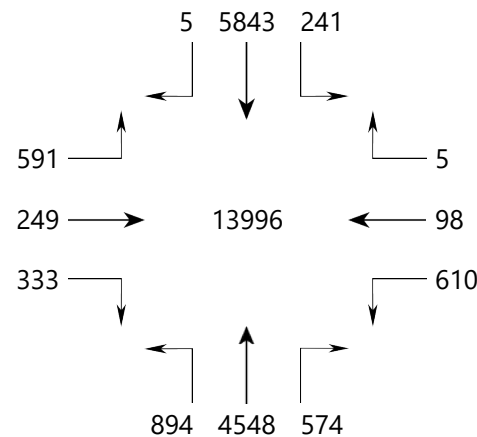
OVERALL PEAK HOUR VOLUME

FROM 15:30 TO 16:30



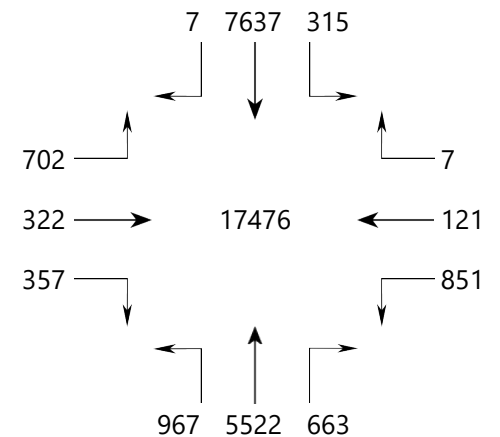
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

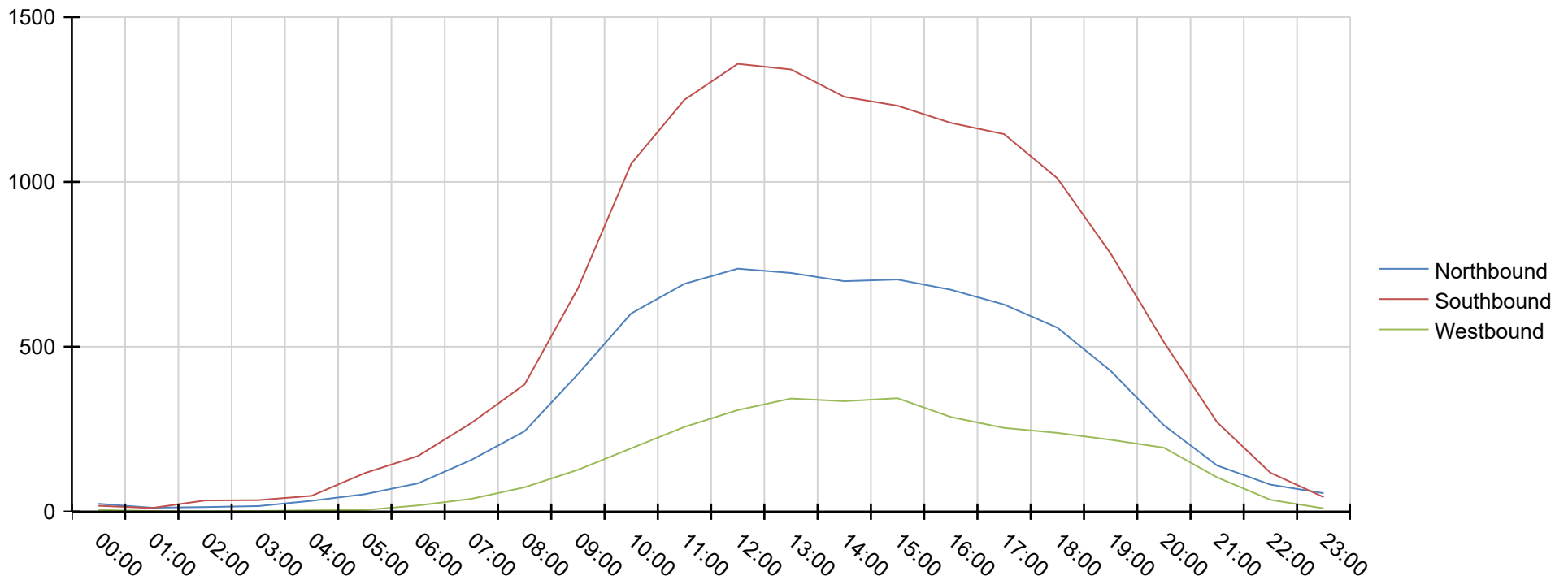
FROM 00:00 TO 23:59



Intersection Daniel Webster & Dan Chan Street

Date 12/6/2021-12/10/2021

	Right	Through	Left	UTurn	Total
Northbound	1340	6221	38	449	8049
Southbound	0	9461	4833	37	14331
Westbound	1001	222	2183	0	3408
Total	2342	15905	7054	486	25789





Turning Movement Counts - Average

Intersection Daniel Webster & Dan Chan Street

Date 12/6/2021-12/10/2021

	Northbound				Southbound				Westbound			
	R	T	L	U	R	T	L	U	R	T	L	U
00:00	0	18	0	5		14	4		1	1	2	
01:00	0	8	0	3		8	2			0	1	
02:00	0	9	0	4		31	2	0		0	0	
03:00	0	12	0	4		22	13		0	0	1	
04:00	4	16	1	11		35	12		0	1	2	
05:00	6	28	2	15		79	38		0	1	3	0
06:00	11	58	1	15		126	42	0	3	2	13	
07:00	29	103	1	23		201	66	1	11	1	26	
08:00	46	178	1	17		241	143	1	25	0	48	
09:00	93	307	1	14		412	263	2	52	1	74	
10:00	123	457	0	20		650	400	3	68	2	122	
11:00	132	532	1	25		768	477	3	94	2	160	
12:00	136	570	2	28	0	842	512	3	115	2	190	
13:00	121	576	1	24		857	479	4	128	1	213	
14:00	122	544	2	30	0	836	419	2	111	2	221	
15:00	119	544	2	38		809	418	3	134	1	208	
16:00	102	545	1	24		784	390	4	84	25	178	
17:00	101	497	3	25		771	372	1	40	39	174	
18:00	84	447	3	22		701	309	1	34	33	172	
19:00	65	339	2	19		560	222	1	33	35	150	
20:00	28	211	2	20		378	135	1	31	36	126	
21:00	6	111	1	20		205	64	1	18	21	64	
22:00	1	59	1	20		90	28	0	6	7	21	
23:00	0	43	0	12		32	12		3	2	5	
Total	1340	6221	38	449	0	9461	4833	37	1001	222	2183	0

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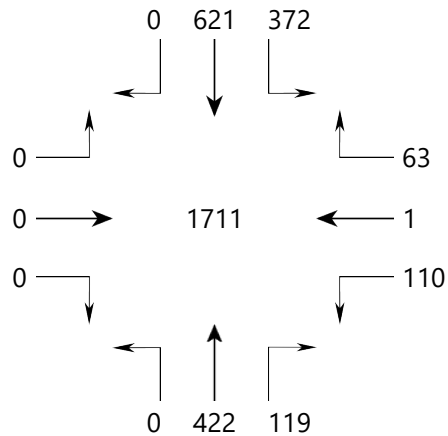
Turning Movement Counts - Average

Intersection Daniel Webster & Dan Chan Street

Date 12/6/2021-12/10/2021

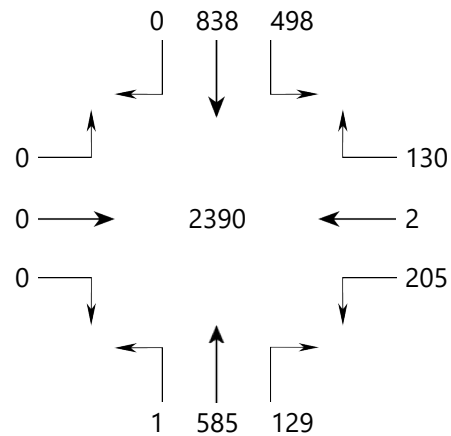
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 09:45 TO 10:45



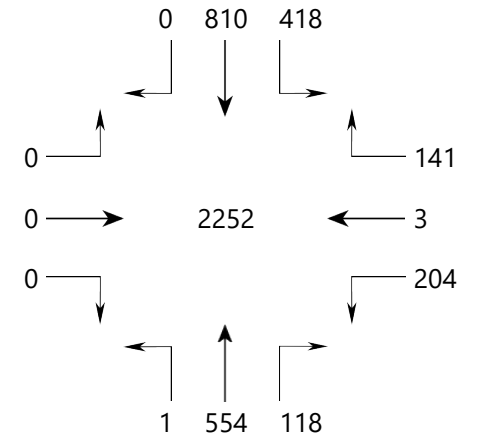
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:30 TO 13:30



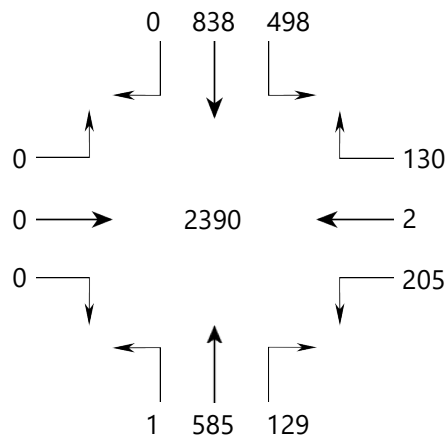
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 15:15 TO 16:15



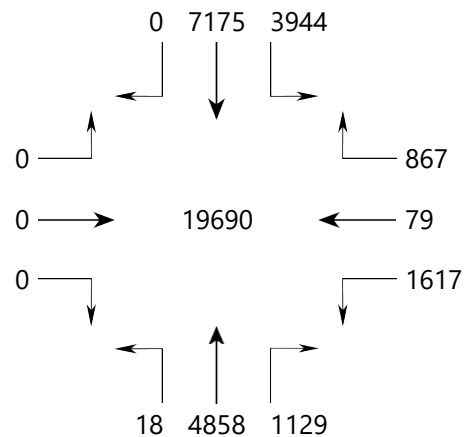
OVERALL PEAK HOUR VOLUME

FROM 12:30 TO 13:30



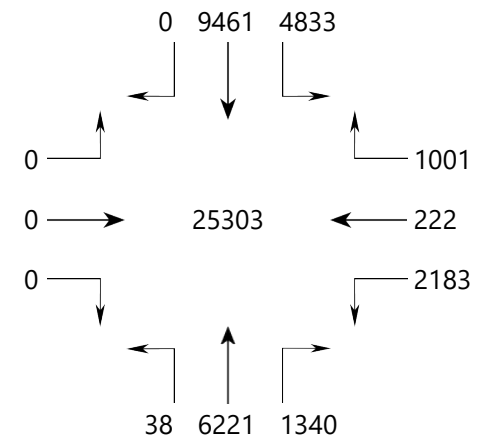
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

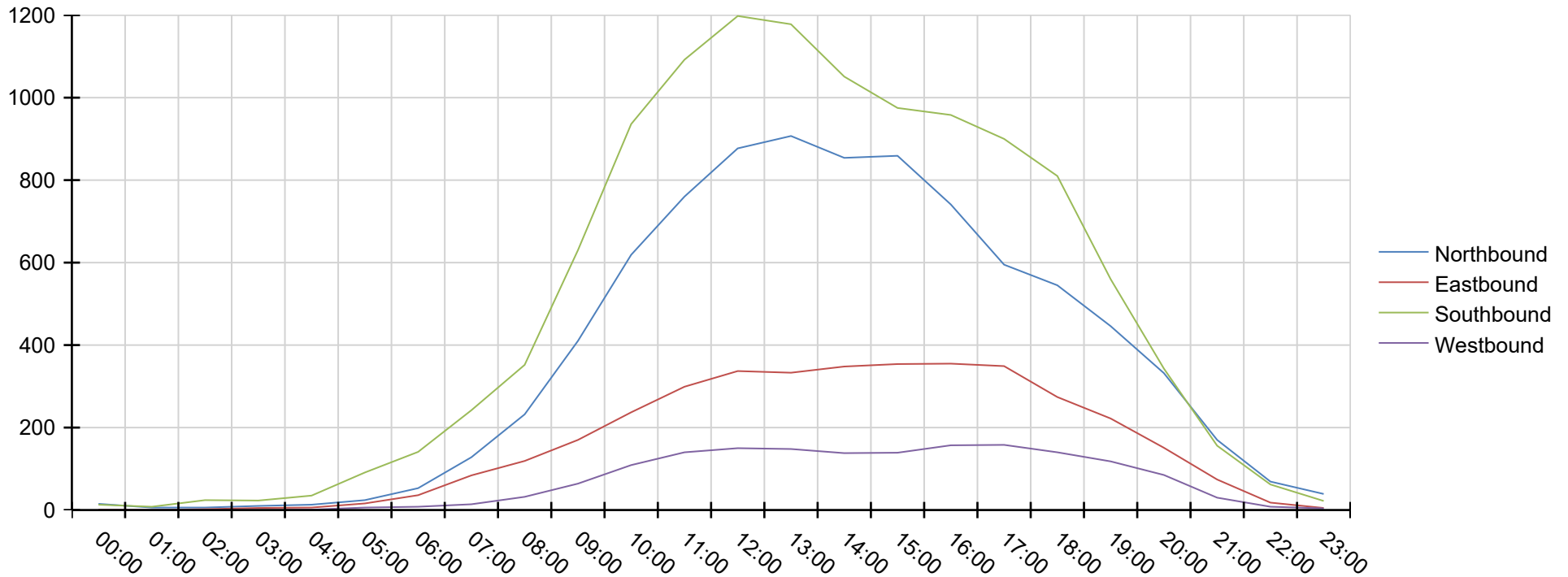
FROM 00:00 TO 23:59



Intersection DW Highway & Danforth Rd

Date 12/6/2021-12/10/2021

	Right	Through	Left	UTurn	Total
Northbound	600	6201	1698	220	8720
Eastbound	1381	593	1829	0	3804
Southbound	407	9733	1555	114	11811
Westbound	495	429	734		1659
Total	2884	16957	5817	335	25994





Turning Movement Counts - Average

Intersection DW Highway & Danforth Rd

Date 12/6/2021-12/10/2021

	Northbound				Eastbound				Southbound				Westbound		
	R	T	L	U	R	T	L	U	R	T	L	U	R	T	L
00:00		12	1	1	0	0	0		1	11	0		0		
01:00	0	5	0				0		1	6	0		0		
02:00		4	1	0	1	0	0			24					0
03:00		8	1	0	3	1	1		0	22	0		0		
04:00	0	12	1		3	0	2		0	30	4		1		0
05:00	1	18	4		10	2	4		3	77	10	0	2	0	3
06:00	2	33	17	0	17	5	13		6	118	16		3	1	3
07:00	7	84	35	0	34	10	38		9	202	29	1	2	5	6
08:00	15	151	62	4	41	15	62		14	282	53	2	8	8	15
09:00	33	258	109	9	59	34	77		25	512	87	5	11	19	33
10:00	50	419	136	13	85	37	114		28	779	123	6	25	34	49
11:00	58	533	152	16	105	54	140		32	902	147	9	26	44	70
12:00	65	624	166	20	112	56	169		37	992	158	9	33	46	70
13:00	67	656	165	18	117	53	163		31	979	157	10	27	44	76
14:00	64	610	157	22	117	58	172		32	878	133	7	31	41	65
15:00	60	608	168	22	112	53	188		31	798	137	8	28	43	67
16:00	49	516	152	23	128	53	173		33	763	150	11	47	44	65
17:00	41	403	128	22	143	53	152		29	734	126	10	63	36	58
18:00	37	386	99	20	105	38	130		31	667	103	8	57	29	53
19:00	25	335	73	11	85	31	106	0	23	455	70	10	61	13	44
20:00	14	267	43	7	58	23	69		17	283	36	6	43	13	28
21:00	3	154	10	2	30	7	36		8	138	5	4	14	1	14
22:00	0	62	4	1	5	3	9		4	55	2	0	3	0	4
23:00	0	34	4		1	0	3		3	18	0		3		1
Total	600	6201	1698	220	1381	593	1829	0	407	9733	1555	114	495	429	734

GRIDSMART

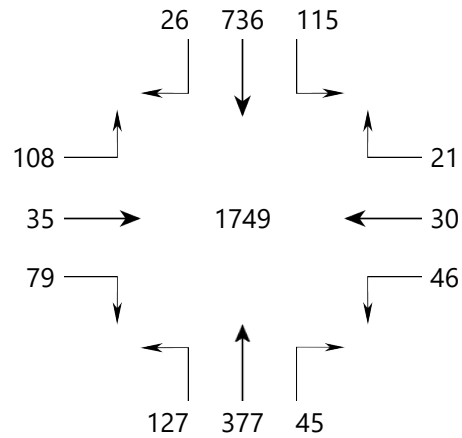
Turning Movement Counts - Average

Intersection DW Highway & Danforth Rd

Date 12/6/2021-12/10/2021

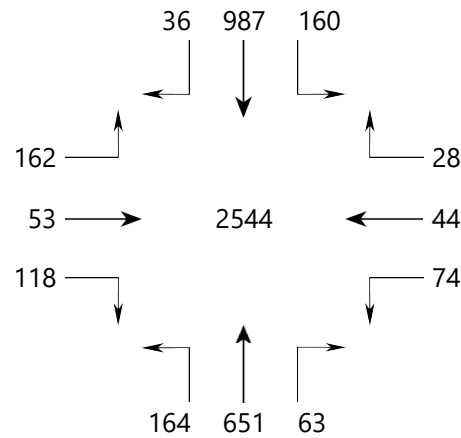
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 09:45 TO 10:45



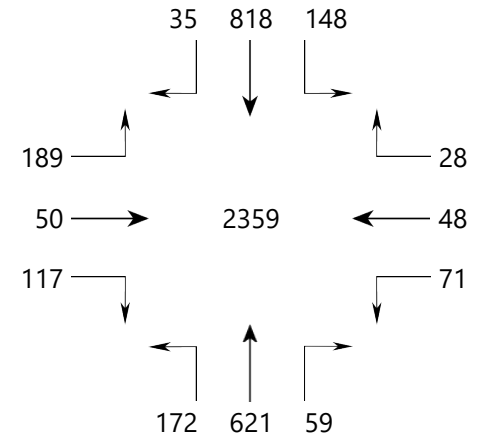
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:45 TO 13:45



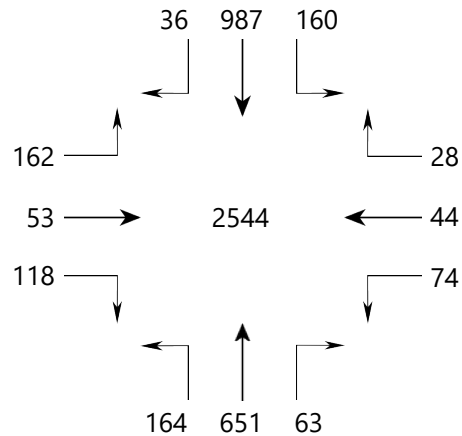
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 15:30 TO 16:30



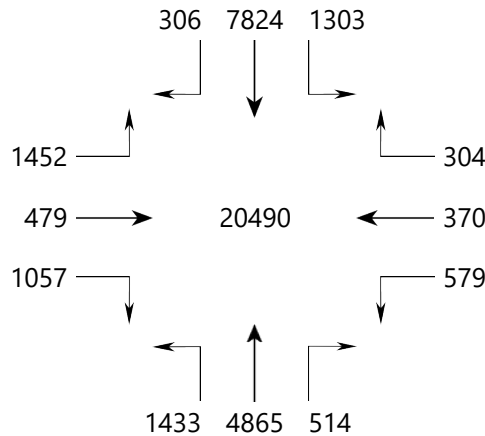
OVERALL PEAK HOUR VOLUME

FROM 12:45 TO 13:45



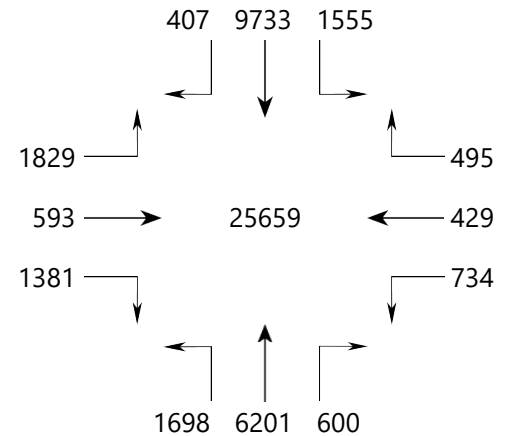
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

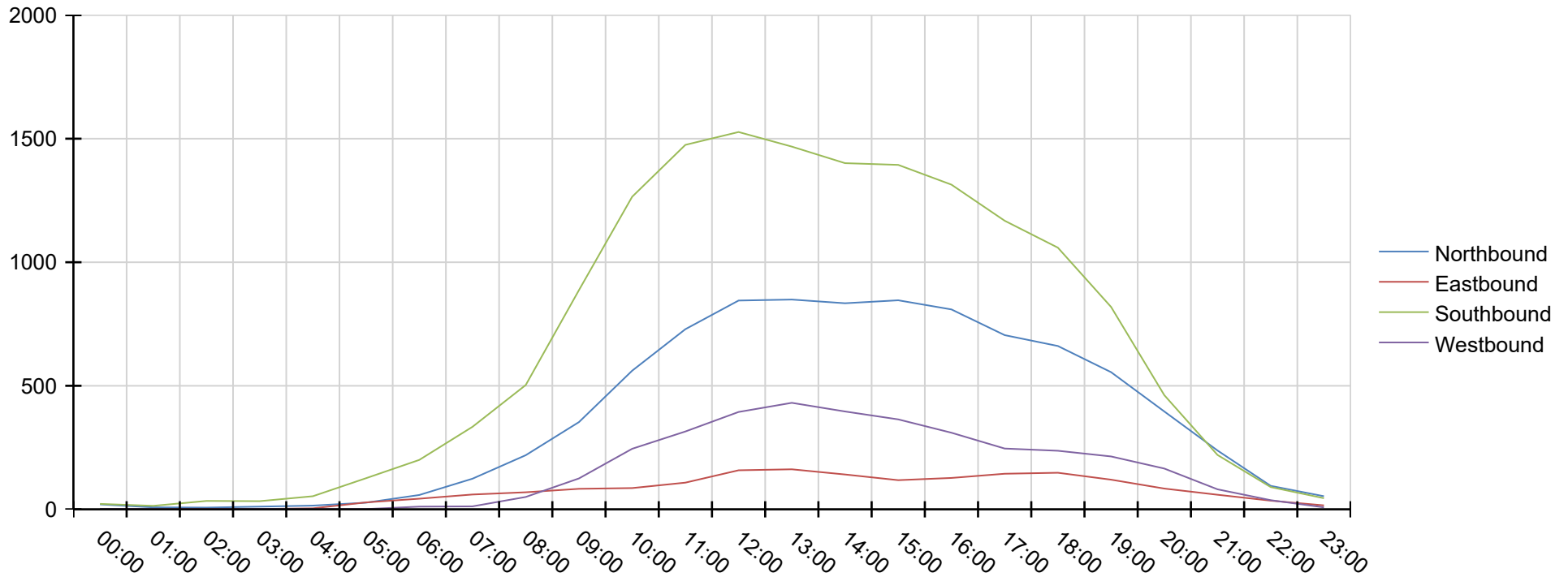
FROM 00:00 TO 23:59



Intersection Silver Drive & Daniel Webster Hwy

Date 12/6/2021-12/10/2021

	Right	Through	Left	UTurn	Total
Northbound	318	8120	541	45	9027
Eastbound	672	231	901		1805
Southbound	409	12950	2463	99	15922
Westbound	2587	168	901	0	3657
Total	3987	21471	4808	145	30412





Turning Movement Counts - Average

Intersection Silver Drive & Daniel Webster Hwy

Date 12/6/2021-12/10/2021

	Northbound				Eastbound			Southbound				Westbound			
	R	T	L	U	R	T	L	R	T	L	U	R	T	L	U
00:00	0	20	0		1	0	1	1	17	2	0	2	0		
01:00		7	0	0	0		0	0	11	1	0	1			
02:00		7			0	0	0	1	30	2	0	0			
03:00		11	0		1		0	0	30	2		1	0		
04:00	0	14	0		3	0	0	0	44	7		0	0	0	
05:00	1	23	3		17	2	9	3	107	15	0	0	0	0	
06:00	1	53	3		21	2	18	4	173	22	1	8	0	3	
07:00	3	114	6	0	21	7	31	22	281	28	2	7	1	3	
08:00	7	198	12	0	21	11	37	10	415	75	2	34	3	12	
09:00	16	314	20	1	29	15	37	14	723	145	5	76	8	41	
10:00	24	510	24	3	30	12	44	16	1045	196	7	152	11	82	
11:00	27	663	33	5	40	18	49	29	1216	224	5	209	13	92	
12:00	27	751	60	6	63	21	72	33	1253	235	5	255	16	121	
13:00	25	767	50	6	62	23	77	24	1201	234	8	282	20	127	
14:00	30	754	42	6	50	24	66	28	1125	237	10	283	16	95	
15:00	31	764	46	4	45	18	54	29	1128	229	7	283	13	67	
16:00	34	725	45	3	43	18	65	39	1055	213	5	237	13	59	
17:00	24	630	49	2	54	15	74	47	923	190	6	184	12	49	0
18:00	24	588	46	2	54	17	76	33	858	160	6	177	12	47	
19:00	22	495	36	1	44	12	63	28	654	127	8	162	10	41	
20:00	12	354	28	1	31	5	47	17	362	74	8	122	7	35	
21:00	3	215	18	0	18	2	37	11	174	30	5	62	4	14	
22:00	0	87	6	0	10	1	23	5	77	5	2	32	1	3	
23:00	0	49	4		4	0	10	6	36	1	0	7	0	0	
Total	318	8120	541	45	672	231	901	409	12950	2463	99	2587	168	901	0

GRIDSMART[®]

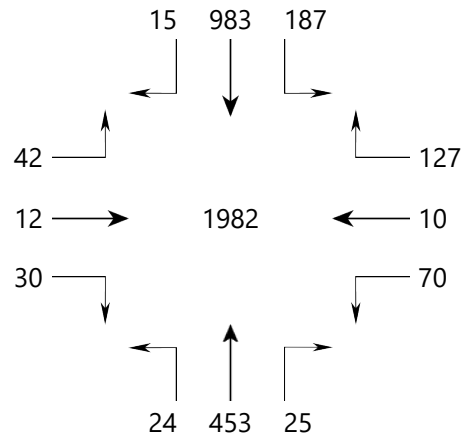
Turning Movement Counts - Average

Intersection Silver Drive & Daniel Webster Hwy

Date 12/6/2021-12/10/2021

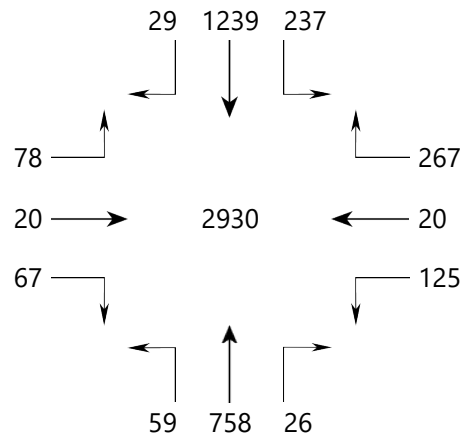
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 09:45 TO 10:45



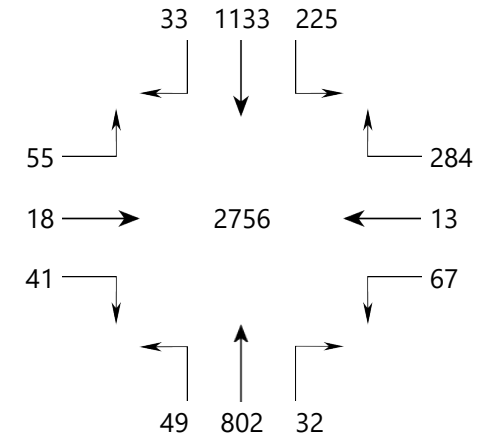
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:15 TO 13:15



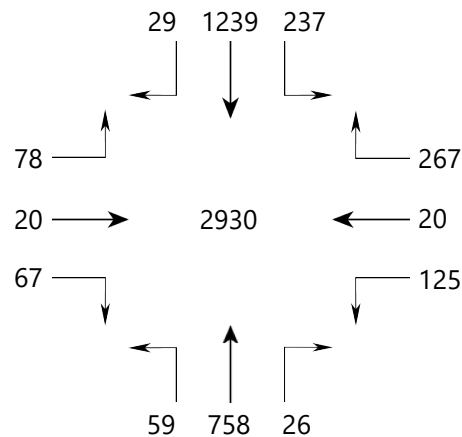
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 15:30 TO 16:30



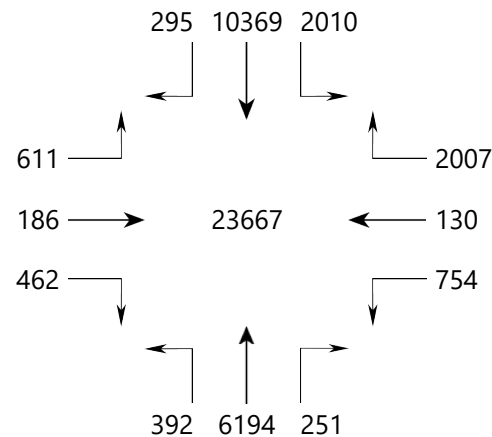
OVERALL PEAK HOUR VOLUME

FROM 12:15 TO 13:15



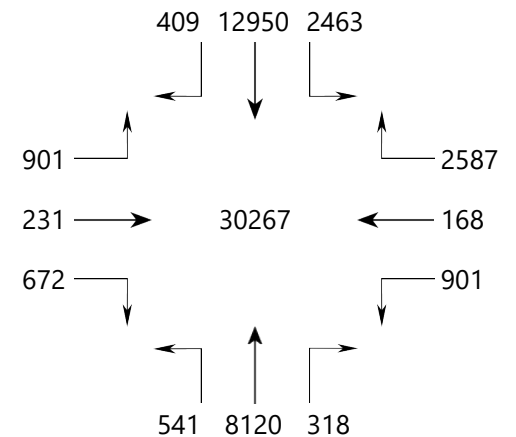
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

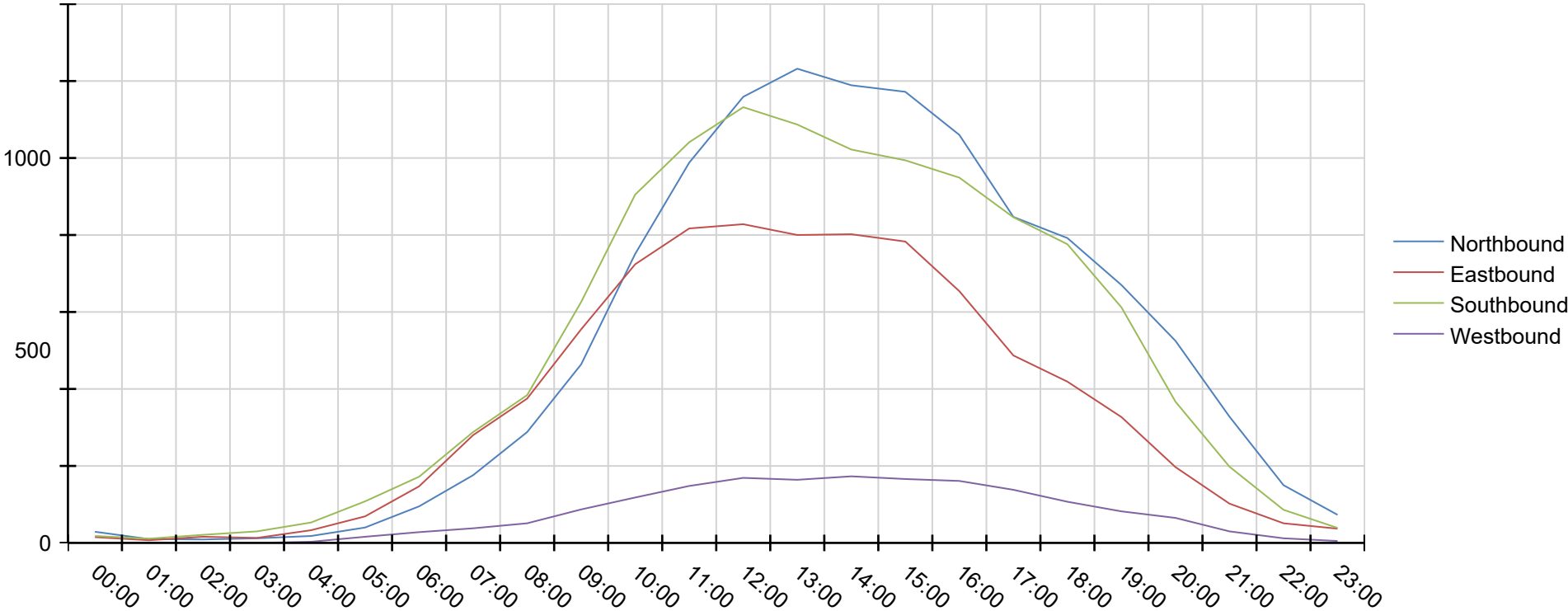
FROM 00:00 TO 23:59



Intersection DW Highway & Spit Brook rd

Date 12/6/2021-12/10/2021

	Total
Northbound	12084
Eastbound	8546
Southbound	11772
Westbound	1771
Total	34175





Volume Report - Average

Intersection DW Highway & Spit Brook rd

Date 12/6/2021-12/10/2021

	Northbound	Eastbound	Southbound	Westbound	Total
00:00	29	15	18	0	63
01:00	10	7	11	1	30
02:00	9	16	21	0	46
03:00	12	13	30	0	55
04:00	18	33	53	3	108
05:00	40	69	108	16	234
06:00	95	147	172	28	443
07:00	176	280	288	38	782
08:00	288	375	384	51	1100
09:00	464	555	626	87	1733
10:00	751	724	905	118	2498
11:00	988	817	1041	148	2995
12:00	1159	828	1132	169	3289
13:00	1232	800	1087	164	3284
14:00	1189	802	1022	173	3188
15:00	1172	783	994	166	3116
16:00	1060	654	949	161	2824
17:00	847	487	846	138	2319
18:00	792	419	776	107	2095
19:00	670	327	612	82	1692
20:00	525	197	367	65	1156
21:00	328	102	198	30	659
22:00	150	51	86	12	300
23:00	73	37	39	5	155
Total	12084	8546	11772	1771	34175

Appendix C

Turning Movement Counts (TMC) Data

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 18089801
 Site Code : 18089801
 Start Date : 11/15/2018
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
03:00 PM	19	200	31	1	12	17	13	101	134	4	0	34	10	128	704
03:15 PM	20	128	23	11	14	18	10	127	132	4	0	37	17	137	678
03:30 PM	10	172	26	8	12	26	10	123	136	6	0	32	14	132	707
03:45 PM	17	162	15	12	11	21	16	117	154	4	0	39	19	147	734
Total	66	662	95	32	49	82	49	468	556	18	0	142	60	544	2823
04:00 PM	11	177	27	3	12	24	17	117	133	5	0	31	19	119	695
04:15 PM	10	159	27	6	11	29	9	129	120	0	0	35	11	126	672
04:30 PM	8	164	27	6	14	20	5	112	122	4	0	38	12	119	651
04:45 PM	10	172	43	1	11	18	14	124	121	3	0	28	14	154	713
Total	39	672	124	16	48	91	45	482	496	12	0	132	56	518	2731
05:00 PM	17	136	19	7	18	33	14	108	129	7	1	53	19	141	702
05:15 PM	6	158	27	5	12	16	13	109	127	7	0	37	7	118	642
05:30 PM	13	135	20	6	14	22	12	120	117	5	0	31	19	114	628
05:45 PM	4	160	29	4	11	17	8	104	106	2	0	37	9	118	609
Total	40	589	95	22	55	88	47	441	479	21	1	158	54	491	2581
Grand Total	145	1923	314	70	152	261	141	1391	1531	51	1	432	170	1553	8135
Aprch %	5.9	78.4	12.8	2.9	27.4	47.1	25.5	46.8	51.5	1.7	0	20	7.9	72.1	
Total %	1.8	23.6	3.9	0.9	1.9	3.2	1.7	17.1	18.8	0.6	0	5.3	2.1	19.1	
Cars	145	1914	311	70	152	261	139	1384	1522	51	1	429	170	1545	8094
% Cars	100	99.5	99	100	100	100	98.6	99.5	99.4	100	100	99.3	100	99.5	99.5
Trucks	0	9	3	0	0	0	2	7	9	0	0	3	0	8	41
% Trucks	0	0.5	1	0	0	0	1.4	0.5	0.6	0	0	0.7	0	0.5	0.5

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 18089801
 Site Code : 18089801
 Start Date : 11/15/2018
 Page No : 2

Start Time	D.W. Hwy From North					Spit Brook Rd From East				D.W. Hwy From South				Spit Brook Rd From West				Int. Total
	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 03:00 PM																		
03:00 PM	19	200	31	1	251	12	17	13	42	101	134	4	239	34	10	128	172	704
03:15 PM	20	128	23	11	182	14	18	10	42	127	132	4	263	37	17	137	191	678
03:30 PM	10	172	26	8	216	12	26	10	48	123	136	6	265	32	14	132	178	707
03:45 PM	17	162	15	12	206	11	21	16	48	117	154	4	275	39	19	147	205	734
Total Volume	66	662	95	32	855	49	82	49	180	468	556	18	1042	142	60	544	746	2823
% App. Total	7.7	77.4	11.1	3.7		27.2	45.6	27.2		44.9	53.4	1.7		19	8	72.9		
PHF	.825	.828	.766	.667	.852	.875	.788	.766	.938	.921	.903	.750	.947	.910	.789	.925	.910	.962
Cars	66	660	94	32	852	49	82	47	178	467	552	18	1037	140	60	540	740	2807
% Cars	100	99.7	98.9	100	99.6	100	100	95.9	98.9	99.8	99.3	100	99.5	98.6	100	99.3	99.2	99.4
Trucks	0	2	1	0	3	0	0	2	2	1	4	0	5	2	0	4	6	16
% Trucks	0	0.3	1.1	0	0.4	0	0	4.1	1.1	0.2	0.7	0	0.5	1.4	0	0.7	0.8	0.6

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 18089801
 Site Code : 18089801
 Start Date : 11/15/2018
 Page No : 1

Groups Printed- Cars

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
03:00 PM	19	198	31	1	12	17	11	101	133	4	0	33	10	127	697
03:15 PM	20	128	23	11	14	18	10	127	129	4	0	37	17	137	675
03:30 PM	10	172	25	8	12	26	10	123	136	6	0	31	14	130	703
03:45 PM	17	162	15	12	11	21	16	116	154	4	0	39	19	146	732
Total	66	660	94	32	49	82	47	467	552	18	0	140	60	540	2807
04:00 PM	11	176	27	3	12	24	17	116	133	5	0	30	19	118	691
04:15 PM	10	158	27	6	11	29	9	128	119	0	0	35	11	125	668
04:30 PM	8	163	27	6	14	20	5	112	122	4	0	38	12	119	650
04:45 PM	10	170	42	1	11	18	14	123	120	3	0	28	14	153	707
Total	39	667	123	16	48	91	45	479	494	12	0	131	56	515	2716
05:00 PM	17	135	19	7	18	33	14	107	129	7	1	53	19	141	700
05:15 PM	6	158	27	5	12	16	13	109	126	7	0	37	7	117	640
05:30 PM	13	135	19	6	14	22	12	120	117	5	0	31	19	114	627
05:45 PM	4	159	29	4	11	17	8	102	104	2	0	37	9	118	604
Total	40	587	94	22	55	88	47	438	476	21	1	158	54	490	2571
Grand Total	145	1914	311	70	152	261	139	1384	1522	51	1	429	170	1545	8094
Apprch %	5.9	78.4	12.7	2.9	27.5	47.3	25.2	46.8	51.5	1.7	0	20	7.9	72.1	
Total %	1.8	23.6	3.8	0.9	1.9	3.2	1.7	17.1	18.8	0.6	0	5.3	2.1	19.1	

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 18089801
 Site Code : 18089801
 Start Date : 11/15/2018
 Page No : 1

Groups Printed- Trucks

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
03:00 PM	0	2	0	0	0	0	2	0	1	0	0	1	0	1	7
03:15 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
03:30 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	2	4
03:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
Total	0	2	1	0	0	0	2	1	4	0	0	2	0	4	16
04:00 PM	0	1	0	0	0	0	0	1	0	0	0	1	0	1	4
04:15 PM	0	1	0	0	0	0	0	1	1	0	0	0	0	1	4
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	2	1	0	0	0	0	1	1	0	0	0	0	1	6
Total	0	5	1	0	0	0	0	3	2	0	0	1	0	3	15
05:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
05:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	1	0	0	0	0	0	2	2	0	0	0	0	0	5
Total	0	2	1	0	0	0	0	3	3	0	0	0	0	1	10
Grand Total	0	9	3	0	0	0	2	7	9	0	0	3	0	8	41
Apprch %	0	75	25	0	0	0	100	43.8	56.2	0	0	27.3	0	72.7	
Total %	0	22	7.3	0	0	0	4.9	17.1	22	0	0	7.3	0	19.5	

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 18089801
 Site Code : 18089801
 Start Date : 11/15/2018
 Page No : 1

Groups Printed- Bikes Peds

Start Time	D.W. Hwy From North				Spit Brook Rd From East				D.W. Hwy From South				Spit Brook Rd From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 180898S1
 Site Code : 18089801
 Start Date : 11/17/2018
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
11:00 AM	20	261	27	7	24	15	2	117	172	10	0	63	22	217	957
11:15 AM	17	230	19	9	16	30	20	149	160	12	0	50	15	238	965
11:30 AM	16	302	26	13	17	20	8	128	180	12	0	55	20	198	995
11:45 AM	13	237	29	14	28	26	13	140	166	9	0	55	27	239	996
Total	66	1030	101	43	85	91	43	534	678	43	0	223	84	892	3913
12:00 PM	16	278	24	9	26	19	9	166	190	11	0	58	21	214	1041
12:15 PM	13	250	25	9	24	24	6	142	194	8	0	72	23	231	1021
12:30 PM	15	270	17	8	21	19	7	183	199	17	0	48	23	204	1031
12:45 PM	11	256	15	3	25	21	17	135	188	10	0	57	23	226	987
Total	55	1054	81	29	96	83	39	626	771	46	0	235	90	875	4080
01:00 PM	17	236	17	6	28	22	9	136	199	7	2	52	26	218	975
01:15 PM	14	274	21	7	24	21	14	139	232	11	0	47	24	224	1052
01:30 PM	11	257	16	5	20	24	11	146	211	10	0	44	22	236	1013
01:45 PM	16	251	24	6	19	22	10	122	178	9	0	50	19	208	934
Total	58	1018	78	24	91	89	44	543	820	37	2	193	91	886	3974
Grand Total	179	3102	260	96	272	263	126	1703	2269	126	2	651	265	2653	11967
Aprch %	4.9	85.3	7.1	2.6	41.1	39.8	19.1	41.5	55.3	3.1	0	18.2	7.4	74.3	
Total %	1.5	25.9	2.2	0.8	2.3	2.2	1.1	14.2	19	1.1	0	5.4	2.2	22.2	
Cars	179	3101	260	96	272	263	126	1700	2266	126	2	650	265	2649	11955
% Cars	100	100	100	100	100	100	100	99.8	99.9	100	100	99.8	100	99.8	99.9
Trucks	0	1	0	0	0	0	0	3	3	0	0	1	0	4	12
% Trucks	0	0	0	0	0	0	0	0.2	0.1	0	0	0.2	0	0.2	0.1

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 180898S1
 Site Code : 18089801
 Start Date : 11/17/2018
 Page No : 2

Start Time	D.W. Hwy From North					Spit Brook Rd From East				D.W. Hwy From South					Spit Brook Rd From West				Int. Total
	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 11:45 AM																			
11:45 AM	13	237	29	14	293	28	26	13	67	140	166	9	0	315	55	27	239	321	996
12:00 PM	16	278	24	9	327	26	19	9	54	166	190	11	0	367	58	21	214	293	1041
12:15 PM	13	250	25	9	297	24	24	6	54	142	194	8	0	344	72	23	231	326	1021
12:30 PM	15	270	17	8	310	21	19	7	47	183	199	17	0	399	48	23	204	275	1031
Total Volume	57	1035	95	40	1227	99	88	35	222	631	749	45	0	1425	233	94	888	1215	4089
% App. Total	4.6	84.4	7.7	3.3		44.6	39.6	15.8		44.3	52.6	3.2	0		19.2	7.7	73.1		
PHF	.891	.931	.819	.714	.938	.884	.846	.673	.828	.862	.941	.662	.000	.893	.809	.870	.929	.932	.982
Cars	57	1035	95	40	1227	99	88	35	222	630	748	45	0	1423	233	94	886	1213	4085
% Cars	100	100	100	100	100	100	100	100	100	99.8	99.9	100	0	99.9	100	100	99.8	99.8	99.9
Trucks	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	2	2	4
% Trucks	0	0	0	0	0	0	0	0	0	0.2	0.1	0	0	0.1	0	0	0.2	0.2	0.1

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 180898S1
 Site Code : 18089801
 Start Date : 11/17/2018
 Page No : 1

Groups Printed- Cars

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
11:00 AM	20	261	27	7	24	15	2	117	172	10	0	63	22	217	957
11:15 AM	17	230	19	9	16	30	20	148	159	12	0	50	15	238	963
11:30 AM	16	302	26	13	17	20	8	128	180	12	0	55	20	197	994
11:45 AM	13	237	29	14	28	26	13	139	166	9	0	55	27	239	995
Total	66	1030	101	43	85	91	43	532	677	43	0	223	84	891	3909
12:00 PM	16	278	24	9	26	19	9	166	190	11	0	58	21	212	1039
12:15 PM	13	250	25	9	24	24	6	142	193	8	0	72	23	231	1020
12:30 PM	15	270	17	8	21	19	7	183	199	17	0	48	23	204	1031
12:45 PM	11	255	15	3	25	21	17	135	187	10	0	57	23	226	985
Total	55	1053	81	29	96	83	39	626	769	46	0	235	90	873	4075
01:00 PM	17	236	17	6	28	22	9	135	199	7	2	51	26	217	972
01:15 PM	14	274	21	7	24	21	14	139	232	11	0	47	24	224	1052
01:30 PM	11	257	16	5	20	24	11	146	211	10	0	44	22	236	1013
01:45 PM	16	251	24	6	19	22	10	122	178	9	0	50	19	208	934
Total	58	1018	78	24	91	89	44	542	820	37	2	192	91	885	3971
Grand Total	179	3101	260	96	272	263	126	1700	2266	126	2	650	265	2649	11955
Apprch %	4.9	85.3	7.2	2.6	41.1	39.8	19.1	41.5	55.3	3.1	0	18.2	7.4	74.3	
Total %	1.5	25.9	2.2	0.8	2.3	2.2	1.1	14.2	19	1.1	0	5.4	2.2	22.2	

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 180898S1
 Site Code : 18089801
 Start Date : 11/17/2018
 Page No : 1

Groups Printed- Trucks

Start Time	D.W. Hwy From North				Spit Brook Rd From East			D.W. Hwy From South				Spit Brook Rd From West			Int. Total
	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
11:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	2	1	0	0	0	0	1	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
12:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	1	0	0	0	0	0	0	2	0	0	0	0	2	5
01:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	1	3
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	1	3
Grand Total	0	1	0	0	0	0	0	3	3	0	0	1	0	4	12
Apprch %	0	100	0	0	0	0	0	50	50	0	0	20	0	80	
Total %	0	8.3	0	0	0	0	0	25	25	0	0	8.3	0	33.3	

Accurate Counts

978-664-2565

N/S Street : Daniel Webster Highway
 E/W Street: Spit Brook Road
 City/State : Nashua, NH
 Weather : Cloudy

File Name : 180898S1
 Site Code : 18089801
 Start Date : 11/17/2018
 Page No : 1

Groups Printed- Bikes Peds

Start Time	D.W. Hwy From North				Spit Brook Rd From East				D.W. Hwy From South				Spit Brook Rd From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	3	0	3
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

DW Hwy and Raymond Wieczorek Dr Ramps

	NBT	NBR	EBL	EBT	EBR	SBL	SBT	
0-15	84	47	92	0	79	8	47	
15-30	111	53	98	0	76	11	50	
30-45	119	58	124	0	89	9	56	
45-60	103	67	133	0	80	22	50	
60-75	115	52	99	0	76	16	54	
75-90	97	46	111	0	62	19	42	
90-105	84	44	101	0	61	30	53	
105-120	82	38	92	0	53	18	46	

DW Hwy and Somerville Dr

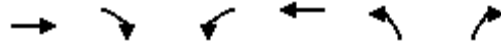
	NBT	NBR	SBL	SBT	WBL	WBR	
0-15	196	2	1	57	1	2	
15-30	214	0	0	71	0	3	
30-45	236	0	0	83	1	3	
45-60	230	4	1	79	1	3	
60-75	198	1	0	71	1	0	
75-90	222	1	0	56	0	1	
90-105	208	3	1	87	2	3	
105-120	182	1	6	69	2	3	

Day Part	Average		Avg All		
	Daily Zone Traffic (StL Volume)	Avg Trip Duration (sec)	Trip Duration (sec)	Avg Trip Length (mi)	Avg All Trip Length (mi)
00: All Day (12am-12am)	21326	2036	2320	8.7	10
01: 12am (12am-1am)	205	1978	2954	9.4	16.1
02: 1am (1am-2am)	157	2048	3226	10.9	18
03: 2am (2am-3am)	71	1749	2661	6.9	13.7
04: 3am (3am-4am)	48	2047	2742	10.7	15.1
05: 4am (4am-5am)	187	2123	2589	11.9	14.9
06: 5am (5am-6am)	241	2137	2478	12.7	14.3
07: 6am (6am-7am)	601	1926	2255	9.9	11.5
08: 7am (7am-8am)	883	2173	2375	11.1	12.2
09: 8am (8am-9am)	995	2112	2412	9.5	10.7
10: 9am (9am-10am)	1052	2029	2264	8.5	9.4
11: 10am (10am-11am)	1105	2057	2248	8.9	9.6
12: 11am (11am-12noon)	1287	2005	2235	8.4	9.3
13: 12pm (12noon-1pm)	1434	2043	2293	8.1	9.1
14: 1pm (1pm-2pm)	1476	1999	2246	7.7	8.8
15: 2pm (2pm-3pm)	1456	2147	2364	9	9.9
16: 3pm (3pm-4pm)	1704	2148	2398	8.6	9.5
17: 4pm (4pm-5pm)	1762	2065	2294	8.3	9.1
18: 5pm (5pm-6pm)	1855	2074	2315	8.1	9.1
19: 6pm (6pm-7pm)	1446	1956	2173	7.9	8.7
20: 7pm (7pm-8pm)	1206	1912	2217	8	9.2
21: 8pm (8pm-9pm)	861	1858	2228	8.6	10.3
22: 9pm (9pm-10pm)	600	1888	2318	8.4	10.5
23: 10pm (10pm-11pm)	393	1860	2503	9.4	13
24: 11pm (11pm-12am)	303	2073	2645	10.4	13.9
00: All Day (12am-12am)	21595	2019	2295	8.4	9.6
01: 12am (12am-1am)	128	2047	2629	11.3	15.1
02: 1am (1am-2am)	74	2360	3343	14.1	20.7
03: 2am (2am-3am)	52	1827	1996	6.1	6.7
04: 3am (3am-4am)	47	1943	2375	10.7	15.2
05: 4am (4am-5am)	215	2047	2497	12.1	14.4
06: 5am (5am-6am)	283	2063	2298	11.6	12.6
07: 6am (6am-7am)	740	1955	2264	10	11.3
08: 7am (7am-8am)	1085	2192	2384	10.9	11.9
09: 8am (8am-9am)	1127	2153	2436	9.5	10.5
10: 9am (9am-10am)	1058	2051	2319	8.7	9.7
11: 10am (10am-11am)	1063	2025	2234	8.4	9.3
12: 11am (11am-12noon)	1232	1962	2231	8.1	9.3
13: 12pm (12noon-1pm)	1381	2004	2274	7.7	8.7
14: 1pm (1pm-2pm)	1466	1967	2205	7.4	8.3
15: 2pm (2pm-3pm)	1441	2094	2302	8.4	9.2
16: 3pm (3pm-4pm)	1784	2138	2402	8.2	9.1
17: 4pm (4pm-5pm)	1840	2035	2295	7.9	8.9
18: 5pm (5pm-6pm)	2030	2085	2333	7.7	8.8
19: 6pm (6pm-7pm)	1449	1899	2122	7.7	8.3
20: 7pm (7pm-8pm)	1217	1857	2194	7.5	8.8
21: 8pm (8pm-9pm)	846	1838	2192	8.1	9.9
22: 9pm (9pm-10pm)	510	1833	2253	8.4	10.6
23: 10pm (10pm-11pm)	309	1688	2377	8.3	12.3
24: 11pm (11pm-12am)	216	2127	2608	10.4	13.8
00: All Day (12am-12am)	19219	2060	2352	9.5	10.9
01: 12am (12am-1am)	373	1982	3341	8.9	18.2
02: 1am (1am-2am)	355	1963	3223	9.7	16.9
03: 2am (2am-3am)	102	1717	3631	8	23.5
04: 3am (3am-4am)	54	2128	3524	8.6	14.9
05: 4am (4am-5am)	98	2575	3271	14.1	21.4
06: 5am (5am-6am)	114	2240	2548	15.8	17.2
07: 6am (6am-7am)	236	1848	2146	8.9	10.1
08: 7am (7am-8am)	384	2061	2358	12.7	13.7
09: 8am (8am-9am)	631	2077	2454	10.3	12
10: 9am (9am-10am)	1029	1946	2125	7.7	8.6
11: 10am (10am-11am)	1158	2194	2350	10.4	10.9
12: 11am (11am-12noon)	1399	2037	2197	8.9	9.3
13: 12pm (12noon-1pm)	1518	2124	2320	8.9	9.8
14: 1pm (1pm-2pm)	1502	2010	2183	8.4	9.2
15: 2pm (2pm-3pm)	1360	2199	2407	10.3	11.3
16: 3pm (3pm-4pm)	1471	2144	2351	9.6	10.6
17: 4pm (4pm-5pm)	1478	2126	2315	9.8	10.4
18: 5pm (5pm-6pm)	1398	1937	2134	9.2	9.9
19: 6pm (6pm-7pm)	1398	1969	2164	8.2	9.2
20: 7pm (7pm-8pm)	1015	1990	2261	9.5	10.5
21: 8pm (8pm-9pm)	727	1953	2428	10.4	12.2
22: 9pm (9pm-10pm)	609	1994	2448	8.7	10.8
23: 10pm (10pm-11pm)	440	2126	2564	11.9	14.6
24: 11pm (11pm-12am)	366	2279	2869	11.8	15

APPENDIX G-3

Intersection Capacity Analysis

Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	442	17	177	638	50	141
Future Volume (vph)	442	17	177	638	50	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.900	
Flt Protected			0.950		0.987	
Satd. Flow (prot)	1853	0	1770	1863	1655	0
Flt Permitted			0.202		0.987	
Satd. Flow (perm)	1853	0	376	1863	1655	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3				106	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.85	0.85	0.88	0.88	0.75	0.75
Adj. Flow (vph)	520	20	201	725	67	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	540	0	201	725	255	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street

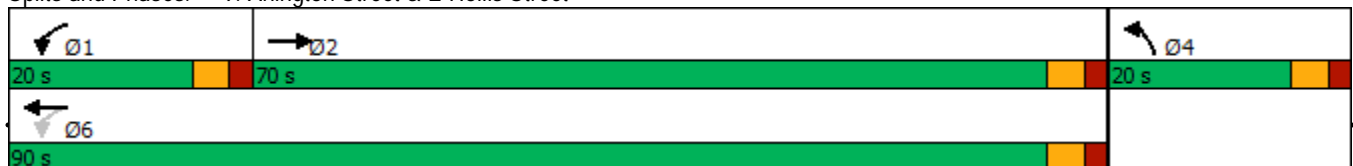


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	23.6		39.0	39.0	12.4	
Actuated g/C Ratio	0.38		0.63	0.63	0.20	
v/c Ratio	0.76		0.43	0.61	0.61	
Control Delay	24.2		7.7	9.6	21.4	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	24.2		7.7	9.6	21.4	
LOS	C		A	A	C	
Approach Delay	24.2			9.2	21.4	
Approach LOS	C			A	C	
Queue Length 50th (ft)	164		26	134	49	
Queue Length 95th (ft)	260		51	234	98	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1792		584	1863	491	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.30		0.34	0.39	0.52	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 61.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 15.7
 Intersection LOS: B
 Intersection Capacity Utilization 58.1%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 6th TWSC
 8: Chase Street & E Hollis Street

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↑	
Traffic Vol, veh/h	0	506	11	23	815	0	0	0	0	0	0	0
Future Vol, veh/h	0	506	11	23	815	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	5	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	81	81	87	87	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	625	14	26	937	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	643	0	0	-	1632	-
Stage 1	-	-	-	-	-	-	-	989	-
Stage 2	-	-	-	-	-	-	-	643	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	951	-	0	0	101	0
Stage 1	0	-	-	-	-	0	0	325	0
Stage 2	0	-	-	-	-	0	0	468	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	951	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	951	-	-
HCM Lane V/C Ratio	-	-	0.028	-	-
HCM Control Delay (s)	-	-	8.9	0	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 6th TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	11	3	7	19	14	13	174	14	9	172	13
Future Vol, veh/h	4	11	3	7	19	14	13	174	14	9	172	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	63	63	63	57	57	57	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	13	3	11	30	22	23	305	25	14	265	20

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	693	679	275	675	677	318	285	0	0	330	0	0
Stage 1	303	303	-	364	364	-	-	-	-	-	-	-
Stage 2	390	376	-	311	313	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	358	374	764	368	375	723	1277	-	-	1229	-	-
Stage 1	706	664	-	655	624	-	-	-	-	-	-	-
Stage 2	634	616	-	699	657	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	316	361	764	347	362	723	1277	-	-	1229	-	-
Mov Cap-2 Maneuver	316	361	-	347	362	-	-	-	-	-	-	-
Stage 1	690	655	-	641	610	-	-	-	-	-	-	-
Stage 2	571	602	-	673	648	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.9		14.7		0.5		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	383	435	1229	-
HCM Lane V/C Ratio	0.018	-	-	0.055	0.146	0.011	-
HCM Control Delay (s)	7.9	0	-	14.9	14.7	8	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.5	0	-

HCM 6th TWSC
 11: Crown Street & Chase Street

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	19	16	0	20	14
Future Vol, veh/h	0	19	16	0	20	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	44	44	75	75
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	28	36	0	27	19

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	64 36
Stage 1	-	-	-	-	36 -
Stage 2	-	-	-	-	28 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	947 1042
Stage 1	0	-	-	0	992 -
Stage 2	0	-	-	0	1000 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	947 1042
Mov Cap-2 Maneuver	-	-	-	-	947 -
Stage 1	-	-	-	-	992 -
Stage 2	-	-	-	-	1000 -





















Approach

	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	984
HCM Lane V/C Ratio	-	-	0.046
HCM Control Delay (s)	-	-	8.8
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	0	324	0	0	0	0	431	225	57	236	0
Future Volume (vph)	461	0	324	0	0	0	0	431	225	57	236	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950	0.950								0.950		
Satd. Flow (prot)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.950								0.950		
Satd. Flow (perm)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			372						262			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		553			694			882				461
Travel Time (s)		12.6			15.8			20.0				10.5
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	530	0	372	0	0	0	0	501	262	66	274	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	265	265	372	0	0	0	0	501	262	66	274	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			24			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	11.0	16.0	
Total Split (s)	20.0	20.0	20.0					25.0	25.0	15.0	40.0	
Total Split (%)	33.3%	33.3%	33.3%					41.7%	41.7%	25.0%	66.7%	
Maximum Green (s)	14.0	14.0	14.0					19.0	19.0	9.0	34.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	Min	None	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	12.5	12.5	12.5					14.4	14.4	6.5	27.0	
Actuated g/C Ratio	0.24	0.24	0.24					0.28	0.28	0.13	0.52	
v/c Ratio	0.65	0.65	0.56					0.51	0.42	0.15	0.15	
Control Delay	27.7	27.7	6.3					17.9	4.7	22.8	6.7	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	27.7	27.7	6.3					17.9	4.7	22.8	6.7	
LOS	C	C	A					B	A	C	A	
Approach Delay		18.9						13.4			9.9	
Approach LOS		B						B			A	
Queue Length 50th (ft)	74	74	0					68	0	9	21	
Queue Length 95th (ft)	#162	#162	50					103	37	24	34	
Internal Link Dist (ft)		473			614			802			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	462	462	705					1320	754	606	2363	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	0	0	0					0	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	0.57	0.57	0.53					0.38	0.35	0.11	0.12	

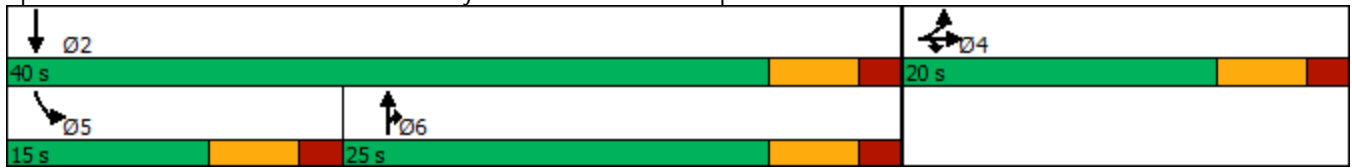
Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	51.7
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	15.3
Intersection LOS:	B
Intersection Capacity Utilization:	45.9%
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.	























Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



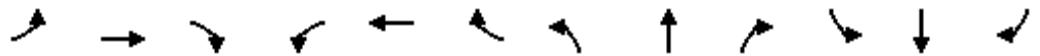
Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	6	1	140	1	115	14	344	539	84	151	2
Future Volume (vph)	0	6	1	140	1	115	14	344	539	84	151	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850		0.998	
Flt Protected					0.953		0.950			0.950		
Satd. Flow (prot)	0	1863	1583	0	1775	1583	1770	3539	1583	3433	3532	0
Flt Permitted					0.953		0.950			0.950		
Satd. Flow (perm)	0	1863	1583	0	1775	1583	1770	3539	1583	3433	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			256			147			642			1
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		245			390			714			684	
Travel Time (s)		5.6			8.9			16.2			15.5	
Peak Hour Factor	0.50	0.50	0.50	0.78	0.78	0.78	0.84	0.84	0.84	0.83	0.83	0.83
Adj. Flow (vph)	0	12	2	179	1	147	17	410	642	101	182	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	2	0	180	147	17	410	642	101	184	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	30.0	30.0	20.0	40.0	
Total Split (%)	8.7%	8.7%	8.7%	13.0%	13.0%	13.0%	8.7%	26.1%	26.1%	17.4%	34.8%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	24.0	24.0	14.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		4.3	4.3		9.6	19.7	4.3	16.5	33.6	7.4	25.1	
Actuated g/C Ratio		0.09	0.09		0.19	0.39	0.09	0.33	0.67	0.15	0.50	
v/c Ratio		0.08	0.01		0.53	0.21	0.11	0.35	0.51	0.20	0.10	
Control Delay		28.5	0.0		31.7	4.0	29.2	14.9	2.1	23.9	7.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		28.5	0.0		31.7	4.0	29.2	14.9	2.1	23.9	7.7	
LOS		C	A		C	A	C	B	A	C	A	
Approach Delay		24.4			19.3			7.4			13.5	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		3	0		48	0	5	47	0	13	10	
Queue Length 95th (ft)		11	0		#137	23	24	93	17	38	39	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		157	368		338	706	150	1800	1262	1018	2484	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.08	0.01		0.53	0.21	0.11	0.23	0.51	0.10	0.07	








Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	50.5
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization:	55.9%
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.	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

Splits and Phases: 14: South River Rd & East Point Dr

 Ø1 10 s	 Ø2 40 s	 Ø4 10 s	 Ø8 15 s	 Ø9 40 s
 Ø5 20 s	 Ø6 30 s			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	35%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 6th TWSC
 13: South River Rd & Somerville Dr

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑		↔↔↔	
Traffic Vol, veh/h	3	11	885	6	2	290
Future Vol, veh/h	3	11	885	6	2	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	92	92	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	13	962	7	2	333

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1103	485	0	0	969
Stage 1	966	-	-	-	-
Stage 2	137	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22
Pot Cap-1 Maneuver	238	528	-	-	707
Stage 1	322	-	-	-	-
Stage 2	835	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	237	528	-	-	707
Mov Cap-2 Maneuver	237	-	-	-	-
Stage 1	322	-	-	-	-
Stage 2	832	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	418	707
HCM Lane V/C Ratio	-	-	0.039	0.003
HCM Control Delay (s)	-	-	14	10.1
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.1	0

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕↔			↕↕	↗
Traffic Volume (vph)	69	8	34	107	4	25	49	471	112	8	535	76
Future Volume (vph)	69	8	34	107	4	25	49	471	112	8	535	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		135
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Frt			0.850		0.975			0.971				0.850
Flt Protected		0.957			0.962		0.950				0.999	
Satd. Flow (prot)	0	1783	1583	0	1747	0	1770	3437	0	0	3536	1583
Flt Permitted		0.696			0.710		0.950				0.944	
Satd. Flow (perm)	0	1296	1583	0	1289	0	1770	3437	0	0	3341	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		13			56				94
Link Speed (mph)		30			30			30				30
Link Distance (ft)		286			297			569				586
Travel Time (s)		6.5			6.8			12.9				13.3
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	10	41	129	5	30	54	523	124	10	660	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	41	0	164	0	54	647	0	0	670	94
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Perm	NA	Prot
Protected Phases		7	7		3		1	6			2	2

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	7			3						2			
Detector Phase	7	7	7	3	3		1	6		2	2	2	
Switch Phase													
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		21.0	21.0	21.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		20.0	58.0		38.0	38.0	38.0	
Total Split (%)	35.6%	35.6%	35.6%	35.6%	35.6%		22.2%	64.4%		42.2%	42.2%	42.2%	
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		15.0	53.0		33.0	33.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	5.0	
Lead/Lag							Lead				Lag	Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		Min	Min	Min	
Act Effct Green (s)		12.4	12.4		12.4		7.8	28.3			21.4	21.4	
Actuated g/C Ratio		0.24	0.24		0.24		0.15	0.55			0.41	0.41	
v/c Ratio		0.30	0.09		0.51		0.20	0.34			0.48	0.13	
Control Delay		21.1	1.6		23.9		26.1	6.4			14.8	4.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Delay		21.1	1.6		23.9		26.1	6.4			14.8	4.4	
LOS		C	A		C		C	A			B	A	
Approach Delay		15.2			23.9			8.0			13.5		
Approach LOS		B			C			A			B		
Queue Length 50th (ft)		23	0		40		15	41			86	0	
Queue Length 95th (ft)		64	3		101		54	92			148	21	
Internal Link Dist (ft)		206			217			489			506		
Turn Bay Length (ft)												135	
Base Capacity (vph)		741	942		742		562	3172			2292	1116	
Starvation Cap Reductn		0	0		0		0	0			0	0	
Spillback Cap Reductn		0	0		0		0	0			0	0	
Storage Cap Reductn		0	0		0		0	0			0	0	
Reduced v/c Ratio		0.13	0.04		0.22		0.10	0.20			0.29	0.08	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 51.6

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 58.4%

ICU Level of Service B























Analysis Period (min) 15

Splits and Phases: 1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	460	128	242	18	184	12	183	371	11	8	359	636
Future Volume (vph)	460	128	242	18	184	12	183	371	11	8	359	636
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		175	0		0	125		0	550		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	0.91	0.91	1.00	0.95	0.95	0.95	1.00	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.991			0.996				0.850
Flt Protected	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (prot)	1610	3285	1583	0	3493	0	1770	5065	0	1770	3539	1583
Flt Permitted	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (perm)	1610	3285	1583	0	3493	0	1770	5065	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			288		4			4				566
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1049			446			586			1047	
Travel Time (s)		23.8			10.1			13.3			23.8	
Peak Hour Factor	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	548	152	288	22	224	15	220	447	13	9	403	715
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	274	426	288	0	261	0	220	460	0	9	403	715
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		20	15		9	15		9	15		35
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	Prot
Protected Phases	3	3	3	4	4		1	6		5	2	2

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3	4	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	10.0		6.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	13.0	13.0		11.0	16.0		11.0	25.0	25.0
Total Split (s)	29.0	29.0	29.0	21.0	21.0		35.0	57.0		13.0	35.0	35.0
Total Split (%)	24.2%	24.2%	24.2%	17.5%	17.5%		29.2%	47.5%		10.8%	29.2%	29.2%
Maximum Green (s)	24.0	24.0	24.0	16.0	16.0		30.0	52.0		8.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Act Effct Green (s)	21.9	21.9	21.9		12.5		17.7	46.3		6.5	25.5	25.5
Actuated g/C Ratio	0.22	0.22	0.22		0.13		0.18	0.47		0.07	0.26	0.26
v/c Ratio	0.76	0.58	0.50		0.58		0.69	0.19		0.08	0.44	0.86
Control Delay	53.3	39.5	7.8		47.4		50.9	16.1		51.4	33.4	20.2
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	53.3	39.5	7.8		47.4		50.9	16.1		51.4	33.4	20.2
LOS	D	D	A		D		D	B		D	C	C
Approach Delay		34.1			47.4			27.4				25.2
Approach LOS		C			D			C				C
Queue Length 50th (ft)	184	136	0		85		138	58		6	115	88
Queue Length 95th (ft)	#328	201	53		126		207	94		23	179	#347
Internal Link Dist (ft)		969			366			506			967	
Turn Bay Length (ft)	275		175				125			550		
Base Capacity (vph)	404	824	613		588		555	2799		148	1111	885
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.68	0.52	0.47		0.44		0.40	0.16		0.06	0.36	0.81

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 98.2
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 30.5
 Intersection LOS: C
 Intersection Capacity Utilization 68.7%
 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.

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

Splits and Phases: 2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	36	56	99	14	0	98	660	84	34	847	132
Future Volume (vph)	69	36	56	99	14	0	98	660	84	34	847	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	275		0	245		40
Storage Lanes	1		1	0		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Fr			0.850					0.983				0.850
Flt Protected	0.950				0.958		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	1785	1863	1770	4999	0	1770	5085	1583
Flt Permitted	0.676				0.725		0.950			0.950		
Satd. Flow (perm)	1259	1863	1583	0	1350	1863	1770	4999	0	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87					27				76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			242			1047			500	
Travel Time (s)		5.4			5.5			23.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	77	40	62	110	16	0	109	733	93	38	941	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	40	62	0	126	0	109	826	0	38	941	147
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Prot
Protected Phases		4			8		5	2		1	6	6

Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	16.0		10.0	16.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	27.0	48.0		27.0	48.0	48.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	27.0%	48.0%		27.0%	48.0%	48.0%
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0	20.0	22.0	42.0		22.0	42.0	42.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	6.0		5.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Act Effct Green (s)	11.2	11.2	11.2		11.5		9.7	35.1		7.4	28.1	28.1
Actuated g/C Ratio	0.20	0.20	0.20		0.20		0.17	0.62		0.13	0.50	0.50
v/c Ratio	0.31	0.11	0.16		0.46		0.36	0.27		0.17	0.37	0.18
Control Delay	26.5	22.8	4.7		29.4		28.6	8.8		29.6	14.2	8.5
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	26.5	22.8	4.7		29.4		28.6	8.8		29.6	14.2	8.5
LOS	C	C	A		C		C	A		C	B	A
Approach Delay		18.1			29.4			11.1			14.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	22	11	0		38		33	38		12	88	16
Queue Length 95th (ft)	69	41	19		105		94	119		45	159	58
Internal Link Dist (ft)		158			162			967			420	
Turn Bay Length (ft)	100		100				275			245		40
Base Capacity (vph)	488	723	667		523		755	3764		755	3822	1208
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.16	0.06	0.09		0.24		0.14	0.22		0.05	0.25	0.12














Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 56.6
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 14.0
 Intersection Capacity Utilization 48.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St

							
Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	203	84	27	591	111	394	784
Future Volume (vph)	203	84	27	591	111	394	784
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	250	75		0	545	
Storage Lanes	2	1	1		0	1	
Taper Length (ft)	100		100			100	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.97	0.95
Frt		0.850		0.976			
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	3433	1583	1770	4963	0	3433	3539
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3433	1583	1770	4963	0	3433	3539
Right Turn on Red		Yes			Yes		
Satd. Flow (RTOR)		93		42			
Link Speed (mph)	30			30			30
Link Distance (ft)	365			500			942
Travel Time (s)	8.3			11.4			21.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	226	93	30	657	123	438	871
Shared Lane Traffic (%)							
Lane Group Flow (vph)	226	93	30	780	0	438	871
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Right	Left	R NA
Median Width(ft)	24			18			24
Link Offset(ft)	0			0			0
Crosswalk Width(ft)	16			16			16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9		9	15	
Number of Detectors	1	1	1	2		1	2
Detector Template	Left	Right	Left	Thru		Left	Thru
Leading Detector (ft)	20	20	20	100		20	100
Trailing Detector (ft)	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0		0	0
Detector 1 Size(ft)	20	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)				94			94
Detector 2 Size(ft)				6			6
Detector 2 Type				Cl+Ex			Cl+Ex
Detector 2 Channel							
Detector 2 Extend (s)				0.0			0.0
Turn Type	Prot	custom	Prot	NA		Prot	NA
Protected Phases	4	4	5	2		1	6

Lanes, Volumes, Timings

4: Daniel Webster Hwy & Dan Chan St

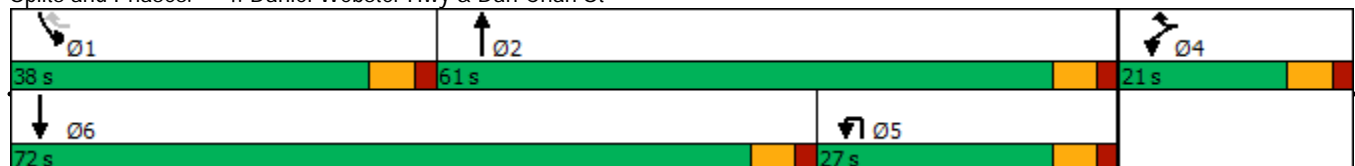


Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Permitted Phases		1					
Detector Phase	4	4	5	2		1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	10.0		10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	16.0		16.0	16.0
Total Split (s)	21.0	21.0	27.0	61.0		38.0	72.0
Total Split (%)	17.5%	17.5%	22.5%	50.8%		31.7%	60.0%
Maximum Green (s)	15.0	15.0	21.0	55.0		32.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag			Lag	Lag		Lead	Lead
Lead-Lag Optimize?			Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	Min		None	Min
Act Effect Green (s)	9.7	29.3	6.9	17.3		13.5	31.9
Actuated g/C Ratio	0.16	0.50	0.12	0.29		0.23	0.54
v/c Ratio	0.40	0.11	0.14	0.52		0.56	0.45
Control Delay	25.6	2.7	28.0	18.1		24.0	11.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	25.6	2.7	28.0	18.1		24.0	11.0
LOS	C	A	C	B		C	B
Approach Delay	19.0			18.5			15.4
Approach LOS	B			B			B
Queue Length 50th (ft)	37	0	10	77		70	66
Queue Length 95th (ft)	76	20	35	128		129	196
Internal Link Dist (ft)	285			420			862
Turn Bay Length (ft)		250	75			545	
Base Capacity (vph)	893	807	644	4534		1905	3478
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	0.25	0.12	0.05	0.17		0.23	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 58.9
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 16.9
 Intersection Capacity Utilization 46.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: Daniel Webster Hwy & Dan Chan St



Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	173	53	128	65	44	47	23	152	516	49	13	181
Future Volume (vph)	173	53	128	65	44	47	23	152	516	49	13	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		185	0		100		215		0		440
Storage Lanes	1		1	0		1		1		0		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00
Frt			0.850			0.850			0.987			
Flt Protected	0.950	0.974			0.971			0.950				0.950
Satd. Flow (prot)	1681	1724	1583	0	1809	1583	0	1770	5019	0	0	1770
Flt Permitted	0.679	0.767			0.741			0.950				0.950
Satd. Flow (perm)	1202	1357	1583	0	1380	1583	0	1770	5019	0	0	1770
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)			198			198			13			
Link Speed (mph)		30			30				30			
Link Distance (ft)		335			336				942			
Travel Time (s)		7.6			7.6				21.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	192	59	142	72	49	52	26	169	573	54	14	201
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	123	128	142	0	121	52	0	195	627	0	0	215
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2	1	1	2	1	1	1	2		1	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100	20	20	100	20	20	20	100		20	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases		4			4		5	5	2		1	1
Permitted Phases	4		4	4		4						

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	SBT	SBR	Ø9
Lane Configurations	↑↑↑		
Traffic Volume (vph)	922	40	
Future Volume (vph)	922	40	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	0.91	0.91	
Frt	0.994		
Flt Protected			
Satd. Flow (prot)	5055	0	
Flt Permitted			
Satd. Flow (perm)	5055	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	6		
Link Speed (mph)	30		
Link Distance (ft)	829		
Travel Time (s)	18.8		
Peak Hour Factor	0.90	0.90	
Adj. Flow (vph)	1024	44	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	1068	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	6	9	
Permitted Phases			

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	4	4	4	4	4	4	5	5	2		1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	16.0		11.0	11.0
Total Split (s)	18.0	18.0	18.0	18.0	18.0	18.0	15.0	15.0	30.0		22.0	22.0
Total Split (%)	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	13.6%	13.6%	27.3%		20.0%	20.0%
Maximum Green (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	24.0		16.0	16.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0			5.0	6.0		6.0
Lead/Lag							Lead	Lead	Lead		Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	Min		None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	12.1	12.1	12.1		12.1	12.1		10.0	14.0			16.7
Actuated g/C Ratio	0.20	0.20	0.20		0.20	0.20		0.16	0.23			0.27
v/c Ratio	0.52	0.48	0.30		0.44	0.11		0.67	0.54			0.44
Control Delay	32.6	29.8	3.5		28.8	0.5		38.9	22.0			22.1
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay	32.6	29.8	3.5		28.8	0.5		38.9	22.0			22.1
LOS	C	C	A		C	A		D	C			C
Approach Delay		21.2			20.3				26.0			
Approach LOS		C			C				C			
Queue Length 50th (ft)	42	44	0		39	0		68	72			65
Queue Length 95th (ft)	#113	104	21		93	0		#171	108			127
Internal Link Dist (ft)		255			256				862			
Turn Bay Length (ft)	200		185			100		215				440
Base Capacity (vph)	238	269	472		273	472		292	1997			494
Starvation Cap Reductn	0	0	0		0	0		0	0			0
Spillback Cap Reductn	0	0	0		0	0		0	0			0
Storage Cap Reductn	0	0	0		0	0		0	0			0
Reduced v/c Ratio	0.52	0.48	0.30		0.44	0.11		0.67	0.31			0.44

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	60.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	21.1
Intersection LOS:	C
Intersection Capacity Utilization:	61.4%
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.	

Lanes, Volumes, Timings

5: Daniel Webster Hwy & Danforth Rd

Splits and Phases: 5: Daniel Webster Hwy & Danforth Rd























↑ Ø2	↙ Ø1	↔ Ø4	🚶 Ø9
30 s	22 s	18 s	40 s
↙ Ø5	↓ Ø6		
15 s	37 s		

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd















Lane Group	SBT	SBR	Ø9
Detector Phase	6		
Switch Phase			
Minimum Initial (s)	10.0		4.0
Minimum Split (s)	16.0		40.0
Total Split (s)	37.0		40.0
Total Split (%)	33.6%		36%
Maximum Green (s)	31.0		34.0
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	6.0		
Lead/Lag	Lag		
Lead-Lag Optimize?	Yes		
Vehicle Extension (s)	3.0		3.0
Recall Mode	Min		None
Walk Time (s)			4.0
Flash Dont Walk (s)			30.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)	21.6		
Actuated g/C Ratio	0.36		
v/c Ratio	0.59		
Control Delay	17.2		
Queue Delay	0.0		
Total Delay	17.2		
LOS	B		
Approach Delay	18.0		
Approach LOS	B		
Queue Length 50th (ft)	112		
Queue Length 95th (ft)	148		
Internal Link Dist (ft)	749		
Turn Bay Length (ft)			
Base Capacity (vph)	2591		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.41		
Intersection Summary			

Lanes, Volumes, Timings
 6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	18	43	59	13	237	45	725	34	213	1055	39
Future Volume (vph)	65	18	43	59	13	237	45	725	34	213	1055	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	100		0	150		0	130		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.993			0.995	
Flt Protected		0.962			0.960		0.950			0.950		
Satd. Flow (prot)	0	1792	1583	0	1788	1583	1770	5050	0	1770	5060	0
Flt Permitted		0.962			0.960		0.950			0.950		
Satd. Flow (perm)	0	1792	1583	0	1788	1583	1770	5050	0	1770	5060	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			255		7			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		345			340			829			809	
Travel Time (s)		7.8			7.7			18.8			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	72	20	48	66	14	255	50	806	38	237	1172	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	48	0	80	255	50	844	0	237	1215	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		5	2		1	6	

Lanes, Volumes, Timings
 6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			3			4						
Detector Phase	3	3	3	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0	15.0	10.0	24.0		10.0	24.0	
Total Split (s)	22.0	22.0	22.0	21.0	21.0	21.0	15.0	40.0		25.0	50.0	
Total Split (%)	20.4%	20.4%	20.4%	19.4%	19.4%	19.4%	13.9%	37.0%		23.1%	46.3%	
Maximum Green (s)	17.0	17.0	17.0	16.0	16.0	16.0	10.0	35.0		20.0	45.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		10.9	10.9		10.5	10.5	8.5	49.5		19.4	62.6	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.46		0.18	0.58	
v/c Ratio		0.51	0.15		0.46	0.66	0.36	0.36		0.75	0.41	
Control Delay		55.3	1.0		53.6	14.4	53.7	22.2		48.8	21.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		55.3	1.0		53.6	14.4	53.7	22.2		48.8	21.8	
LOS		E	A		D	B	D	C		D	C	
Approach Delay		36.7			23.8			23.9			26.2	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)		61	0		53	0	33	140		158	255	
Queue Length 95th (ft)		110	0		97	73	70	219		250	323	
Internal Link Dist (ft)		265			260			749			729	
Turn Bay Length (ft)			50				150			130		
Base Capacity (vph)		282	394		264	451	168	2338		350	2934	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.33	0.12		0.30	0.57	0.30	0.36		0.68	0.41	

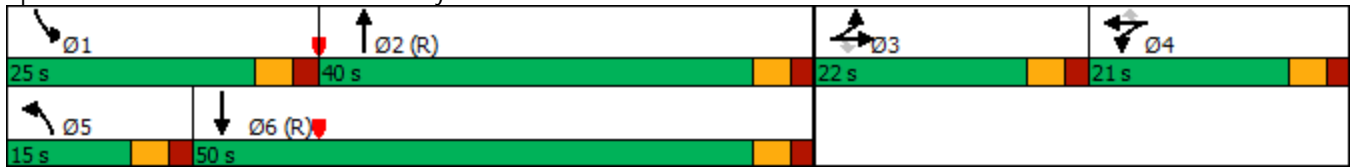
Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	108
Offset:	84 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	25.7
Intersection LOS:	C
Intersection Capacity Utilization:	50.3%
ICU Level of Service:	A
Analysis Period (min):	15

Lanes, Volumes, Timings

6: Daniel Webster Hwy & Silver Dr

Splits and Phases: 6: Daniel Webster Hwy & Silver Dr



Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	56	523	48	91	45	486	500	12	39	680	124
Future Volume (vph)	132	56	523	48	91	45	486	500	12	39	680	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		115	160		160	500		0	275		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	0.91
Frt			0.850				0.850		0.996			0.977
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5060	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5060	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			335			172			3			34
Link Speed (mph)		30			30			30				30
Link Distance (ft)		786			628			809				724
Travel Time (s)		17.9			14.3			18.4				16.5
Peak Hour Factor	0.84	0.84	0.84	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	157	67	623	62	118	58	523	538	13	43	747	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	67	623	62	118	58	523	551	0	43	883	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA	pt+ov	Split	NA	Prot	Prot	NA		Prot	NA	
Protected Phases	3	3	3 5	4	4	4	5	2		1	6	

Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3 5	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	22.5	22.5		15.0	15.0	15.0	22.5	22.5		15.0	22.5	
Total Split (s)	25.0	25.0		18.0	18.0	18.0	30.0	50.0		15.0	35.0	
Total Split (%)	23.1%	23.1%		16.7%	16.7%	16.7%	27.8%	46.3%		13.9%	32.4%	
Maximum Green (s)	20.0	20.0		13.0	13.0	13.0	25.0	45.0		10.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	C-Min		Max	C-Min	
Act Effct Green (s)	16.5	16.5	50.9	11.3	11.3	11.3	34.4	40.8		19.4	25.8	
Actuated g/C Ratio	0.15	0.15	0.47	0.10	0.10	0.10	0.32	0.38		0.18	0.24	
v/c Ratio	0.58	0.23	0.41	0.33	0.59	0.18	0.47	0.41		0.13	0.72	
Control Delay	50.5	40.6	5.6	48.9	58.3	1.3	33.1	16.0		44.3	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	50.5	40.6	5.6	48.9	58.3	1.3	33.1	16.0		44.3	39.5	
LOS	D	D	A	D	E	A	C	B		D	D	
Approach Delay		16.7			41.9			24.3			39.7	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	101	41	38	40	79	0	72	152		26	198	
Queue Length 95th (ft)	152	74	60	69	115	0	248	61		64	234	
Internal Link Dist (ft)		706			548			729			644	
Turn Bay Length (ft)	250		115	160		160	500			275		
Base Capacity (vph)	332	353	1601	220	231	340	1116	1500		324	1430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.47	0.19	0.39	0.28	0.51	0.17	0.47	0.37		0.13	0.62	

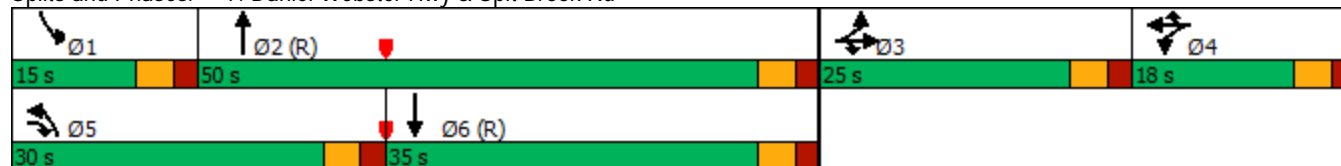
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 28.2
 Intersection Capacity Utilization 56.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

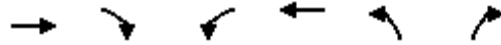
Lanes, Volumes, Timings

7: Daniel Webster Hwy & Spit Brook Rd

Splits and Phases: 7: Daniel Webster Hwy & Spit Brook Rd



Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	666	14	179	518	35	195
Future Volume (vph)	666	14	179	518	35	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.885	
Flt Protected			0.950		0.992	
Satd. Flow (prot)	1857	0	1770	1863	1635	0
Flt Permitted			0.135		0.992	
Satd. Flow (perm)	1857	0	251	1863	1635	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				212	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.92	0.92	0.85	0.85	0.76	0.76
Adj. Flow (vph)	724	15	211	609	46	257
Shared Lane Traffic (%)						
Lane Group Flow (vph)	739	0	211	609	303	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	35.1		50.7	50.7	12.0	
Actuated g/C Ratio	0.48		0.69	0.69	0.16	
v/c Ratio	0.83		0.54	0.47	0.68	
Control Delay	24.9		12.2	6.3	19.6	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	24.9		12.2	6.3	19.6	
LOS	C		B	A	B	
Approach Delay	24.9			7.8	19.6	
Approach LOS	C			A	B	
Queue Length 50th (ft)	251		24	91	35	
Queue Length 95th (ft)	436		75	159	89	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1643		496	1825	514	
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	0.45		0.43	0.33	0.59	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	73
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	16.5
Intersection LOS:	B
Intersection Capacity Utilization:	72.3%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 6th TWSC
 8: Chase Street & E Hollis Street

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↑	
Traffic Vol, veh/h	0	826	16	16	591	0	0	0	0	0	0	0
Future Vol, veh/h	0	826	16	16	591	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	11	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	86	86	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	888	17	19	687	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	911	0	0	-	1636	-
Stage 1	-	-	-	-	-	-	-	725	-
Stage 2	-	-	-	-	-	-	-	911	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	756	-	0	0	101	0
Stage 1	0	-	-	-	-	0	0	430	0
Stage 2	0	-	-	-	-	0	0	353	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	756	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	756	-	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Control Delay (s)	-	-	9.9	0	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 6th TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	22	4	21	22	14	10	211	44	9	171	12
Future Vol, veh/h	5	22	4	21	22	14	10	211	44	9	171	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	79	79	79	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	33	6	31	32	21	13	267	56	13	248	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	631	632	257	623	612	295	265	0	0	323	0	0
Stage 1	283	283	-	321	321	-	-	-	-	-	-	-
Stage 2	348	349	-	302	291	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	394	398	782	398	408	744	1299	-	-	1237	-	-
Stage 1	724	677	-	691	652	-	-	-	-	-	-	-
Stage 2	668	633	-	707	672	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	353	388	782	363	398	744	1299	-	-	1237	-	-
Mov Cap-2 Maneuver	353	388	-	363	398	-	-	-	-	-	-	-
Stage 1	715	669	-	683	644	-	-	-	-	-	-	-
Stage 2	609	625	-	659	664	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.9		15.3		0.3		0.4	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1299	-	-	408	432	1237	-
HCM Lane V/C Ratio	0.01	-	-	0.113	0.194	0.011	-
HCM Control Delay (s)	7.8	0	-	14.9	15.3	7.9	0
HCM Lane LOS	A	A	-	B	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.4	0.7	0	-

HCM 6th TWSC
 11: Crown Street & Chase Street

Intersection

Int Delay, s/veh 2.5





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	55	29	0	16	17
Future Vol, veh/h	0	55	29	0	16	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	66	66	76	76
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	68	44	0	21	22

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	112 44
Stage 1	-	-	-	-	44 -
Stage 2	-	-	-	-	68 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	890 1032
Stage 1	0	-	-	0	984 -
Stage 2	0	-	-	0	960 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	890 1032
Mov Cap-2 Maneuver	-	-	-	-	890 -
Stage 1	-	-	-	-	984 -
Stage 2	-	-	-	-	960 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	958
HCM Lane V/C Ratio	-	-	0.045
HCM Control Delay (s)	-	-	8.9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	3	337	0	0	0	0	378	140	135	467	0
Future Volume (vph)	461	3	337	0	0	0	0	378	140	135	467	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950	0.953								0.950		
Satd. Flow (prot)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.953								0.950		
Satd. Flow (perm)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			285						175			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		612			694			882				461
Travel Time (s)		13.9			15.8			20.0				10.5
Peak Hour Factor	0.83	0.83	0.83	0.90	0.90	0.90	0.80	0.80	0.80	0.77	0.77	0.77
Adj. Flow (vph)	555	4	406	0	0	0	0	473	175	175	606	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	277	282	406	0	0	0	0	473	175	175	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			24			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	21.0	16.0	
Total Split (s)	25.0	25.0	25.0					35.0	35.0	15.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%					46.7%	46.7%	20.0%	66.7%	
Maximum Green (s)	19.0	19.0	19.0					29.0	29.0	9.0	44.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	None	Min	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	16.0	16.0	16.0					15.1	15.1	8.2	25.6	
Actuated g/C Ratio	0.29	0.29	0.29					0.28	0.28	0.15	0.47	
v/c Ratio	0.56	0.57	0.61					0.48	0.31	0.34	0.36	
Control Delay	23.5	23.6	10.8					19.8	5.1	26.2	9.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	23.5	23.6	10.8					19.8	5.1	26.2	9.6	
LOS	C	C	B					B	A	C	A	
Approach Delay		18.2						15.8			13.3	
Approach LOS		B						B			B	
Queue Length 50th (ft)	85	87	32					77	0	29	65	
Queue Length 95th (ft)	158	161	94					103	28	51	79	
Internal Link Dist (ft)		532			614			802			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	629	631	771					2024	980	609	2797	
Starvation Cap Reductn	0	0	0					0	0	0	0	
Spillback Cap Reductn	0	0	0					0	0	0	0	
Storage Cap Reductn	0	0	0					0	0	0	0	
Reduced v/c Ratio	0.44	0.45	0.53					0.23	0.18	0.29	0.22	

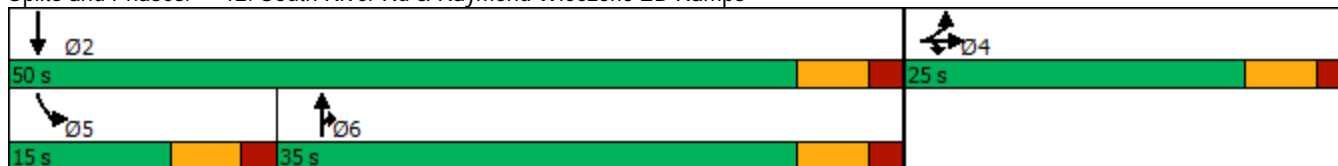
Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	54.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	15.9
Intersection Capacity Utilization:	43.8%
Analysis Period (min):	15
Intersection LOS:	B
ICU Level of Service:	A























Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	3	238	0	86	4	320	524	216	360	0
Future Volume (vph)	4	4	3	238	0	86	4	320	524	216	360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.976			0.950		0.950			0.950		
Satd. Flow (prot)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.976			0.950		0.950			0.950		
Satd. Flow (perm)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			136			595			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		245			390			714			684	
Travel Time (s)		5.6			8.9			16.2			15.5	
Peak Hour Factor	0.46	0.46	0.46	0.86	0.86	0.86	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	9	9	7	277	0	100	5	364	595	281	468	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	7	0	277	100	5	364	595	281	468	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	40.0	40.0	15.0	45.0	
Total Split (%)	8.3%	8.3%	8.3%	12.5%	12.5%	12.5%	8.3%	33.3%	33.3%	12.5%	37.5%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	34.0	34.0	9.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		4.1	4.1		9.2	24.5	4.1	14.9	28.2	9.2	28.6	
Actuated g/C Ratio		0.07	0.07		0.17	0.44	0.07	0.27	0.51	0.17	0.52	
v/c Ratio		0.13	0.02		0.94	0.13	0.04	0.38	0.54	0.49	0.25	
Control Delay		30.5	0.0		69.7	2.2	29.0	18.0	2.6	26.3	9.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		30.5	0.0		69.7	2.2	29.0	18.0	2.6	26.3	9.4	
LOS		C	A		E	A	C	B	A	C	A	
Approach Delay		22.0			51.8			8.6			15.7	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)		5	0		82	0	1	44	0	39	29	
Queue Length 95th (ft)		13	0		#257	14	11	89	22	78	85	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		134	294		295	780	131	2233	1269	573	2561	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.13	0.02		0.94	0.13	0.04	0.16	0.47	0.49	0.18	















Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	55.1
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	19.0
Intersection LOS:	B
Intersection Capacity Utilization:	56.9%
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.	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

Splits and Phases: 14: South River Rd & East Point Dr

 Ø1  Ø2	 Ø4  Ø8	 Ø9
10 s 	45 s 	10 s 
15 s 	40 s 	15 s 
 Ø5	 Ø6	40 s 

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	33%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 6th TWSC
 13: South River Rd & Somerville Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑		↔↔↔	
Traffic Vol, veh/h	6	15	834	5	5	596
Future Vol, veh/h	6	15	834	5	5	596
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	28	959	6	5	641























Major/Minor	Minor1	Major1	Major2	Major3	Major4
Conflicting Flow All	1228	483	0	0	965
Stage 1	962	-	-	-	-
Stage 2	266	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22
Pot Cap-1 Maneuver	201	530	-	-	709
Stage 1	323	-	-	-	-
Stage 2	717	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	199	530	-	-	709
Mov Cap-2 Maneuver	199	-	-	-	-
Stage 1	323	-	-	-	-
Stage 2	709	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	359	709
HCM Lane V/C Ratio	-	-	0.11	0.008
HCM Control Delay (s)	-	-	16.3	10.1
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	252	133	123	303	86	137	360	60	29	418	170
Future Volume (vph)	165	252	133	123	303	86	137	360	60	29	418	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	510		0	200		0	600		0	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frnt			0.850		0.965				0.850			0.850
Flt Protected	0.950			0.950				0.986			0.996	
Satd. Flow (prot)	1570	1637	1364	1525	3031	0	0	3075	1378	0	3089	1391
Flt Permitted	0.950			0.950				0.611			0.765	
Satd. Flow (perm)	1570	1637	1364	1525	3031	0	0	1906	1378	0	2372	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			151		26				94			154
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		947			565			834			584	
Travel Time (s)		21.5			12.8			19.0			13.3	
Peak Hour Factor	0.88	0.89	0.88	0.69	0.88	0.81	0.83	0.91	0.83	0.63	0.90	0.86
Heavy Vehicles (%)	0%	1%	3%	3%	0%	0%	0%	1%	2%	4%	1%	1%
Adj. Flow (vph)	188	283	151	178	344	106	165	396	72	46	464	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	283	151	178	450	0	0	561	72	0	510	198
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	custom













Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2				8		8	4		5
Detector Phase	5	2	2	1	6		3	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	25.0	35.0	35.0	22.0	32.0		14.0	49.0	49.0	35.0	35.0	25.0
Total Split (%)	17.9%	25.0%	25.0%	15.7%	22.9%		10.0%	35.0%	35.0%	25.0%	25.0%	17.9%
Maximum Green (s)	19.0	29.0	29.0	16.0	26.0		8.0	43.0	43.0	29.0	29.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	Min	Min	Min	Min	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	22.2	44.9	44.9	18.7	41.5			43.2	43.2		43.2	22.2
Actuated g/C Ratio	0.16	0.32	0.32	0.13	0.30			0.31	0.31		0.31	0.16
v/c Ratio	0.76	0.54	0.28	0.88	0.49			0.96	0.15		0.70	0.57
Control Delay	67.6	31.0	3.1	96.8	40.9			75.1	3.9		48.7	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	67.6	31.0	3.1	96.8	40.9			75.1	3.9		48.7	21.7
LOS	E	C	A	F	D			E	A		D	C
Approach Delay		35.3			56.8			67.0			41.2	
Approach LOS		D			E			E			D	
Queue Length 50th (ft)	168	227	14	163	175			264	0		216	35
Queue Length 95th (ft)	#309	281	25	#211	217			#388	16		284	108
Internal Link Dist (ft)		867			485			754			504	
Turn Bay Length (ft)	510			200								150
Base Capacity (vph)	248	525	540	203	915			587	489		731	349
Starvation Cap Reductn	0	0	0	0	0			0	0		0	0
Spillback Cap Reductn	0	0	0	0	0			0	0		0	0
Storage Cap Reductn	0	0	0	0	0			0	0		0	0
Reduced v/c Ratio	0.76	0.54	0.28	0.88	0.49			0.96	0.15		0.70	0.57

Intersection Summary

Area Type: CBD

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 49.9

Intersection LOS: D

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	34.0
Total Split (s)	34.0
Total Split (%)	24%
Maximum Green (s)	31.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	60
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

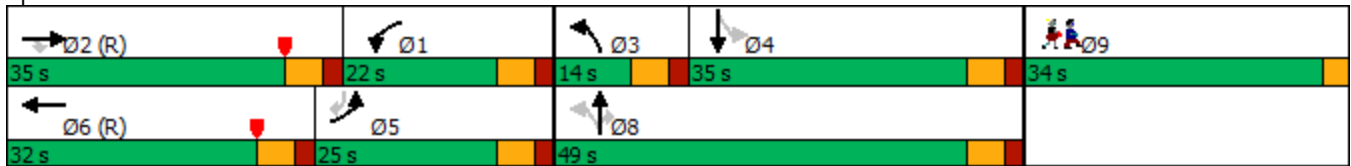
18: Elm St

Analysis Period (min) 15



























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

Queue shown is maximum after two cycles.

Splits and Phases: 18: Elm St



Lanes, Volumes, Timings
 19: Canal St & Granite Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (vph)	421	540	439	6	658	139	302	271	19	70	144	245
Future Volume (vph)	421	540	439	6	658	139	302	271	19	70	144	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	140		250	120		120	260		0
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.933				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3338	0	1805	3574	1583	1770	3574	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3338	0	1805	3574	1583	1770	3574	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		136				151		4				266
Link Speed (mph)		30			30			30				30
Link Distance (ft)		329			947			835				503
Travel Time (s)		7.5			21.5			19.0				11.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	1%	2%	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	458	587	477	7	715	151	328	295	21	76	157	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	458	1064	0	7	715	151	328	316	0	76	157	266
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	5	2		1	6	6 7	3	8		7	4	4 5

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lanes, Volumes, Timings
 19: Canal St & Granite Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	5	2		1	6	6 7	3	8		7	4	4 5
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	16.0	38.0		14.0	36.0		29.0	29.0		22.0	22.0	
Total Split (%)	11.4%	27.1%		10.0%	25.7%		20.7%	20.7%		15.7%	15.7%	
Maximum Green (s)	10.0	32.0		8.0	30.0		23.0	23.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	36.0	81.3		8.0	42.1	62.5	23.0	17.5		20.4	14.9	56.9
Actuated g/C Ratio	0.26	0.58		0.06	0.30	0.45	0.16	0.12		0.15	0.11	0.41
v/c Ratio	0.51	0.53		0.07	0.67	0.19	1.13	0.70		0.29	0.79	0.33
Control Delay	48.7	17.2		53.8	34.3	1.7	144.5	66.5		57.7	88.0	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.7	17.2		53.8	34.3	1.7	144.5	66.5		57.7	88.0	4.5
LOS	D	B		D	C	A	F	E		E	F	A
Approach Delay		26.7			28.9			106.2			38.9	
Approach LOS		C			C			F			D	
Queue Length 50th (ft)	192	249		6	204	1	-345	145		62	141	0
Queue Length 95th (ft)	257	391		m12	m244	m12	#540	192		118	#245	59
Internal Link Dist (ft)		249			867			755			423	
Turn Bay Length (ft)	200			140		250	120			260		
Base Capacity (vph)	891	1995		103	1074	790	290	590		258	212	788
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.51	0.53		0.07	0.67	0.19	1.13	0.54		0.29	0.74	0.34

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 134 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 43.4 Intersection LOS: D
 Intersection Capacity Utilization 80.0% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	37.0
Total Split (s)	37.0
Total Split (%)	26%
Maximum Green (s)	31.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

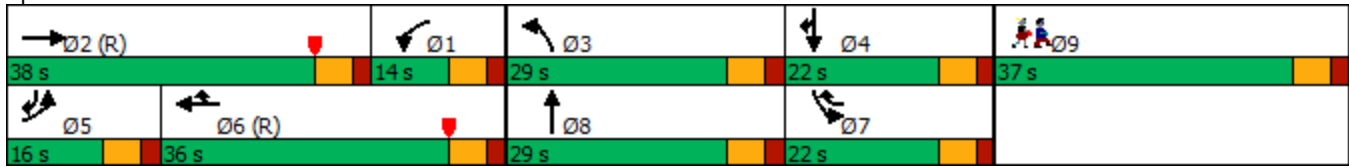
Lanes, Volumes, Timings

19: Canal St & Granite Street

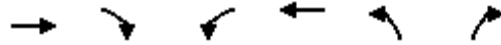
Queue shown is maximum after two cycles.

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

Splits and Phases: 19: Canal St & Granite Street

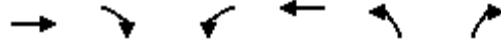


Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	485	20	195	700	55	155
Future Volume (vph)	485	20	195	700	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.900	
Flt Protected			0.950		0.987	
Satd. Flow (prot)	1853	0	1770	1863	1655	0
Flt Permitted			0.176		0.987	
Satd. Flow (perm)	1853	0	328	1863	1655	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3				107	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.85	0.85	0.88	0.88	0.75	0.75
Adj. Flow (vph)	571	24	222	795	73	207
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	222	795	280	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	26.8		42.4	42.4	13.5	
Actuated g/C Ratio	0.41		0.64	0.64	0.20	
v/c Ratio	0.79		0.51	0.67	0.66	
Control Delay	25.4		9.7	10.7	25.1	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	25.4		9.7	10.7	25.1	
LOS	C		A	B	C	
Approach Delay	25.4			10.5	25.1	
Approach LOS	C			B	C	
Queue Length 50th (ft)	206		34	184	61	
Queue Length 95th (ft)	296		60	268	121	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1739		544	1863	466	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.34		0.41	0.43	0.60	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	66.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	17.3
Intersection LOS:	B
Intersection Capacity Utilization:	62.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 2010 TWSC
 8: Chase Street & E Hollis Street

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↶	
Traffic Vol, veh/h	0	555	10	25	890	0	0	0	0	0	0	0
Future Vol, veh/h	0	555	10	25	890	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	5	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	81	81	87	87	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	685	12	29	1023	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	701	0	0	-	1782	-
Stage 1	-	-	-	-	-	-	-	1081	-
Stage 2	-	-	-	-	-	-	-	701	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	905	-	0	0	82	0
Stage 1	0	-	-	-	-	0	0	294	0
Stage 2	0	-	-	-	-	0	0	441	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	905	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	905	-	-
HCM Lane V/C Ratio	-	-	0.032	-	-
HCM Control Delay (s)	-	-	9.1	0	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 2010 TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	10	20	15	15	190	15	10	190	15
Future Vol, veh/h	5	10	5	10	20	15	15	190	15	10	190	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	63	63	63	57	57	57	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	12	6	16	32	24	26	333	26	15	292	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	760	745	304	741	743	346	315	0	0	359	0	0
Stage 1	334	334	-	398	398	-	-	-	-	-	-	-
Stage 2	426	411	-	343	345	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	323	342	736	332	343	697	1245	-	-	1200	-	-
Stage 1	680	643	-	628	603	-	-	-	-	-	-	-
Stage 2	606	595	-	672	636	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	280	328	736	310	329	697	1245	-	-	1200	-	-
Mov Cap-2 Maneuver	280	328	-	310	329	-	-	-	-	-	-	-
Stage 1	662	633	-	612	587	-	-	-	-	-	-	-
Stage 2	539	580	-	645	626	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.6		16.2		0.5		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	363	393	1200	-
HCM Lane V/C Ratio	0.021	-	-	0.064	0.182	0.013	-
HCM Control Delay (s)	8	0	-	15.6	16.2	8	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.7	0	-

HCM 2010 TWSC
 11: Crown Street & Chase Street





















Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	20	20	0	20	15
Future Vol, veh/h	0	20	20	0	20	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	44	44	75	75
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	29	45	0	27	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	74 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	29 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	935 1031
Stage 1	0	-	-	0	983 -
Stage 2	0	-	-	0	999 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	-	-	-	-	935 1031
Mov Cap-2 Maneuver	-	-	-	-	935 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	999 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

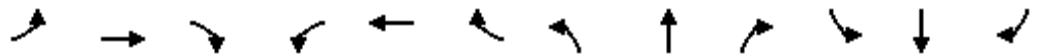
Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	974
HCM Lane V/C Ratio	-	-	0.048
HCM Control Delay (s)	-	-	8.9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	0	355	0	0	0	0	470	245	60	260	0
Future Volume (vph)	505	0	355	0	0	0	0	470	245	60	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950	0.950								0.950		
Satd. Flow (prot)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.950								0.950		
Satd. Flow (perm)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			408						285			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		553			694			882			461	
Travel Time (s)		12.6			15.8			20.0			10.5	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	580	0	408	0	0	0	0	547	285	70	302	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	290	290	408	0	0	0	0	547	285	70	302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			24			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	11.0	16.0	
Total Split (s)	20.0	20.0	20.0					25.0	25.0	15.0	40.0	
Total Split (%)	33.3%	33.3%	33.3%					41.7%	41.7%	25.0%	66.7%	
Maximum Green (s)	14.0	14.0	14.0					19.0	19.0	9.0	34.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	Min	None	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	12.9	12.9	12.9					15.2	15.2	6.6	27.9	
Actuated g/C Ratio	0.24	0.24	0.24					0.29	0.29	0.12	0.53	
v/c Ratio	0.71	0.71	0.59					0.54	0.43	0.16	0.16	
Control Delay	31.2	31.2	6.5					18.2	4.7	23.3	6.8	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	31.2	31.2	6.5					18.2	4.7	23.3	6.8	
LOS	C	C	A					B	A	C	A	
Approach Delay		21.0						13.6			9.9	
Approach LOS		C						B			A	
Queue Length 50th (ft)	88	88	0					76	0	10	24	
Queue Length 95th (ft)	#195	#195	53					113	38	25	37	
Internal Link Dist (ft)		473			614			802			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	450	450	722					1286	756	591	2301	
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	0.64	0.64	0.57					0.43	0.38	0.12	0.13	

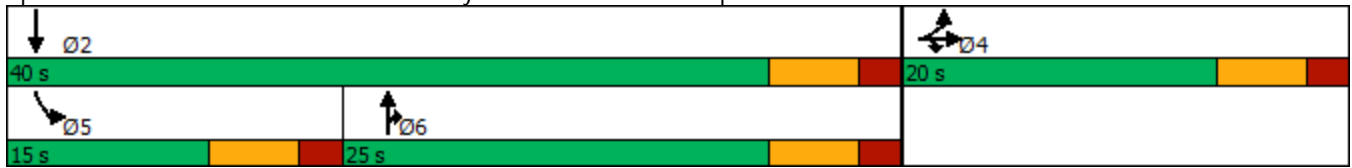
Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	16.3
Intersection LOS:	B
Intersection Capacity Utilization:	48.3%
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.	























Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	5	0	155	0	125	15	375	590	90	165	0
Future Volume (vph)	0	5	0	155	0	125	15	375	590	90	165	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt						0.850			0.850			
Flt Protected					0.950		0.950			0.950		
Satd. Flow (prot)	0	1863	1863	0	1770	1583	1770	3539	1583	3433	3539	0
Flt Permitted					0.950		0.950			0.950		
Satd. Flow (perm)	0	1863	1863	0	1770	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						160			702			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		245			390			714				684
Travel Time (s)		5.6			8.9			16.2				15.5
Peak Hour Factor	0.50	0.50	0.50	0.78	0.78	0.78	0.84	0.84	0.84	0.83	0.83	0.83
Adj. Flow (vph)	0	10	0	199	0	160	18	446	702	108	199	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	199	160	18	446	702	108	199	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type		NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	30.0	30.0	20.0	40.0	
Total Split (%)	8.7%	8.7%	8.7%	13.0%	13.0%	13.0%	8.7%	26.1%	26.1%	17.4%	34.8%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	24.0	24.0	14.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		4.2			9.6	19.6	4.2	17.5	34.5	7.5	26.2	
Actuated g/C Ratio		0.08			0.19	0.38	0.08	0.34	0.67	0.15	0.51	
v/c Ratio		0.07			0.60	0.23	0.12	0.37	0.54	0.22	0.11	
Control Delay		28.6			34.7	4.0	29.5	14.9	2.3	24.2	7.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		28.6			34.7	4.0	29.5	14.9	2.3	24.2	7.7	
LOS		C			C	A	C	B	A	C	A	
Approach Delay		28.6			21.0			7.5			13.5	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		3			56	0	5	52	0	14	11	
Queue Length 95th (ft)		10			#157	24	25	102	17	40	42	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		153			329	703	146	1753	1286	992	2456	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.07			0.60	0.23	0.12	0.25	0.55	0.11	0.08	








Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	51.4
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization:	59.0%
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.	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

Splits and Phases: 14: South River Rd & East Point Dr

 Ø1	 Ø2	 Ø4	 Ø8	 Ø9
10 s	40 s	10 s	15 s	40 s
 Ø5	 Ø6			
20 s	30 s			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	35%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 6th TWSC
 13: South River Rd & Somerville Dr

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑		←←←	
Traffic Vol, veh/h	5	10	970	5	0	315
Future Vol, veh/h	5	10	970	5	0	315
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	92	92	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	12	1054	5	0	362

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1202	530	0	0	1059
Stage 1	1057	-	-	-	-
Stage 2	145	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22
Pot Cap-1 Maneuver	208	493	-	-	653
Stage 1	288	-	-	-	-
Stage 2	827	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	208	493	-	-	653
Mov Cap-2 Maneuver	208	-	-	-	-
Stage 1	288	-	-	-	-
Stage 2	827	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	338	653
HCM Lane V/C Ratio	-	-	0.052	-
HCM Control Delay (s)	-	-	16.2	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗			↕↗	↗
Traffic Volume (vph)	75	10	35	115	5	25	55	515	125	10	585	85
Future Volume (vph)	75	10	35	115	5	25	55	515	125	10	585	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		135
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Frt			0.850		0.977			0.971				0.850
Flt Protected		0.958			0.962		0.950				0.999	
Satd. Flow (prot)	0	1785	1583	0	1751	0	1770	3437	0	0	3536	1583
Flt Permitted		0.691			0.703		0.950				0.941	
Satd. Flow (perm)	0	1287	1583	0	1279	0	1770	3437	0	0	3330	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		12			58				105
Link Speed (mph)		30			30			30				30
Link Distance (ft)		286			297			569				586
Travel Time (s)		6.5			6.8			12.9				13.3
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	90	12	42	139	6	30	61	572	139	12	722	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	42	0	175	0	61	711	0	0	734	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Perm	NA	Prot
Protected Phases		7	7		3		1	6			2	2

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	7			3						2			
Detector Phase	7	7	7	3	3		1	6		2	2	2	
Switch Phase													
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		21.0	21.0	21.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		20.0	58.0		38.0	38.0	38.0	
Total Split (%)	35.6%	35.6%	35.6%	35.6%	35.6%		22.2%	64.4%		42.2%	42.2%	42.2%	
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		15.0	53.0		33.0	33.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	5.0	
Lead/Lag							Lead				Lag	Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		Min	Min	Min	
Act Effct Green (s)		13.7	13.7		13.7		8.1	31.5			24.4	24.4	
Actuated g/C Ratio		0.24	0.24		0.24		0.14	0.56			0.44	0.44	
v/c Ratio		0.33	0.09		0.55		0.24	0.36			0.51	0.14	
Control Delay		23.1	1.7		26.4		28.8	6.8			15.4	4.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Delay		23.1	1.7		26.4		28.8	6.8			15.4	4.1	
LOS		C	A		C		C	A			B	A	
Approach Delay		16.8			26.4			8.5			14.0		
Approach LOS		B			C			A			B		
Queue Length 50th (ft)		28	0		47		18	50			101	0	
Queue Length 95th (ft)		75	3		116		63	108			172	22	
Internal Link Dist (ft)		206			217			489			506		
Turn Bay Length (ft)												135	
Base Capacity (vph)		672	867		674		513	3054			2126	1048	
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		0.15	0.05		0.26		0.12	0.23			0.35	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 56

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 62.0%

ICU Level of Service B






















Analysis Period (min) 15

Splits and Phases: 1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	140	265	20	200	15	200	405	10	10	395	695
Future Volume (vph)	505	140	265	20	200	15	200	405	10	10	395	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		175	0		0	125		0	550		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	0.91	0.91	1.00	0.95	0.95	0.95	1.00	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.991			0.996				0.850
Flt Protected	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (prot)	1610	3285	1583	0	3493	0	1770	5065	0	1770	3539	1583
Flt Permitted	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (perm)	1610	3285	1583	0	3493	0	1770	5065	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			315		5			4				546
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1049			446			586				1047
Travel Time (s)		23.8			10.1			13.3				23.8
Peak Hour Factor	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	601	167	315	24	244	18	241	488	12	11	444	781
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	300	468	315	0	286	0	241	500	0	11	444	781
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		20	15		9	15		9	15		35
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	Prot
Protected Phases	3	3	3	4	4		1	6		5	2	2

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3	4	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	10.0		6.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	13.0	13.0		11.0	16.0		11.0	25.0	25.0
Total Split (s)	29.0	29.0	29.0	21.0	21.0		35.0	57.0		13.0	35.0	35.0
Total Split (%)	24.2%	24.2%	24.2%	17.5%	17.5%		29.2%	47.5%		10.8%	29.2%	29.2%
Maximum Green (s)	24.0	24.0	24.0	16.0	16.0		30.0	52.0		8.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Act Effect Green (s)	23.5	23.5	23.5		13.4		19.6	51.2		6.5	28.8	28.8
Actuated g/C Ratio	0.22	0.22	0.22		0.13		0.19	0.49		0.06	0.27	0.27
v/c Ratio	0.84	0.64	0.53		0.64		0.73	0.20		0.10	0.46	0.94
Control Delay	62.4	43.4	8.0		51.3		54.7	16.4		53.0	35.0	32.8
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	62.4	43.4	8.0		51.3		54.7	16.4		53.0	35.0	32.8
LOS	E	D	A		D		D	B		D	C	C
Approach Delay		38.4			51.3			28.8				33.7
Approach LOS		D			D			C				C
Queue Length 50th (ft)	218	162	0		98		159	65		7	133	187
Queue Length 95th (ft)	#384	226	55		139		225	102		27	202	#488
Internal Link Dist (ft)		969			366			506			967	
Turn Bay Length (ft)	275		175				125			550		
Base Capacity (vph)	370	757	607		540		510	2613		135	1019	844
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.81	0.62	0.52		0.53		0.47	0.19		0.08	0.44	0.93

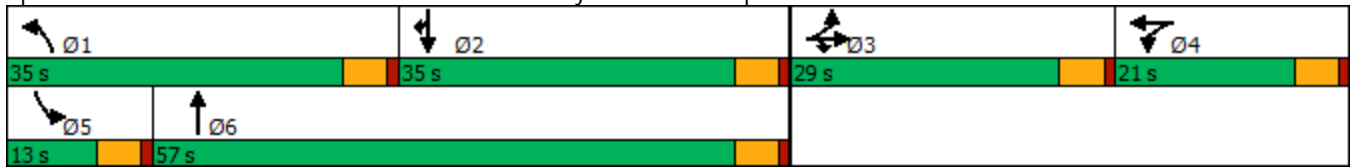
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 105.5
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 35.6
 Intersection LOS: D
 Intersection Capacity Utilization 73.3%
 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.

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

Splits and Phases: 2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lanes, Volumes, Timings
 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Future Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	275		0	245		40
Storage Lanes	1		1	0		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Fr			0.850					0.983				0.850
Flt Protected	0.950				0.958		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	1785	1863	1770	4999	0	1770	5085	1583
Flt Permitted	0.668				0.721		0.950			0.950		
Satd. Flow (perm)	1244	1863	1583	0	1343	1863	1770	4999	0	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87					27				76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			242			1047			500	
Travel Time (s)		5.4			5.5			23.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	44	67	122	17	0	117	800	100	39	1028	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	44	67	0	139	0	117	900	0	39	1028	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Prot
Protected Phases		4			8		5	2		1	6	6

Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	16.0		10.0	16.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	27.0	48.0		27.0	48.0	48.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	27.0%	48.0%		27.0%	48.0%	48.0%
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0	20.0	22.0	42.0		22.0	42.0	42.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	6.0		5.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Act Effct Green (s)	12.2	12.2	12.2		12.6		10.3	39.1		7.5	31.7	31.7
Actuated g/C Ratio	0.20	0.20	0.20		0.20		0.17	0.63		0.12	0.51	0.51
v/c Ratio	0.34	0.12	0.17		0.51		0.40	0.28		0.18	0.39	0.19
Control Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
LOS	C	C	A		C		C	A		C	B	A
Approach Delay		20.0			32.8			11.7			14.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	27	14	0		47		40	46		14	104	20
Queue Length 95th (ft)	79	47	23		124		109	137		50	186	68
Internal Link Dist (ft)		158			162			967			420	
Turn Bay Length (ft)	100		100				275			245		40
Base Capacity (vph)	445	667	622		481		697	3545		697	3597	1142
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.19	0.07	0.11		0.29		0.17	0.25		0.06	0.29	0.14

Intersection Summary



















Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 61.7
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 14.8
 Intersection Capacity Utilization 50.6%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St

							
Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	 			  		 	 
Traffic Volume (vph)	220	90	30	645	120	430	860
Future Volume (vph)	220	90	30	645	120	430	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	250	75		0	545	
Storage Lanes	2	1	1		0	1	
Taper Length (ft)	100		100			100	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.97	0.95
Frt		0.850		0.977			
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	3433	1583	1770	4968	0	3433	3539
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3433	1583	1770	4968	0	3433	3539
Right Turn on Red		Yes			Yes		
Satd. Flow (RTOR)		100		41			
Link Speed (mph)	30			30			30
Link Distance (ft)	365			500			942
Travel Time (s)	8.3			11.4			21.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	244	100	33	717	133	478	956
Shared Lane Traffic (%)							
Lane Group Flow (vph)	244	100	33	850	0	478	956
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Right	Left	R NA
Median Width(ft)	24			18			24
Link Offset(ft)	0			0			0
Crosswalk Width(ft)	16			16			16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9		9	15	
Number of Detectors	1	1	1	2		1	2
Detector Template	Left	Right	Left	Thru		Left	Thru
Leading Detector (ft)	20	20	20	100		20	100
Trailing Detector (ft)	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0		0	0
Detector 1 Size(ft)	20	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)				94			94
Detector 2 Size(ft)				6			6
Detector 2 Type				Cl+Ex			Cl+Ex
Detector 2 Channel							
Detector 2 Extend (s)				0.0			0.0
Turn Type	Prot	custom	Prot	NA		Prot	NA
Protected Phases	4	4	5	2		1	6

Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St



Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Permitted Phases		1					
Detector Phase	4	4	5	2		1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	10.0		10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	16.0		16.0	16.0
Total Split (s)	21.0	21.0	27.0	61.0		38.0	72.0
Total Split (%)	17.5%	17.5%	22.5%	50.8%		31.7%	60.0%
Maximum Green (s)	15.0	15.0	21.0	55.0		32.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag			Lag	Lag		Lead	Lead
Lead-Lag Optimize?			Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	Min		None	Min
Act Effect Green (s)	10.4	31.2	7.2	19.3		14.6	35.0
Actuated g/C Ratio	0.17	0.50	0.11	0.31		0.23	0.56
v/c Ratio	0.43	0.12	0.16	0.55		0.60	0.49
Control Delay	27.6	2.8	30.3	19.0		25.8	11.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	27.6	2.8	30.3	19.0		25.8	11.3
LOS	C	A	C	B		C	B
Approach Delay	20.4			19.4			16.2
Approach LOS	C			B			B
Queue Length 50th (ft)	42	0	12	90		81	77
Queue Length 95th (ft)	88	22	40	149		150	227
Internal Link Dist (ft)	285			420			862
Turn Bay Length (ft)		250	75			545	
Base Capacity (vph)	839	800	606	4357		1791	3401
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	0.29	0.13	0.05	0.20		0.27	0.28

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 62.8
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 49.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Daniel Webster Hwy & Dan Chan St



Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	190	60	140	70	50	50	25	165	565	55	15	200
Future Volume (vph)	190	60	140	70	50	50	25	165	565	55	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		185	0		100		215		0		440
Storage Lanes	1		1	0		1		1		0		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00
Frt			0.850			0.850			0.987			
Flt Protected	0.950	0.974			0.972			0.950				0.950
Satd. Flow (prot)	1681	1724	1583	0	1811	1583	0	1770	5019	0	0	1770
Flt Permitted	0.671	0.763			0.737			0.950				0.950
Satd. Flow (perm)	1187	1350	1583	0	1373	1583	0	1770	5019	0	0	1770
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)			198			198			13			
Link Speed (mph)		30			30				30			
Link Distance (ft)		335			336				942			
Travel Time (s)		7.6			7.6				21.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	211	67	156	78	56	56	28	183	628	61	17	222
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	135	143	156	0	134	56	0	211	689	0	0	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2	1	1	2	1	1	1	2		1	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100	20	20	100	20	20	20	100		20	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases		4			4		5	5	2		1	1
Permitted Phases	4		4	4		4						

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	SBT	SBR	Ø9
Lane Configurations	↑↑↑		
Traffic Volume (vph)	1010	45	
Future Volume (vph)	1010	45	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	0.91	0.91	
Frt	0.994		
Flt Protected			
Satd. Flow (prot)	5055	0	
Flt Permitted			
Satd. Flow (perm)	5055	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	6		
Link Speed (mph)	30		
Link Distance (ft)	829		
Travel Time (s)	18.8		
Peak Hour Factor	0.90	0.90	
Adj. Flow (vph)	1122	50	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	1172	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	6	9	
Permitted Phases			

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	4	4	4	4	4	4	5	5	2		1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	16.0		11.0	11.0
Total Split (s)	18.0	18.0	18.0	18.0	18.0	18.0	15.0	15.0	30.0		22.0	22.0
Total Split (%)	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	13.6%	13.6%	27.3%		20.0%	20.0%
Maximum Green (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	24.0		16.0	16.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0		5.0	6.0			6.0
Lead/Lag							Lead	Lead	Lead		Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	Min		None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	12.1	12.1	12.1		12.1	12.1		10.1	15.1			18.4
Actuated g/C Ratio	0.19	0.19	0.19		0.19	0.19		0.16	0.24			0.29
v/c Ratio	0.60	0.56	0.34		0.52	0.12		0.76	0.57			0.47
Control Delay	39.1	35.2	4.6		32.9	0.5		47.2	23.2			22.5
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay	39.1	35.2	4.6		32.9	0.5		47.2	23.2			22.5
LOS	D	D	A		C	A		D	C			C
Approach Delay		25.4			23.4				28.9			
Approach LOS		C			C				C			
Queue Length 50th (ft)	51	53	0		47	0		80	84			76
Queue Length 95th (ft)	#137	#135	28		#116	0		#200	124			143
Internal Link Dist (ft)		255			256				862			
Turn Bay Length (ft)	200		185			100		215				440
Base Capacity (vph)	224	255	460		260	460		279	1908			514
Starvation Cap Reductn	0	0	0		0	0		0	0			0
Spillback Cap Reductn	0	0	0		0	0		0	0			0
Storage Cap Reductn	0	0	0		0	0		0	0			0
Reduced v/c Ratio	0.60	0.56	0.34		0.52	0.12		0.76	0.36			0.46

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 63.7
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 22.7
 Intersection LOS: C
 Intersection Capacity Utilization 65.4%
 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.

Lanes, Volumes, Timings

5: Daniel Webster Hwy & Danforth Rd

Splits and Phases: 5: Daniel Webster Hwy & Danforth Rd























↑ Ø2	↙ Ø1	↔ Ø4	🚶 Ø9
30 s	22 s	18 s	40 s
↙ Ø5	↓ Ø6		
15 s	37 s		

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd















Lane Group	SBT	SBR	Ø9
Detector Phase	6		
Switch Phase			
Minimum Initial (s)	10.0		4.0
Minimum Split (s)	16.0		40.0
Total Split (s)	37.0		40.0
Total Split (%)	33.6%		36%
Maximum Green (s)	31.0		34.0
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	6.0		
Lead/Lag	Lag		
Lead-Lag Optimize?	Yes		
Vehicle Extension (s)	3.0		3.0
Recall Mode	Min		None
Walk Time (s)			4.0
Flash Dont Walk (s)			30.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)	24.5		
Actuated g/C Ratio	0.38		
v/c Ratio	0.60		
Control Delay	16.8		
Queue Delay	0.0		
Total Delay	16.8		
LOS	B		
Approach Delay	17.8		
Approach LOS	B		
Queue Length 50th (ft)	127		
Queue Length 95th (ft)	164		
Internal Link Dist (ft)	749		
Turn Bay Length (ft)			
Base Capacity (vph)	2475		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.47		
Intersection Summary			

Lanes, Volumes, Timings
 6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	20	45	65	15	260	50	795	35	235	1155	45
Future Volume (vph)	70	20	45	65	15	260	50	795	35	235	1155	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	100		0	150		0	130		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.994			0.994	
Flt Protected		0.962			0.961		0.950			0.950		
Satd. Flow (prot)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5055	0
Flt Permitted		0.962			0.961		0.950			0.950		
Satd. Flow (perm)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5055	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			280		6			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		345			340			829			809	
Travel Time (s)		7.8			7.7			18.8			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	78	22	50	72	16	280	56	883	39	261	1283	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	50	0	88	280	56	922	0	261	1333	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		5	2		1	6	

Lanes, Volumes, Timings
6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			3			4						
Detector Phase	3	3	3	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0	15.0	10.0	24.0		10.0	24.0	
Total Split (s)	22.0	22.0	22.0	21.0	21.0	21.0	15.0	40.0		25.0	50.0	
Total Split (%)	20.4%	20.4%	20.4%	19.4%	19.4%	19.4%	13.9%	37.0%		23.1%	46.3%	
Maximum Green (s)	17.0	17.0	17.0	16.0	16.0	16.0	10.0	35.0		20.0	45.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		11.3	11.3		11.0	11.0	8.6	45.5		20.2	59.2	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.42		0.19	0.55	
v/c Ratio		0.53	0.16		0.49	0.68	0.40	0.43		0.79	0.48	
Control Delay		55.5	1.0		53.9	14.2	55.0	24.4		48.6	24.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		55.5	1.0		53.9	14.2	55.0	24.4		48.6	24.1	
LOS		E	A		D	B	E	C		D	C	
Approach Delay		37.3			23.7			26.1			28.2	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)		67	0		59	0	37	164		170	284	
Queue Length 95th (ft)		117	0		104	76	77	235		#300	349	
Internal Link Dist (ft)		265			260			749			729	
Turn Bay Length (ft)			50				150			130		
Base Capacity (vph)		282	394		266	474	167	2134		351	2775	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.35	0.13		0.33	0.59	0.34	0.43		0.74	0.48	

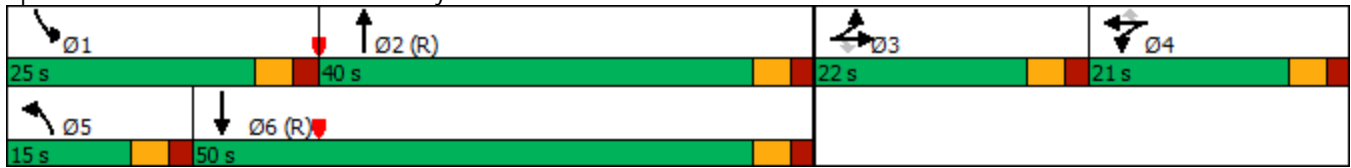
Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	108
Offset:	84 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	27.4
Intersection LOS:	C
Intersection Capacity Utilization	53.3%
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.	

Lanes, Volumes, Timings

6: Daniel Webster Hwy & Silver Dr

Splits and Phases: 6: Daniel Webster Hwy & Silver Dr



Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	60	570	55	100	50	530	545	15	45	745	135
Future Volume (vph)	145	60	570	55	100	50	530	545	15	45	745	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		115	160		160	500		0	275		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	0.91
Frt			0.850				0.850		0.996			0.977
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5060	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5060	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			296			172			3			33
Link Speed (mph)		30			30			30				30
Link Distance (ft)		786			628			809				724
Travel Time (s)		17.9			14.3			18.4				16.5
Peak Hour Factor	0.84	0.84	0.84	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	173	71	679	71	130	65	570	586	16	49	819	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	71	679	71	130	65	570	602	0	49	967	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA	pt+ov	Split	NA	Prot	Prot	NA		Prot	NA	
Protected Phases	3	3	3 5	4	4	4	5	2		1	6	

Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3 5	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	22.5	22.5		15.0	15.0	15.0	22.5	22.5		15.0	22.5	
Total Split (s)	25.0	25.0		18.0	18.0	18.0	30.0	50.0		15.0	35.0	
Total Split (%)	23.1%	23.1%		16.7%	16.7%	16.7%	27.8%	46.3%		13.9%	32.4%	
Maximum Green (s)	20.0	20.0		13.0	13.0	13.0	25.0	45.0		10.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	C-Min		Max	C-Min	
Act Effct Green (s)	17.2	17.2	49.3	11.5	11.5	11.5	32.1	42.2		17.1	27.2	
Actuated g/C Ratio	0.16	0.16	0.46	0.11	0.11	0.11	0.30	0.39		0.16	0.25	
v/c Ratio	0.61	0.23	0.47	0.37	0.65	0.20	0.55	0.43		0.17	0.74	
Control Delay	51.1	40.3	7.3	50.1	61.2	1.4	38.7	13.7		46.1	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.1	40.3	7.3	50.1	61.2	1.4	38.7	13.7		46.1	39.5	
LOS	D	D	A	D	E	A	D	B		D	D	
Approach Delay		18.0			43.6			25.9			39.8	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	110	42	56	46	87	0	86	164		31	215	
Queue Length 95th (ft)	166	78	79	77	125	0	268	65		70	260	
Internal Link Dist (ft)		706			548			729			644	
Turn Bay Length (ft)	250		115	160		160	500			275		
Base Capacity (vph)	330	351	1523	217	228	338	1040	1500		285	1429	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.20	0.45	0.33	0.57	0.19	0.55	0.40		0.17	0.68	

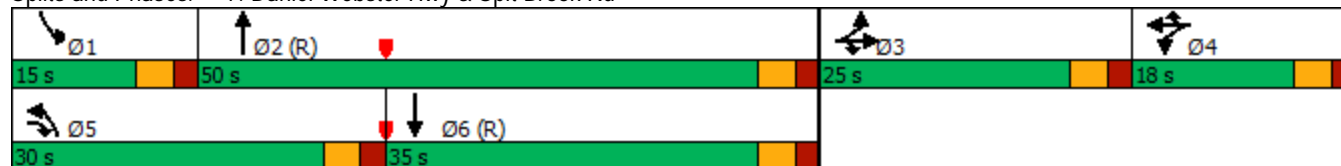
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 29.3
 Intersection Capacity Utilization 59.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

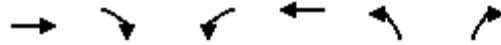
Lanes, Volumes, Timings

7: Daniel Webster Hwy & Spit Brook Rd

Splits and Phases: 7: Daniel Webster Hwy & Spit Brook Rd



Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	730	15	195	565	40	215
Future Volume (vph)	730	15	195	565	40	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.886	
Flt Protected			0.950		0.992	
Satd. Flow (prot)	1857	0	1770	1863	1637	0
Flt Permitted			0.114		0.992	
Satd. Flow (perm)	1857	0	212	1863	1637	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				202	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.92	0.92	0.85	0.85	0.76	0.76
Adj. Flow (vph)	793	16	229	665	53	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	809	0	229	665	336	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	41.4		57.5	57.5	13.3	
Actuated g/C Ratio	0.51		0.71	0.71	0.16	
v/c Ratio	0.85		0.64	0.50	0.77	
Control Delay	26.5		20.4	6.7	28.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	26.5		20.4	6.7	28.3	
LOS	C		C	A	C	
Approach Delay	26.5			10.2	28.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	336		41	135	61	
Queue Length 95th (ft)	516		113	175	135	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1514		450	1769	478	
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	0.53		0.51	0.38	0.70	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	81.2
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	19.7
Intersection LOS:	B
Intersection Capacity Utilization:	78.1%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 6th TWSC
 8: Chase Street & E Hollis Street

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↖	
Traffic Vol, veh/h	0	905	20	20	645	0	0	0	0	0	0	0
Future Vol, veh/h	0	905	20	20	645	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	11	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	86	86	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	973	22	23	750	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1001	0	0	-	1797	-
Stage 1	-	-	-	-	-	-	-	796	-
Stage 2	-	-	-	-	-	-	-	1001	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	700	-	0	0	80	0
Stage 1	0	-	-	-	-	0	0	399	0
Stage 2	0	-	-	-	-	0	0	321	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	700	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	700	-	-
HCM Lane V/C Ratio	-	-	0.033	-	-
HCM Control Delay (s)	-	-	10.3	0	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 6th TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	5	25	25	15	10	230	50	10	185	15
Future Vol, veh/h	5	25	5	25	25	15	10	230	50	10	185	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	79	79	79	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	37	7	37	37	22	13	291	63	14	268	22

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	685	687	279	678	667	323	290	0	0	354	0	0
Stage 1	307	307	-	349	349	-	-	-	-	-	-	-
Stage 2	378	380	-	329	318	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	362	370	760	366	380	718	1272	-	-	1205	-	-
Stage 1	703	661	-	667	633	-	-	-	-	-	-	-
Stage 2	644	614	-	684	654	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	318	360	760	327	370	718	1272	-	-	1205	-	-
Mov Cap-2 Maneuver	318	360	-	327	370	-	-	-	-	-	-	-
Stage 1	694	652	-	658	625	-	-	-	-	-	-	-
Stage 2	580	606	-	630	645	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.9		17		0.3		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	381	394	1205	-
HCM Lane V/C Ratio	0.01	-	-	0.137	0.243	0.012	-
HCM Control Delay (s)	7.9	0	-	15.9	17	8	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.5	0.9	0	-

HCM 6th TWSC
 11: Crown Street & Chase Street

Intersection

Int Delay, s/veh 2.8





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	60	30	0	20	20
Future Vol, veh/h	0	60	30	0	20	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	66	66	76	76
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	74	45	0	26	26

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	119 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	74 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	882 1031
Stage 1	0	-	-	0	983 -
Stage 2	0	-	-	0	954 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	-	-	-	-	882 1031
Mov Cap-2 Maneuver	-	-	-	-	882 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	954 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	951
HCM Lane V/C Ratio	-	-	0.055
HCM Control Delay (s)	-	-	9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	5	370	0	0	0	0	415	155	150	510	0
Future Volume (vph)	505	5	370	0	0	0	0	415	155	150	510	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950	0.953								0.950		
Satd. Flow (prot)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.953								0.950		
Satd. Flow (perm)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			251						194			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		612			694			882				461
Travel Time (s)		13.9			15.8			20.0				10.5
Peak Hour Factor	0.83	0.83	0.83	0.90	0.90	0.90	0.80	0.80	0.80	0.77	0.77	0.77
Adj. Flow (vph)	608	6	446	0	0	0	0	519	194	195	662	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	304	310	446	0	0	0	0	519	194	195	662	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			24			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	21.0	16.0	
Total Split (s)	25.0	25.0	25.0					35.0	35.0	15.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%					46.7%	46.7%	20.0%	66.7%	
Maximum Green (s)	19.0	19.0	19.0					29.0	29.0	9.0	44.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	None	Min	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	16.6	16.6	16.6					15.8	15.8	8.2	30.1	
Actuated g/C Ratio	0.28	0.28	0.28					0.27	0.27	0.14	0.51	
v/c Ratio	0.64	0.65	0.71					0.55	0.34	0.41	0.37	
Control Delay	26.8	27.3	16.5					21.2	5.0	28.0	9.5	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	26.8	27.3	16.5					21.2	5.0	28.0	9.5	
LOS	C	C	B					C	A	C	A	
Approach Delay		22.6						16.8			13.7	
Approach LOS		C						B			B	
Queue Length 50th (ft)	98	102	57					88	0	34	74	
Queue Length 95th (ft)	182	186	142					112	28	58	86	
Internal Link Dist (ft)		532			614			802			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	552	554	689					1776	891	534	2695	
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	0.55	0.56	0.65					0.29	0.22	0.37	0.25	

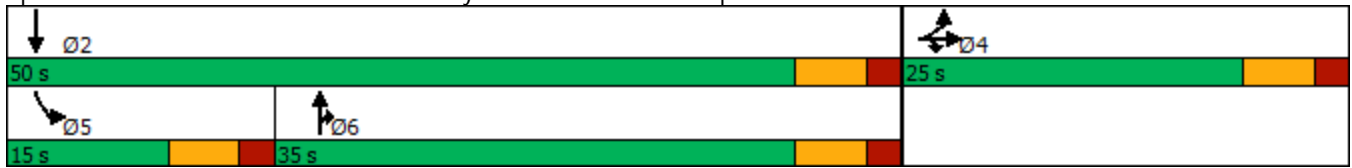
Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	59
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	18.1
Intersection LOS:	B
Intersection Capacity Utilization:	47.0%
ICU Level of Service:	A
Analysis Period (min):	15

Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	5	260	0	95	5	350	575	235	395	0
Future Volume (vph)	5	5	5	260	0	95	5	350	575	235	395	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.976			0.950		0.950			0.950		
Satd. Flow (prot)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.976			0.950		0.950			0.950		
Satd. Flow (perm)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			136			653			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		245			390			714				684
Travel Time (s)		5.6			8.9			16.2				15.5
Peak Hour Factor	0.46	0.46	0.46	0.86	0.86	0.86	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	11	11	11	302	0	110	6	398	653	305	513	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	11	0	302	110	6	398	653	305	513	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	40.0	40.0	15.0	45.0	
Total Split (%)	8.3%	8.3%	8.3%	12.5%	12.5%	12.5%	8.3%	33.3%	33.3%	12.5%	37.5%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	34.0	34.0	9.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		4.1	4.1		9.2	24.6	4.1	16.6	30.0	9.2	30.4	
Actuated g/C Ratio		0.07	0.07		0.16	0.43	0.07	0.29	0.53	0.16	0.53	
v/c Ratio		0.17	0.04		1.05	0.14	0.05	0.39	0.57	0.55	0.27	
Control Delay		32.5	0.2		98.9	2.9	30.6	17.5	2.8	28.8	9.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		32.5	0.2		98.9	2.9	30.6	17.5	2.8	28.8	9.1	
LOS		C	A		F	A	C	B	A	C	A	
Approach Delay		21.7			73.3			8.5			16.5	
Approach LOS		C			E			A			B	
Queue Length 50th (ft)		7	0		95	0	2	49	0	44	33	
Queue Length 95th (ft)		15	0		#296	19	13	96	22	87	92	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		131	291		287	762	127	2170	1272	557	2489	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.17	0.04		1.05	0.14	0.05	0.18	0.51	0.55	0.21	















Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	56.9
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	23.0
Intersection LOS:	C
Intersection Capacity Utilization:	60.6%
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.	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

Splits and Phases: 14: South River Rd & East Point Dr

 Ø1  Ø2	 Ø4  Ø8	 Ø9
10 s 	45 s 	10 s 
 Ø5  Ø6		
15 s 	40 s 	15 s 
		40 s 

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	33%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 6th TWSC
 13: South River Rd & Somerville Dr





















Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	
Traffic Vol, veh/h	5	15	910	5	5	650
Future Vol, veh/h	5	15	910	5	5	650
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	28	1046	6	5	699

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1339	526	0	0	1052	0
Stage 1	1049	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	173	496	-	-	657	-
Stage 1	291	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	171	496	-	-	657	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	657
HCM Lane V/C Ratio	-	-	0.112	0.008
HCM Control Delay (s)	-	-	17.1	10.5
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

Lanes, Volumes, Timings
15: Elm St & Valley St













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	25	10	345	25	340	20	575	140	305	805	10
Future Volume (vph)	20	25	10	345	25	340	20	575	140	305	805	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	170		125	100		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Frt		0.974				0.850			0.850		0.996	
Flt Protected		0.979			0.956			0.997		0.950		
Satd. Flow (prot)	0	1812	0	0	1798	1599	0	3599	1615	1787	3596	0
Flt Permitted		0.474			0.679			0.842		0.950		
Satd. Flow (perm)	0	877	0	0	1277	1599	0	3040	1615	1787	3596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				374			141		3	
Link Speed (mph)		30			30			30		30		30
Link Distance (ft)		400			550			619		407		407
Travel Time (s)		9.1			12.5			14.1		9.3		9.3
Peak Hour Factor	0.53	0.75	0.58	0.86	0.79	0.91	0.53	0.95	0.85	0.93	0.94	0.45
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	38	33	17	401	32	374	38	605	165	328	856	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	433	374	0	643	165	328	878	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA		Perm	NA	pt+ov	Perm	NA	Prot	Prot	NA	
Protected Phases		8			4	4 5		6	6	5	2	
Permitted Phases	8			4			6					
Detector Phase	8	8		4	4	4 5	6	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	

Lanes, Volumes, Timings

15: Elm St & Valley St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	29.0

Lanes, Volumes, Timings
15: Elm St & Valley St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	25.0	25.0		25.0	25.0		25.0	25.0	25.0	15.0	40.0	
Total Split (%)	26.6%	26.6%		26.6%	26.6%		26.6%	26.6%	26.6%	16.0%	42.6%	
Maximum Green (s)	19.0	19.0		19.0	19.0		19.0	19.0	19.0	9.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		19.4		19.4	33.8		19.4	19.4	9.2	34.7		
Actuated g/C Ratio		0.27		0.27	0.48		0.27	0.27	0.13	0.49		
v/c Ratio		0.35		1.24	0.39		0.77	0.30	1.41	0.50		
Control Delay		26.6		156.2	2.6		33.4	8.6	238.7	15.2		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.2		
Total Delay		26.6		156.2	2.6		33.4	8.6	238.7	15.5		
LOS		C		F	A		C	A	F	B		
Approach Delay		26.6		85.0			28.4			76.2		
Approach LOS		C		F			C			E		
Queue Length 50th (ft)		23		-209	0		119	7	-173	105		
Queue Length 95th (ft)		71		#477	31		#331	57	#470	296		
Internal Link Dist (ft)		320		470			539			327		
Turn Bay Length (ft)					200			125	100			
Base Capacity (vph)		248		350	959		833	544	232	1766		
Starvation Cap Reductn		0		0	0		0	0	0	293		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.35		1.24	0.39		0.77	0.30	1.41	0.60		

Intersection Summary

Area Type:	Other
Cycle Length:	94
Actuated Cycle Length:	70.8
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.41
Intersection Signal Delay:	63.8
Intersection LOS:	E
Intersection Capacity Utilization:	81.1%
ICU Level of Service:	D
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Lanes, Volumes, Timings

15: Elm St & Valley St




















Splits and Phases: 15: Elm St & Valley St

↓ Ø2	← Ø4	⚣ Ø9
40 s	25 s	29 s
↙ Ø5	↕ Ø6	→ Ø8
15 s	25 s	25 s

Lanes, Volumes, Timings
 15: Elm St & Valley St

Lane Group	Ø9
Total Split (s)	29.0
Total Split (%)	31%
Maximum Green (s)	27.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	20.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
16: Elm St & Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	245	0	0	5	195	675	0	5	875	35
Future Volume (vph)	30	0	245	0	0	5	195	675	0	5	875	35
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	0.95	0.95	0.95
Frt			0.850		0.865							0.993
Flt Protected		0.950					0.950					0.999
Satd. Flow (prot)	0	1805	1615	0	1644	0	1805	1900	0	0	3548	0
Flt Permitted		0.950					0.950					0.777
Satd. Flow (perm)	0	1805	1615	0	1644	0	1805	1900	0	0	2759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			306		584							4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		388			270			407				709
Travel Time (s)		8.8			6.1			9.3				16.1
Peak Hour Factor	0.69	0.92	0.80	0.25	0.92	0.25	0.91	0.92	0.92	0.38	0.95	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	43	0	306	0	0	20	214	734	0	13	921	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	306	0	20	0	214	734	0	0	977	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA	pt+ov		NA		Prot	NA		Perm	NA	
Protected Phases	3	3	3 1	4	4		1	6				2
Permitted Phases										2		
Detector Phase	3	3	3 1	4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		5.0	15.0		10.0	10.0	
Minimum Split (s)	10.0	10.0		11.0	11.0		11.0	25.0		25.0	25.0	
Total Split (s)	20.0	20.0		15.0	15.0		15.0	40.0		25.0	25.0	
Total Split (%)	19.6%	19.6%		14.7%	14.7%		14.7%	39.2%		24.5%	24.5%	
Maximum Green (s)	14.0	14.0		9.0	9.0		9.0	34.0		19.0	19.0	

Lanes, Volumes, Timings
 16: Elm St & Site

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	26%
Maximum Green (s)	25.0

Lanes, Volumes, Timings

16: Elm St & Site



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag			Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		7.3	23.2		5.8		9.5	36.0			20.1	
Actuated g/C Ratio		0.12	0.38		0.10		0.16	0.59			0.33	
v/c Ratio		0.20	0.38		0.03		0.76	0.65			1.07	
Control Delay		30.8	4.5		0.0		47.8	17.1			74.5	
Queue Delay		0.0	0.0		0.0		0.0	1.0			0.0	
Total Delay		30.8	4.5		0.0		47.8	18.1			74.5	
LOS		C	A		A		D	B			E	
Approach Delay		7.7						24.8			74.5	
Approach LOS		A						C			E	
Queue Length 50th (ft)		12	0		0		63	105			151	
Queue Length 95th (ft)		57	37		0		#303	#715			#595	
Internal Link Dist (ft)		308			190			327			629	
Turn Bay Length (ft)												
Base Capacity (vph)		438	965		749		282	1122			913	
Starvation Cap Reductn		0	0		0		0	170			0	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	
Reduced v/c Ratio		0.10	0.32		0.03		0.76	0.77			1.07	

Intersection Summary

Area Type: Other

Cycle Length: 102

Actuated Cycle Length: 60.9

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 43.1

Intersection LOS: D

Intersection Capacity Utilization 84.3%

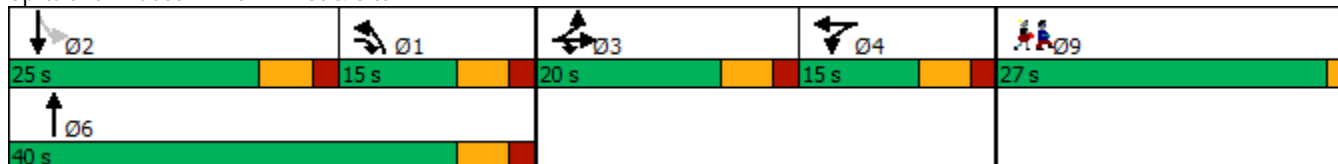
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 16: Elm St & Site























Lanes, Volumes, Timings

16: Elm St & Site

Lane Group	Ø9
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
17: Elm St & Auburn St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	145	345	45	110	15	235	360	20	25	470	90
Future Volume (vph)	45	145	345	45	110	15	235	360	20	25	470	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	150		150	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.987				0.850		0.973	
Flt Protected		0.987			0.986		0.950				0.997	
Satd. Flow (prot)	0	1875	1599	0	1849	0	1805	1900	1615	0	3502	0
Flt Permitted		0.856			0.832		0.263				0.906	
Satd. Flow (perm)	0	1626	1599	0	1560	0	500	1900	1615	0	3182	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			416		6				71		31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		444			563			709			834	
Travel Time (s)		10.1			12.8			16.1			19.0	
Peak Hour Factor	0.80	0.91	0.83	0.65	0.71	0.65	0.92	0.88	0.94	0.69	0.96	0.80
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	56	159	416	69	155	23	255	409	21	36	490	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	416	0	247	0	255	409	21	0	639	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		8	8 1		4		1	6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8	8 1	4	4		1	6	6	2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	13.0	13.0		11.0	11.0		7.0	11.0	11.0	11.0	11.0	

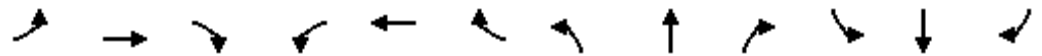
Lanes, Volumes, Timings

17: Elm St & Auburn St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	25.0

Lanes, Volumes, Timings

17: Elm St & Auburn St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	20.0	20.0		20.0	20.0		7.0	32.0	32.0	25.0	25.0	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		9.1%	41.6%	41.6%	32.5%	32.5%	
Maximum Green (s)	14.0	14.0		14.0	14.0		3.0	26.0	26.0	19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0	6.0		6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		14.6	21.1		14.6		24.5	22.5	22.5			15.2
Actuated g/C Ratio		0.28	0.40		0.28		0.46	0.42	0.42			0.29
v/c Ratio		0.48	0.47		0.57		0.83	0.51	0.03			0.69
Control Delay		24.9	4.6		27.2		39.3	15.8	0.1			21.9
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0			0.0
Total Delay		24.9	4.6		27.2		39.3	15.8	0.1			21.9
LOS		C	A		C		D	B	A			C
Approach Delay		11.5			27.2			24.0				21.9
Approach LOS		B			C			C				C
Queue Length 50th (ft)		49	0		56		37	73	0			74
Queue Length 95th (ft)		#197	41		#157		#245	248	0			#221
Internal Link Dist (ft)		364			483			629				754
Turn Bay Length (ft)							150		150			
Base Capacity (vph)		447	886		433		308	971	860			1208
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		0.48	0.47		0.57		0.83	0.42	0.02			0.53

Intersection Summary

Area Type: Other

Cycle Length: 77

Actuated Cycle Length: 53

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.2

Intersection LOS: C

Intersection Capacity Utilization 74.8%

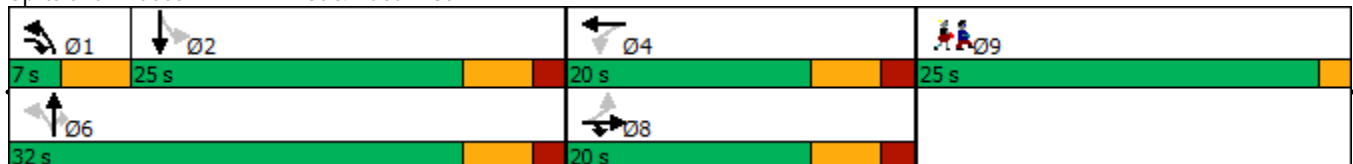
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Elm St & Auburn St

























Lanes, Volumes, Timings

17: Elm St & Auburn St

Lane Group	Ø9
Total Split (s)	25.0
Total Split (%)	32%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	15
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	275	145	135	330	95	150	395	65	30	455	185
Future Volume (vph)	180	275	145	135	330	95	150	395	65	30	455	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	510		0	200		0	600		0	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frnt			0.850		0.964				0.850			0.850
Flt Protected	0.950			0.950				0.985			0.996	
Satd. Flow (prot)	1570	1637	1364	1525	3028	0	0	3072	1378	0	3089	1391
Flt Permitted	0.950			0.950				0.590			0.732	
Satd. Flow (perm)	1570	1637	1364	1525	3028	0	0	1840	1378	0	2270	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165		26				94			153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		947			565			834			584	
Travel Time (s)		21.5			12.8			19.0			13.3	
Peak Hour Factor	0.88	0.89	0.88	0.69	0.88	0.81	0.83	0.91	0.83	0.63	0.90	0.86
Heavy Vehicles (%)	0%	1%	3%	3%	0%	0%	0%	1%	2%	4%	1%	1%
Adj. Flow (vph)	205	309	165	196	375	117	181	434	78	48	506	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	309	165	196	492	0	0	615	78	0	554	215
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	custom













Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2				8		8	4		5
Detector Phase	5	2	2	1	6		3	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	25.0	35.0	35.0	22.0	32.0		14.0	49.0	49.0	35.0	35.0	25.0
Total Split (%)	17.9%	25.0%	25.0%	15.7%	22.9%		10.0%	35.0%	35.0%	25.0%	25.0%	17.9%
Maximum Green (s)	19.0	29.0	29.0	16.0	26.0		8.0	43.0	43.0	29.0	29.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	Min	Min	Min	Min	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	21.6	45.8	45.8	18.0	42.2		43.0	43.0		43.0		21.6
Actuated g/C Ratio	0.15	0.33	0.33	0.13	0.30		0.31	0.31		0.31		0.15
v/c Ratio	0.85	0.58	0.30	1.00	0.53		1.15dl	0.16		0.79		0.62
Control Delay	75.8	30.4	2.9	124.8	41.3		109.4	5.0		54.2		26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	75.8	30.4	2.9	124.8	41.3		109.4	5.0		54.2		26.6
LOS	E	C	A	F	D		F	A		D		C
Approach Delay		37.4			65.1		97.6			46.5		
Approach LOS		D			E		F			D		
Queue Length 50th (ft)	190	249	13	~206	188		~330	0		243		52
Queue Length 95th (ft)	#345	290	23	#244	240		#454	21		319		130
Internal Link Dist (ft)		867			485		754			504		
Turn Bay Length (ft)	510			200								150
Base Capacity (vph)	242	535	557	196	930		565	488		697		344
Starvation Cap Reductn	0	0	0	0	0		0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0	0		0		0
Reduced v/c Ratio	0.85	0.58	0.30	1.00	0.53		1.09	0.16		0.79		0.63

Intersection Summary

Area Type: CBD

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 61.4

Intersection LOS: E

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	34.0
Total Split (s)	34.0
Total Split (%)	24%
Maximum Green (s)	31.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	60
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

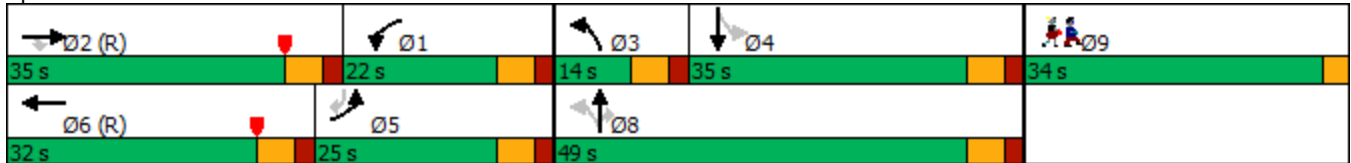
Queue shown is maximum after two cycles.

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
























Queue shown is maximum after two cycles.

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

Splits and Phases: 18: Elm St



Lanes, Volumes, Timings
 19: Canal St & Granite Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	460	590	480	5	720	150	330	295	20	75	160	270
Future Volume (vph)	460	590	480	5	720	150	330	295	20	75	160	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	140		250	120		120	260		0
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.933				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3338	0	1805	3574	1583	1770	3574	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3338	0	1805	3574	1583	1770	3574	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		136				163		4				293
Link Speed (mph)		30			30			30				30
Link Distance (ft)		329			947			835				503
Travel Time (s)		7.5			21.5			19.0				11.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	1%	2%	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	500	641	522	5	783	163	359	321	22	82	174	293
Shared Lane Traffic (%)												
Lane Group Flow (vph)	500	1163	0	5	783	163	359	343	0	82	174	293
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	5	2		1	6	6 7	3	8		7	4	4 5

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lanes, Volumes, Timings
 19: Canal St & Granite Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	5	2		1	6	6 7	3	8		7	4	4 5
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	16.0	38.0		14.0	36.0		29.0	29.0		22.0	22.0	
Total Split (%)	11.4%	27.1%		10.0%	25.7%		20.7%	20.7%		15.7%	15.7%	
Maximum Green (s)	10.0	32.0		8.0	30.0		23.0	23.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	37.9	80.8		8.0	39.7	59.6	23.0	18.5		19.9	15.4	59.3
Actuated g/C Ratio	0.27	0.58		0.06	0.28	0.43	0.16	0.13		0.14	0.11	0.42
v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.24	0.72		0.33	0.85	0.35
Control Delay	47.5	18.6		53.4	39.1	1.7	180.3	66.4		59.1	94.5	4.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.5	18.6		53.4	39.1	1.7	180.3	66.4		59.1	94.5	4.2
LOS	D	B		D	D	A	F	E		E	F	A
Approach Delay		27.3			32.7			124.7				41.0
Approach LOS		C			C			F				D
Queue Length 50th (ft)	207	289		4	233	0	-404	158		68	157	0
Queue Length 95th (ft)	276	449		m8	m263	m10	#604	205		127	#283	59
Internal Link Dist (ft)		249			867			755				423
Turn Bay Length (ft)	200			140		250	120			260		
Base Capacity (vph)	938	1983		103	1013	767	290	590		252	212	833
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.24	0.58		0.33	0.82	0.35

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 134 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.24
 Intersection Signal Delay: 48.3 Intersection LOS: D
 Intersection Capacity Utilization 85.1% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	37.0
Total Split (s)	37.0
Total Split (%)	26%
Maximum Green (s)	31.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

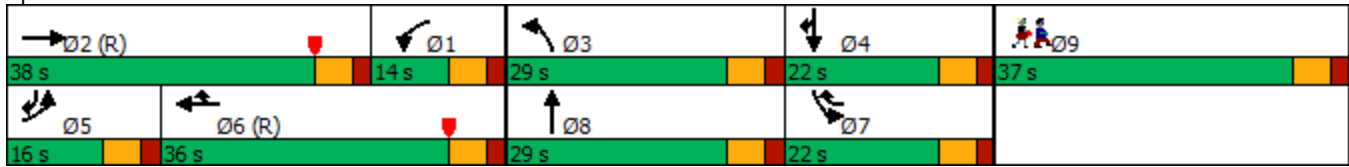
Lanes, Volumes, Timings

19: Canal St & Granite Street

Queue shown is maximum after two cycles.

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

Splits and Phases: 19: Canal St & Granite Street



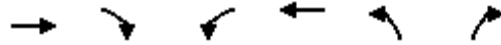
Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	485	41	228	700	64	161
Future Volume (vph)	485	41	228	700	64	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.903	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	1844	0	1770	1863	1659	0
Flt Permitted			0.157		0.986	
Satd. Flow (perm)	1844	0	292	1863	1659	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7				96	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.85	0.85	0.88	0.88	0.75	0.75
Adj. Flow (vph)	571	48	259	795	85	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	0	259	795	300	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings

9: Arlington Street & E Hollis Street

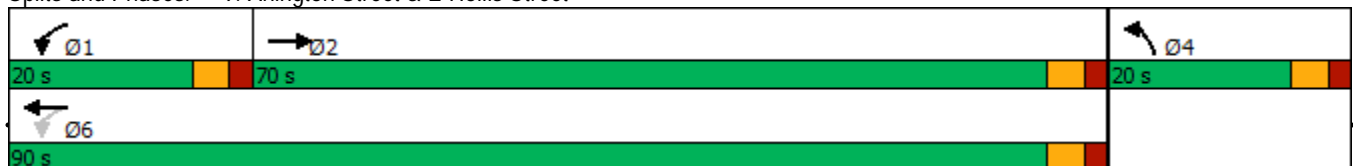


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	28.6		44.4	44.4	15.2	
Actuated g/C Ratio	0.41		0.64	0.64	0.22	
v/c Ratio	0.81		0.63	0.67	0.69	
Control Delay	27.1		15.4	11.0	28.9	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	27.1		15.4	11.0	28.9	
LOS	C		B	B	C	
Approach Delay	27.1			12.1	28.9	
Approach LOS	C			B	C	
Queue Length 50th (ft)	217		40	184	76	
Queue Length 95th (ft)	317		101	264	147	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1699		509	1863	438	
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	0.36		0.51	0.43	0.68	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	69.7
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	19.3
Intersection LOS:	B
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 6th TWSC
 8: Chase Street & E Hollis Street

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Traffic Vol, veh/h	0	561	10	25	923	0	0	0	0	0	0	0
Future Vol, veh/h	0	561	10	25	923	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	5	0	5	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	81	81	87	87	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	693	12	29	1061	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	709	0	0	-	1828	-
Stage 1	-	-	-	-	-	-	-	1119	-
Stage 2	-	-	-	-	-	-	-	709	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	899	-	0	0	77	0
Stage 1	0	-	-	-	-	0	0	282	0
Stage 2	0	-	-	-	-	0	0	437	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	899	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	899	-	-
HCM Lane V/C Ratio	-	-	0.032	-	-
HCM Control Delay (s)	-	-	9.1	0	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 6th TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	12	20	30	15	190	22	64	190	15
Future Vol, veh/h	5	10	5	12	20	30	15	190	22	64	190	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	63	63	63	57	57	57	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	12	6	19	32	48	26	333	39	98	292	23

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	945	924	304	914	916	353	315	0	0	372	0	0
Stage 1	500	500	-	405	405	-	-	-	-	-	-	-
Stage 2	445	424	-	509	511	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	242	269	736	254	272	691	1245	-	-	1186	-	-
Stage 1	553	543	-	622	598	-	-	-	-	-	-	-
Stage 2	592	587	-	547	537	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	184	236	736	220	239	691	1245	-	-	1186	-	-
Mov Cap-2 Maneuver	184	236	-	220	239	-	-	-	-	-	-	-
Stage 1	539	489	-	606	582	-	-	-	-	-	-	-
Stage 2	508	572	-	477	483	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.1		19.8		0.5		2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	262	341	1186	-
HCM Lane V/C Ratio	0.021	-	-	0.089	0.289	0.083	-
HCM Control Delay (s)	8	0	-	20.1	19.8	8.3	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	1.2	0.3	-

HCM 6th TWSC
 11: Crown Street & Chase Street

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	20	20	0	20	15
Future Vol, veh/h	0	20	20	0	20	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	44	44	75	75
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	29	45	0	27	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	74 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	29 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	935 1031
Stage 1	0	-	-	0	983 -
Stage 2	0	-	-	0	999 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	-	-	-	-	935 1031
Mov Cap-2 Maneuver	-	-	-	-	935 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	999 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	974
HCM Lane V/C Ratio	-	-	0.048
HCM Control Delay (s)	-	-	8.9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

HCM 6th TWSC
21: Crown Street





















Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Vol, veh/h	20	61	0	35	17	0
Future Vol, veh/h	20	61	0	35	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	66	0	38	18	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	93 55
Stage 1	-	-	-	-	55 -
Stage 2	-	-	-	-	38 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	0	-	907 1012
Stage 1	-	-	0	-	968 -
Stage 2	-	-	0	-	984 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	907 1012
Mov Cap-2 Maneuver	-	-	-	-	907 -
Stage 1	-	-	-	-	968 -
Stage 2	-	-	-	-	984 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBT
Capacity (veh/h)	907	-	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	9.1	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	0	477	0	0	0	0	505	250	60	307	0
Future Volume (vph)	505	0	477	0	0	0	0	505	250	60	307	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950	0.950								0.950		
Satd. Flow (prot)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.950								0.950		
Satd. Flow (perm)	1681	1681	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			485						291			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		553			694			288				461
Travel Time (s)		12.6			15.8			6.5				10.5
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	580	0	548	0	0	0	0	587	291	70	357	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	290	290	548	0	0	0	0	587	291	70	357	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			24			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	11.0	16.0	
Total Split (s)	20.0	20.0	20.0					25.0	25.0	15.0	40.0	
Total Split (%)	33.3%	33.3%	33.3%					41.7%	41.7%	25.0%	66.7%	
Maximum Green (s)	14.0	14.0	14.0					19.0	19.0	9.0	34.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	Min	None	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	13.2	13.2	13.2					15.5	15.5	6.6	28.2	
Actuated g/C Ratio	0.25	0.25	0.25					0.29	0.29	0.12	0.53	
v/c Ratio	0.70	0.70	0.73					0.57	0.44	0.17	0.19	
Control Delay	31.0	31.0	10.6					18.7	4.6	23.4	6.9	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	31.0	31.0	10.6					18.7	4.6	23.4	6.9	
LOS	C	C	B					B	A	C	A	
Approach Delay		21.1						14.0			9.6	
Approach LOS		C						B			A	
Queue Length 50th (ft)	90	90	16					83	0	10	28	
Queue Length 95th (ft)	#195	#195	91					122	38	25	44	
Internal Link Dist (ft)		473			614			208			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	445	445	775					1272	755	584	2277	
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	0.65	0.65	0.71					0.46	0.39	0.12	0.16	

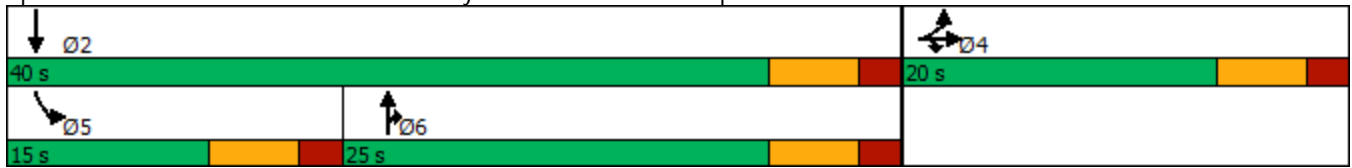
Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53.5
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.5
Intersection LOS:	B
Intersection Capacity Utilization:	48.6%
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.	























Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	5	0	178	0	125	15	381	619	90	189	0
Future Volume (vph)	0	5	0	178	0	125	15	381	619	90	189	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt						0.850			0.850			
Flt Protected					0.950		0.950			0.950		
Satd. Flow (prot)	0	1863	1863	0	1770	1583	1770	3539	1583	3433	3539	0
Flt Permitted					0.950		0.950			0.950		
Satd. Flow (perm)	0	1863	1863	0	1770	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						160			737			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		245			390			714				684
Travel Time (s)		5.6			8.9			16.2				15.5
Peak Hour Factor	0.50	0.50	0.50	0.78	0.78	0.78	0.84	0.84	0.84	0.83	0.83	0.83
Adj. Flow (vph)	0	10	0	228	0	160	18	454	737	108	228	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	228	160	18	454	737	108	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type		NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	30.0	30.0	20.0	40.0	
Total Split (%)	8.7%	8.7%	8.7%	13.0%	13.0%	13.0%	8.7%	26.1%	26.1%	17.4%	34.8%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	24.0	24.0	14.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		4.2			9.6	19.6	4.2	18.0	35.0	7.5	26.6	
Actuated g/C Ratio		0.08			0.18	0.38	0.08	0.35	0.67	0.14	0.51	
v/c Ratio		0.07			0.70	0.23	0.12	0.37	0.56	0.22	0.13	
Control Delay		29.0			39.7	4.0	29.9	14.8	2.4	24.6	7.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		29.0			39.7	4.0	29.9	14.8	2.4	24.6	7.7	
LOS		C			D	A	C	B	A	C	A	
Approach Delay		29.0			25.0			7.5			13.1	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		3			68	0	5	53	0	15	13	
Queue Length 95th (ft)		10			#186	24	25	104	17	40	47	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		152			325	698	144	1738	1297	983	2447	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.07			0.70	0.23	0.13	0.26	0.57	0.11	0.09	








Intersection Summary

Area Type:	Other
Cycle Length:	115
Actuated Cycle Length:	51.9
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	12.1
Intersection LOS:	B
Intersection Capacity Utilization:	60.8%
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.	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

Splits and Phases: 14: South River Rd & East Point Dr

 Ø1	 Ø2	 Ø4	 Ø8	 Ø9
10 s	40 s	10 s	15 s	40 s
 Ø5	 Ø6			
20 s	30 s			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	35%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 6th TWSC
 13: South River Rd & Somerville Dr

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑		↔↔↔	
Traffic Vol, veh/h	5	10	1005	5	0	362
Future Vol, veh/h	5	10	1005	5	0	362
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	92	92	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	12	1092	5	0	416

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1261	549	0	0	1097	0
Stage 1	1095	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	192	480	-	-	632	-
Stage 1	276	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	192	480	-	-	632	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	276	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	320	632
HCM Lane V/C Ratio	-	-	0.055	-
HCM Control Delay (s)	-	-	16.9	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.2	0

HCM 6th TWSC
 22: South River Rd & Site Driveway

Intersection

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗ ↑↑↑	↑↑↑		↙	↑↑
Traffic Vol, veh/h	25	40	715	104	169	615
Future Vol, veh/h	25	40	715	104	169	615
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	43	777	113	184	668

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	1536	445	0	0	890
Stage 1	834	-	-	-	-
Stage 2	702	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12
Pot Cap-1 Maneuver	133	479	-	-	442
Stage 1	313	-	-	-	-
Stage 2	440	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	78	479	-	-	442
Mov Cap-2 Maneuver	78	-	-	-	-
Stage 1	313	-	-	-	-
Stage 2	257	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	36.6	0	4.1
HCM LOS	E		

Minor Lane/Major Mvmt

	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	78	479	442	-
HCM Lane V/C Ratio	-	-	0.348	0.091	0.416	-
HCM Control Delay (s)	-	-	74	13.3	18.8	-
HCM Lane LOS	-	-	F	B	C	-
HCM 95th %tile Q(veh)	-	-	1.3	0.3	2	-

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗			↕↗	↗
Traffic Volume (vph)	75	10	35	192	5	25	55	515	145	10	585	85
Future Volume (vph)	75	10	35	192	5	25	55	515	145	10	585	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		135
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Frt			0.850		0.985			0.967				0.850
Flt Protected		0.958			0.959		0.950				0.999	
Satd. Flow (prot)	0	1785	1583	0	1760	0	1770	3422	0	0	3536	1583
Flt Permitted		0.679			0.684		0.950				0.940	
Satd. Flow (perm)	0	1265	1583	0	1255	0	1770	3422	0	0	3327	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		7			70				105
Link Speed (mph)		30			30			30				30
Link Distance (ft)		286			297			569				586
Travel Time (s)		6.5			6.8			12.9				13.3
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	90	12	42	231	6	30	61	572	161	12	722	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	42	0	267	0	61	733	0	0	734	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Perm	NA	Prot
Protected Phases		7	7		3		1	6			2	2

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	7			3						2			
Detector Phase	7	7	7	3	3		1	6		2	2	2	
Switch Phase													
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		21.0	21.0	21.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		20.0	58.0		38.0	38.0	38.0	
Total Split (%)	35.6%	35.6%	35.6%	35.6%	35.6%		22.2%	64.4%		42.2%	42.2%	42.2%	
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		15.0	53.0		33.0	33.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	5.0	
Lead/Lag							Lead				Lag	Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		Min	Min	Min	
Act Effct Green (s)		19.1	19.1		19.1		8.6	30.3			23.3	23.3	
Actuated g/C Ratio		0.31	0.31		0.31		0.14	0.50			0.38	0.38	
v/c Ratio		0.26	0.08		0.67		0.24	0.42			0.57	0.16	
Control Delay		21.2	1.3		30.2		32.7	9.1			19.0	4.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Delay		21.2	1.3		30.2		32.7	9.1			19.0	4.7	
LOS		C	A		C		C	A			B	A	
Approach Delay		15.4			30.2			10.9			17.2		
Approach LOS		B			C			B			B		
Queue Length 50th (ft)		30	0		89		22	70			124	0	
Queue Length 95th (ft)		74	3		187		67	129			191	23	
Internal Link Dist (ft)		206			217			489			506		
Turn Bay Length (ft)												135	
Base Capacity (vph)		638	841		636		496	2840			2052	1016	
Starvation Cap Reductn		0	0		0		0	0			0	0	
Spillback Cap Reductn		0	0		0		0	0			0	0	
Storage Cap Reductn		0	0		0		0	0			0	0	
Reduced v/c Ratio		0.16	0.05		0.42		0.12	0.26			0.36	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 60.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 66.9%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	148	265	20	239	15	200	405	10	10	395	695
Future Volume (vph)	505	148	265	20	239	15	200	405	10	10	395	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		175	0		0	125		0	550		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	0.91	0.91	1.00	0.95	0.95	0.95	1.00	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.992			0.996				0.850
Flt Protected	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (prot)	1610	3285	1583	0	3497	0	1770	5065	0	1770	3539	1583
Flt Permitted	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (perm)	1610	3285	1583	0	3497	0	1770	5065	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			315		4			4				537
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1049			446			586				1047
Travel Time (s)		23.8			10.1			13.3				23.8
Peak Hour Factor	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	601	176	315	24	291	18	241	488	12	11	444	781
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	300	477	315	0	333	0	241	500	0	11	444	781
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		20	15		9	15		9	15		35
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	Prot
Protected Phases	3	3	3	4	4		1	6		5	2	2

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3	4	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	10.0		6.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	13.0	13.0		11.0	16.0		11.0	25.0	25.0
Total Split (s)	29.0	29.0	29.0	21.0	21.0		35.0	57.0		13.0	35.0	35.0
Total Split (%)	24.2%	24.2%	24.2%	17.5%	17.5%		29.2%	47.5%		10.8%	29.2%	29.2%
Maximum Green (s)	24.0	24.0	24.0	16.0	16.0		30.0	52.0		8.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Act Effect Green (s)	23.5	23.5	23.5		14.3		19.8	52.1		6.5	29.6	29.6
Actuated g/C Ratio	0.22	0.22	0.22		0.13		0.18	0.49		0.06	0.28	0.28
v/c Ratio	0.85	0.66	0.53		0.71		0.74	0.20		0.10	0.46	0.95
Control Delay	64.6	44.7	8.0		54.1		55.7	16.6		53.2	35.3	34.1
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	64.6	44.7	8.0		54.1		55.7	16.6		53.2	35.3	34.1
LOS	E	D	A		D		E	B		D	D	C
Approach Delay		39.6			54.1			29.3				34.7
Approach LOS		D			D			C				C
Queue Length 50th (ft)	223	169	0		116		162	68		8	136	202
Queue Length 95th (ft)	#384	230	55		161		225	102		27	202	#499
Internal Link Dist (ft)		969			366			506				967
Turn Bay Length (ft)	275		175				125			550		
Base Capacity (vph)	362	739	600		528		498	2556		132	995	831
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.83	0.65	0.53		0.63		0.48	0.20		0.08	0.45	0.94

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 107.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 37.0

Intersection LOS: D

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

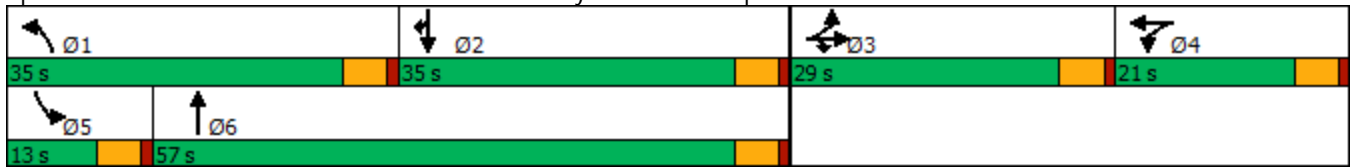
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

Splits and Phases: 2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lanes, Volumes, Timings
 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Future Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	275		0	245		40
Storage Lanes	1		1	0		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Fr			0.850					0.983				0.850
Flt Protected	0.950				0.958		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	1785	1863	1770	4999	0	1770	5085	1583
Flt Permitted	0.668				0.721		0.950			0.950		
Satd. Flow (perm)	1244	1863	1583	0	1343	1863	1770	4999	0	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87					27				76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			242			1047			500	
Travel Time (s)		5.4			5.5			23.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	44	67	122	17	0	117	800	100	39	1028	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	44	67	0	139	0	117	900	0	39	1028	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Prot
Protected Phases		4			8		5	2		1	6	6

Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	16.0		10.0	16.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	27.0	48.0		27.0	48.0	48.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	27.0%	48.0%		27.0%	48.0%	48.0%
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0	20.0	22.0	42.0		22.0	42.0	42.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	6.0		5.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Act Effect Green (s)	12.2	12.2	12.2		12.6		10.3	39.1		7.5	31.7	31.7
Actuated g/C Ratio	0.20	0.20	0.20		0.20		0.17	0.63		0.12	0.51	0.51
v/c Ratio	0.34	0.12	0.17		0.51		0.40	0.28		0.18	0.39	0.19
Control Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
LOS	C	C	A		C		C	A		C	B	A
Approach Delay		20.0			32.8			11.7			14.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	27	14	0		47		40	46		14	104	20
Queue Length 95th (ft)	79	47	23		124		109	137		50	186	68
Internal Link Dist (ft)		158			162			967			420	
Turn Bay Length (ft)	100		100				275			245		40
Base Capacity (vph)	445	667	622		481		697	3545		697	3597	1142
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.19	0.07	0.11		0.29		0.17	0.25		0.06	0.29	0.14














Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 61.7
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 14.8
 Intersection Capacity Utilization 50.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St

							
Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	220	206	30	645	120	474	860
Future Volume (vph)	220	206	30	645	120	474	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	250	75		0	545	
Storage Lanes	2	1	1		0	1	
Taper Length (ft)	100		100			100	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.97	0.95
Frt		0.850		0.977			
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	3433	1583	1770	4968	0	3433	3539
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3433	1583	1770	4968	0	3433	3539
Right Turn on Red		Yes			Yes		
Satd. Flow (RTOR)		139		41			
Link Speed (mph)	30			30			30
Link Distance (ft)	365			500			942
Travel Time (s)	8.3			11.4			21.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	244	229	33	717	133	527	956
Shared Lane Traffic (%)							
Lane Group Flow (vph)	244	229	33	850	0	527	956
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Right	Left	R NA
Median Width(ft)	24			18			24
Link Offset(ft)	0			0			0
Crosswalk Width(ft)	16			16			16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9		9	15	
Number of Detectors	1	1	1	2		1	2
Detector Template	Left	Right	Left	Thru		Left	Thru
Leading Detector (ft)	20	20	20	100		20	100
Trailing Detector (ft)	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0		0	0
Detector 1 Size(ft)	20	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)				94			94
Detector 2 Size(ft)				6			6
Detector 2 Type				Cl+Ex			Cl+Ex
Detector 2 Channel							
Detector 2 Extend (s)				0.0			0.0
Turn Type	Prot	custom	Prot	NA		Prot	NA
Protected Phases	4	4	5	2		1	6

Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St

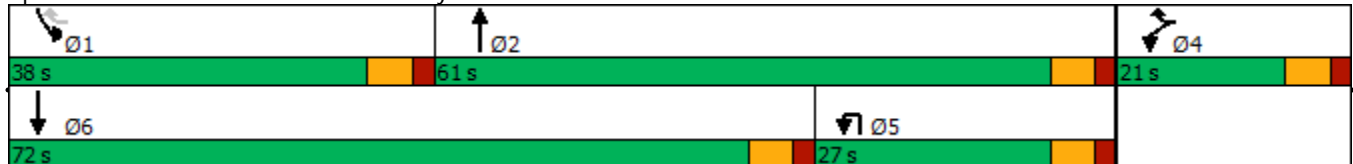


Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Permitted Phases		1					
Detector Phase	4	4	5	2		1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	10.0		10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	16.0		16.0	16.0
Total Split (s)	21.0	21.0	27.0	61.0		38.0	72.0
Total Split (%)	17.5%	17.5%	22.5%	50.8%		31.7%	60.0%
Maximum Green (s)	15.0	15.0	21.0	55.0		32.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag			Lag	Lag		Lead	Lead
Lead-Lag Optimize?			Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	Min		None	Min
Act Effect Green (s)	10.5	32.4	7.5	19.7		15.7	36.1
Actuated g/C Ratio	0.16	0.50	0.12	0.31		0.24	0.56
v/c Ratio	0.43	0.26	0.16	0.55		0.63	0.48
Control Delay	28.5	5.1	30.6	19.6		26.3	11.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	28.5	5.1	30.6	19.6		26.3	11.5
LOS	C	A	C	B		C	B
Approach Delay	17.1			20.0			16.7
Approach LOS	B			C			B
Queue Length 50th (ft)	44	17	12	93		93	78
Queue Length 95th (ft)	90	58	40	154		167	233
Internal Link Dist (ft)	285			420			862
Turn Bay Length (ft)		250	75			545	
Base Capacity (vph)	820	828	592	4273		1750	3367
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	0.30	0.28	0.06	0.20		0.30	0.28

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 64.4
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 49.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Daniel Webster Hwy & Dan Chan St



Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	190	60	140	70	50	50	25	165	681	55	15	200
Future Volume (vph)	190	60	140	70	50	50	25	165	681	55	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		185	0		100		215		0		440
Storage Lanes	1		1	0		1		1		0		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00
Frt			0.850				0.850		0.989			
Flt Protected	0.950	0.974			0.972			0.950				0.950
Satd. Flow (prot)	1681	1724	1583	0	1811	1583	0	1770	5029	0	0	1770
Flt Permitted	0.671	0.763			0.737			0.950				0.950
Satd. Flow (perm)	1187	1350	1583	0	1373	1583	0	1770	5029	0	0	1770
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)			198			198			11			
Link Speed (mph)		30			30				30			
Link Distance (ft)		335			336				942			
Travel Time (s)		7.6			7.6				21.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	211	67	156	78	56	56	28	183	757	61	17	222
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	135	143	156	0	134	56	0	211	818	0	0	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2	1	1	2	1	1	1	2		1	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100	20	20	100	20	20	20	100		20	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases		4			4		5	5	2		1	1
Permitted Phases	4		4	4		4						

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	SBT	SBR	Ø9
Lane Configurations	↑↑↑		
Traffic Volume (vph)	1054	45	
Future Volume (vph)	1054	45	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	0.91	0.91	
Frt	0.994		
Flt Protected			
Satd. Flow (prot)	5055	0	
Flt Permitted			
Satd. Flow (perm)	5055	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	6		
Link Speed (mph)	30		
Link Distance (ft)	829		
Travel Time (s)	18.8		
Peak Hour Factor	0.90	0.90	
Adj. Flow (vph)	1171	50	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	1221	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	6	9	
Permitted Phases			

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	4	4	4	4	4	4	5	5	2		1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	16.0		11.0	11.0
Total Split (s)	18.0	18.0	18.0	18.0	18.0	18.0	15.0	15.0	30.0		22.0	22.0
Total Split (%)	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	13.6%	13.6%	27.3%		20.0%	20.0%
Maximum Green (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	24.0		16.0	16.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0		5.0	6.0			6.0
Lead/Lag							Lead	Lead	Lead		Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	Min		None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	12.1	12.1	12.1		12.1	12.1		10.0	17.8			16.9
Actuated g/C Ratio	0.19	0.19	0.19		0.19	0.19		0.15	0.27			0.26
v/c Ratio	0.61	0.57	0.34		0.53	0.12		0.77	0.59			0.52
Control Delay	40.4	36.3	4.7		33.9	0.6		49.4	21.9			25.9
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay	40.4	36.3	4.7		33.9	0.6		49.4	21.9			25.9
LOS	D	D	A		C	A		D	C			C
Approach Delay		26.2			24.1				27.5			
Approach LOS		C			C				C			
Queue Length 50th (ft)	52	54	0		49	0		82	101			80
Queue Length 95th (ft)	#137	#135	28		#116	0		#200	135			157
Internal Link Dist (ft)		255			256				862			
Turn Bay Length (ft)	200		185			100		215				440
Base Capacity (vph)	220	250	455		254	455		273	1874			468
Starvation Cap Reductn	0	0	0		0	0		0	0			0
Spillback Cap Reductn	0	0	0		0	0		0	0			0
Storage Cap Reductn	0	0	0		0	0		0	0			0
Reduced v/c Ratio	0.61	0.57	0.34		0.53	0.12		0.77	0.44			0.51

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 64.9
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 22.8
 Intersection LOS: C
 Intersection Capacity Utilization 66.2%
 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.

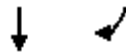
Lanes, Volumes, Timings

5: Daniel Webster Hwy & Danforth Rd

Splits and Phases: 5: Daniel Webster Hwy & Danforth Rd























↑ Ø2	↙ Ø1	↔ Ø4	🚶 Ø9
30 s	22 s	18 s	40 s
↙ Ø5	↓ Ø6		
15 s	37 s		

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	SBT	SBR	Ø9
Detector Phase	6		
Switch Phase			
Minimum Initial (s)	10.0		4.0
Minimum Split (s)	16.0		40.0
Total Split (s)	37.0		40.0
Total Split (%)	33.6%		36%
Maximum Green (s)	31.0		34.0
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	6.0		
Lead/Lag	Lag		
Lead-Lag Optimize?	Yes		
Vehicle Extension (s)	3.0		3.0
Recall Mode	Min		None
Walk Time (s)			4.0
Flash Dont Walk (s)			30.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)	25.7		
Actuated g/C Ratio	0.40		
v/c Ratio	0.61		
Control Delay	16.7		
Queue Delay	0.0		
Total Delay	16.7		
LOS	B		
Approach Delay	18.2		
Approach LOS	B		
Queue Length 50th (ft)	134		
Queue Length 95th (ft)	173		
Internal Link Dist (ft)	749		
Turn Bay Length (ft)			
Base Capacity (vph)	2427		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.50		
Intersection Summary			

Lanes, Volumes, Timings
6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	20	45	65	15	260	50	911	35	235	1199	45
Future Volume (vph)	70	20	45	65	15	260	50	911	35	235	1199	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	100		0	150		0	130		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.994			0.995	
Flt Protected		0.962			0.961		0.950			0.950		
Satd. Flow (prot)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5060	0
Flt Permitted		0.962			0.961		0.950			0.950		
Satd. Flow (perm)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5060	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			280		6		6		6
Link Speed (mph)		30			30			30		30		30
Link Distance (ft)		345			340			829		809		809
Travel Time (s)		7.8			7.7			18.8		18.4		18.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	78	22	50	72	16	280	56	1012	39	261	1332	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	50	0	88	280	56	1051	0	261	1382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12		12		12
Link Offset(ft)		0			0			0		0		0
Crosswalk Width(ft)		16			16			16		16		16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		5	2		1	6	

Lanes, Volumes, Timings
 6: Daniel Webster Hwy & Silver Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			3			4						
Detector Phase	3	3	3	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0	15.0	10.0	24.0		10.0	24.0	
Total Split (s)	22.0	22.0	22.0	21.0	21.0	21.0	15.0	40.0		25.0	50.0	
Total Split (%)	20.4%	20.4%	20.4%	19.4%	19.4%	19.4%	13.9%	37.0%		23.1%	46.3%	
Maximum Green (s)	17.0	17.0	17.0	16.0	16.0	16.0	10.0	35.0		20.0	45.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		11.3	11.3		11.0	11.0	8.6	45.5		20.2	59.2	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.42		0.19	0.55	
v/c Ratio		0.53	0.16		0.49	0.68	0.40	0.49		0.79	0.50	
Control Delay		55.5	1.0		53.9	14.2	55.0	25.3		49.1	25.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		55.5	1.0		53.9	14.2	55.0	25.3		49.1	25.4	
LOS		E	A		D	B	E	C		D	C	
Approach Delay		37.3			23.7			26.8			29.2	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)		67	0		59	0	37	193		168	297	
Queue Length 95th (ft)		117	0		104	76	77	273		#298	360	
Internal Link Dist (ft)		265			260			749			729	
Turn Bay Length (ft)			50				150			130		
Base Capacity (vph)		282	394		266	474	167	2134		351	2778	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.35	0.13		0.33	0.59	0.34	0.49		0.74	0.50	

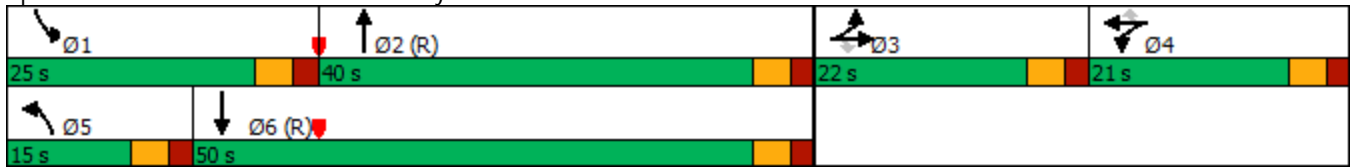
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 84 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 28.1 Intersection LOS: C
 Intersection Capacity Utilization 55.5% 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.

Lanes, Volumes, Timings

6: Daniel Webster Hwy & Silver Dr

Splits and Phases: 6: Daniel Webster Hwy & Silver Dr



Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	60	594	55	100	50	569	622	15	45	765	135
Future Volume (vph)	145	60	594	55	100	50	569	622	15	45	765	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		115	160		160	500		0	275		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	0.91
Frt			0.850				0.850		0.996			0.978
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5065	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293			172			3			32
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		786			628			809			724	
Travel Time (s)		17.9			14.3			18.4			16.5	
Peak Hour Factor	0.84	0.84	0.84	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	173	71	707	71	130	65	612	669	16	49	841	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	71	707	71	130	65	612	685	0	49	989	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	pt+ov	Split	NA	Prot	Prot	NA		Prot	NA	
Protected Phases	3	3	3 5	4	4	4	5	2		1	6	

Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3 5	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	22.5	22.5		15.0	15.0	15.0	22.5	22.5		15.0	22.5	
Total Split (s)	25.0	25.0		18.0	18.0	18.0	30.0	50.0		15.0	35.0	
Total Split (%)	23.1%	23.1%		16.7%	16.7%	16.7%	27.8%	46.3%		13.9%	32.4%	
Maximum Green (s)	20.0	20.0		13.0	13.0	13.0	25.0	45.0		10.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	C-Min		Max	C-Min	
Act Effct Green (s)	17.2	17.2	48.9	11.5	11.5	11.5	31.7	42.6		16.7	27.6	
Actuated g/C Ratio	0.16	0.16	0.45	0.11	0.11	0.11	0.29	0.39		0.15	0.26	
v/c Ratio	0.61	0.23	0.49	0.37	0.65	0.20	0.60	0.48		0.18	0.75	
Control Delay	51.1	40.3	7.8	50.1	61.2	1.4	42.2	13.0		46.4	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.1	40.3	7.8	50.1	61.2	1.4	42.2	13.0		46.4	39.5	
LOS	D	D	A	D	E	A	D	B		D	D	
Approach Delay		18.1			43.6			26.8			39.9	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	110	42	62	46	87	0	94	188		31	221	
Queue Length 95th (ft)	166	78	86	77	125	0	286	66		70	267	
Internal Link Dist (ft)		706			548			729			644	
Turn Bay Length (ft)	250		115	160		160	500			275		
Base Capacity (vph)	330	351	1512	217	228	338	1027	1500		278	1430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.20	0.47	0.33	0.57	0.19	0.60	0.46		0.18	0.69	

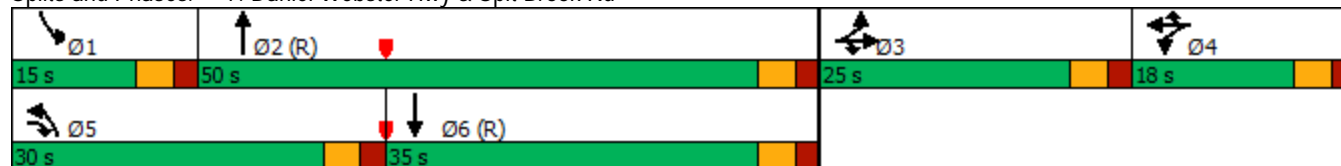
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 29.5
 Intersection Capacity Utilization 61.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Lanes, Volumes, Timings

7: Daniel Webster Hwy & Spit Brook Rd

Splits and Phases: 7: Daniel Webster Hwy & Spit Brook Rd



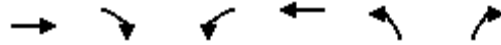
Lanes, Volumes, Timings
 9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	730	24	206	565	60	245
Future Volume (vph)	730	24	206	565	60	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	65		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.892	
Flt Protected			0.950		0.990	
Satd. Flow (prot)	1855	0	1770	1863	1645	0
Flt Permitted			0.100		0.990	
Satd. Flow (perm)	1855	0	186	1863	1645	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3				154	
Link Speed (mph)	30			30	30	
Link Distance (ft)	543			772	313	
Travel Time (s)	12.3			17.5	7.1	
Peak Hour Factor	0.92	0.92	0.85	0.85	0.76	0.76
Adj. Flow (vph)	793	26	242	665	79	322
Shared Lane Traffic (%)						
Lane Group Flow (vph)	819	0	242	665	401	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	100		20	100	20	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	6		20	6	20	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases			6			

Lanes, Volumes, Timings

9: Arlington Street & E Hollis Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	2		1	6	4	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	
Minimum Split (s)	15.0		15.0	15.0	15.0	
Total Split (s)	70.0		20.0	90.0	20.0	
Total Split (%)	63.6%		18.2%	81.8%	18.2%	
Maximum Green (s)	65.0		15.0	85.0	15.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		None	Min	None	
Act Effect Green (s)	42.9		59.1	59.1	15.4	
Actuated g/C Ratio	0.51		0.70	0.70	0.18	
v/c Ratio	0.87		0.72	0.51	0.94	
Control Delay	28.9		28.3	7.2	56.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	28.9		28.3	7.2	56.3	
LOS	C		C	A	E	
Approach Delay	28.9			12.8	56.3	
Approach LOS	C			B	E	
Queue Length 50th (ft)	345		58	136	130	
Queue Length 95th (ft)	551		140	174	#295	
Internal Link Dist (ft)	463			692	233	
Turn Bay Length (ft)			65			
Base Capacity (vph)	1462		417	1758	425	
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	0.56		0.58	0.38	0.94	

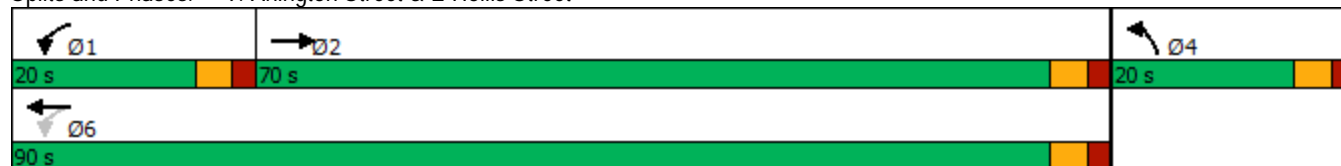
Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	84.8
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	27.2
Intersection LOS:	C
Intersection Capacity Utilization:	82.2%
ICU Level of Service:	E
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Lanes, Volumes, Timings

9: Arlington Street & E Hollis Street

Splits and Phases: 9: Arlington Street & E Hollis Street



HCM 6th TWSC
 8: Chase Street & E Hollis Street

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↑	
Traffic Vol, veh/h	0	935	20	20	656	0	0	0	0	0	0	0
Future Vol, veh/h	0	935	20	20	656	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	11	0	11	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	86	86	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	2	2	2	2	2	2
Mvmt Flow	0	1005	22	23	763	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	1033	0	0	-	1842	-
Stage 1	-	-	-	-	-	-	-	809	-
Stage 2	-	-	-	-	-	-	-	1033	-
Critical Hdwy	-	-	-	4.1	-	-	-	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	4.018	-
Pot Cap-1 Maneuver	0	-	-	681	-	0	0	75	0
Stage 1	0	-	-	-	-	0	0	394	0
Stage 2	0	-	-	-	-	0	0	310	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	681	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	681	-	-
HCM Lane V/C Ratio	-	-	0.034	-	-
HCM Control Delay (s)	-	-	10.5	0	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	-

HCM 6th TWSC
 10: Arlington Street & Crown Street

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	25	5	32	25	65	10	230	53	30	185	15
Future Vol, veh/h	5	25	5	32	25	65	10	230	53	30	185	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	79	79	79	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	37	7	47	37	96	13	291	67	43	268	22

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	782	749	279	738	727	325	290	0	0	358	0	0
Stage 1	365	365	-	351	351	-	-	-	-	-	-	-
Stage 2	417	384	-	387	376	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	312	341	760	334	351	716	1272	-	-	1201	-	-
Stage 1	654	623	-	666	632	-	-	-	-	-	-	-
Stage 2	613	611	-	637	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	237	322	760	289	332	716	1272	-	-	1201	-	-
Mov Cap-2 Maneuver	237	322	-	289	332	-	-	-	-	-	-	-
Stage 1	645	596	-	657	624	-	-	-	-	-	-	-
Stage 2	493	603	-	566	590	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.9		18.6		0.3		1.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	332	441	1201	-
HCM Lane V/C Ratio	0.01	-	-	0.157	0.407	0.036	-
HCM Control Delay (s)	7.9	0	-	17.9	18.6	8.1	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.6	1.9	0.1	-

HCM 6th TWSC
 11: Crown Street & Chase Street

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	60	30	0	20	20
Future Vol, veh/h	0	60	30	0	20	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	66	66	76	76
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	0	74	45	0	26	26

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	119 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	74 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	0	-	-	0	882 1031
Stage 1	0	-	-	0	983 -
Stage 2	0	-	-	0	954 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	882 1031
Mov Cap-2 Maneuver	-	-	-	-	882 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	954 -

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	951
HCM Lane V/C Ratio	-	-	0.055
HCM Control Delay (s)	-	-	9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

HCM 6th TWSC
21: Crown Street




















Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Vol, veh/h	60	23	0	50	57	0
Future Vol, veh/h	60	23	0	50	57	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	25	0	54	62	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	132 78
Stage 1	-	-	-	-	78 -
Stage 2	-	-	-	-	54 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	0	-	862 983
Stage 1	-	-	0	-	945 -
Stage 2	-	-	0	-	969 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	862 983
Mov Cap-2 Maneuver	-	-	-	-	862 -
Stage 1	-	-	-	-	945 -
Stage 2	-	-	-	-	969 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBT
Capacity (veh/h)	862	-	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-	-
HCM Control Delay (s)	9.5	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	5	384	0	0	0	0	546	175	150	515	0
Future Volume (vph)	505	5	384	0	0	0	0	546	175	150	515	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		290	0		0	0		550	0		0
Storage Lanes	1		1	0		0	0		0	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850							0.850		
Flt Protected	0.950	0.953								0.950		
Satd. Flow (prot)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Flt Permitted	0.950	0.953								0.950		
Satd. Flow (perm)	1681	1686	1583	0	0	0	0	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			247						219			
Link Speed (mph)		30			30			30				30
Link Distance (ft)		612			694			288				461
Travel Time (s)		13.9			15.8			6.5				10.5
Peak Hour Factor	0.83	0.83	0.83	0.90	0.90	0.90	0.80	0.80	0.80	0.77	0.77	0.77
Adj. Flow (vph)	608	6	463	0	0	0	0	683	219	195	669	0
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	304	310	463	0	0	0	0	683	219	195	669	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			24			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Split	NA	Prot					NA	Prot	Prot	NA	
Protected Phases	4	4	4					6	6	5	2	
Permitted Phases												

Lanes, Volumes, Timings
 12: South River Rd & Raymond Wieczoric EB Ramps



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4					6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	5.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					20.0	20.0	21.0	16.0	
Total Split (s)	25.0	25.0	25.0					35.0	35.0	15.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%					46.7%	46.7%	20.0%	66.7%	
Maximum Green (s)	19.0	19.0	19.0					29.0	29.0	9.0	44.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					Min	Min	None	Min	
Walk Time (s)								7.0	7.0	7.0		
Flash Dont Walk (s)								7.0	7.0	7.0		
Pedestrian Calls (#/hr)								0	0	0		
Act Effect Green (s)	16.9	16.9	16.9					20.3	20.3	8.3	34.7	
Actuated g/C Ratio	0.26	0.26	0.26					0.32	0.32	0.13	0.54	
v/c Ratio	0.69	0.70	0.77					0.61	0.34	0.44	0.35	
Control Delay	32.1	32.6	21.4					21.0	4.2	31.3	8.8	
Queue Delay	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay	32.1	32.6	21.4					21.0	4.2	31.3	8.8	
LOS	C	C	C					C	A	C	A	
Approach Delay		27.6						16.9			13.9	
Approach LOS		C						B			B	
Queue Length 50th (ft)	113	116	74					123	0	38	75	
Queue Length 95th (ft)	202	207	#175					147	27	63	85	
Internal Link Dist (ft)		532			614			208			381	
Turn Bay Length (ft)			290						550			
Base Capacity (vph)	512	514	654					1647	853	495	2499	
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	0.59	0.60	0.71					0.41	0.26	0.39	0.27	

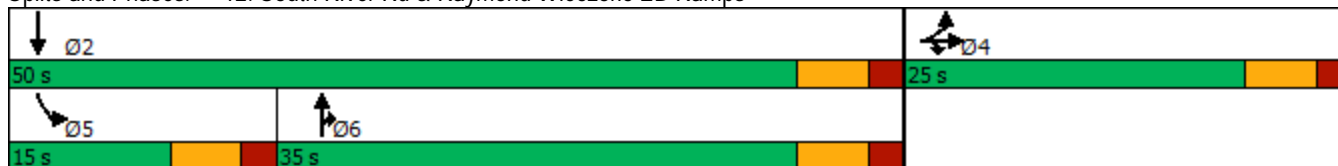
Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	63.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	20.1
Intersection LOS:	C
Intersection Capacity Utilization:	48.5%
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.	























Lanes, Volumes, Timings

12: South River Rd & Raymond Wieczoric EB Ramps

Splits and Phases: 12: South River Rd & Raymond Wieczoric EB Ramps



Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	5	262	0	95	5	380	676	235	398	0
Future Volume (vph)	5	5	5	262	0	95	5	380	676	235	398	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	430		430	450		0
Storage Lanes	0		1	0		1	1		1	2		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850			
Flt Protected		0.976			0.950		0.950			0.950		
Satd. Flow (prot)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Flt Permitted		0.976			0.950		0.950			0.950		
Satd. Flow (perm)	0	1818	1583	0	1770	1583	1770	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			136			768			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		245			390			714			684	
Travel Time (s)		5.6			8.9			16.2			15.5	
Peak Hour Factor	0.46	0.46	0.46	0.86	0.86	0.86	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	11	11	11	305	0	110	6	432	768	305	517	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	11	0	305	110	6	432	768	305	517	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Prot	Split	NA	custom	Prot	NA	custom	Prot	NA	
Protected Phases	4	4	4	8	8	8	1	6	6	5	2	
Permitted Phases						5			8			

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	5.0	5.0	5.0	4.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.0	10.0	10.0	11.0	11.0	11.0	10.0	16.0	16.0	11.0	16.0	
Total Split (s)	10.0	10.0	10.0	15.0	15.0	15.0	10.0	40.0	40.0	15.0	45.0	
Total Split (%)	8.3%	8.3%	8.3%	12.5%	12.5%	12.5%	8.3%	33.3%	33.3%	12.5%	37.5%	
Maximum Green (s)	4.0	4.0	4.0	9.0	9.0	9.0	4.0	34.0	34.0	9.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		4.1	4.1		9.3	24.7	4.1	18.9	32.3	9.3	32.7	
Actuated g/C Ratio		0.07	0.07		0.16	0.42	0.07	0.32	0.55	0.16	0.55	
v/c Ratio		0.17	0.04		1.11	0.15	0.05	0.38	0.63	0.57	0.26	
Control Delay		34.3	0.2		116.3	3.1	32.2	16.9	3.1	31.0	8.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		34.3	0.2		116.3	3.1	32.2	16.9	3.1	31.0	8.7	
LOS		C	A		F	A	C	B	A	C	A	
Approach Delay		22.9			86.3			8.2			17.0	
Approach LOS		C			F			A			B	
Queue Length 50th (ft)		7	0		-114	0	2	54	0	48	33	
Queue Length 95th (ft)		16	0		#318	20	14	103	22	92	92	
Internal Link Dist (ft)		165			310			634			604	
Turn Bay Length (ft)							430		430	450		
Base Capacity (vph)		126	287		276	738	122	2089	1291	536	2396	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.17	0.04		1.11	0.15	0.05	0.21	0.59	0.57	0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	59.2
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.11
Intersection Signal Delay:	24.4
Intersection LOS:	C
Intersection Capacity Utilization:	66.9%
ICU Level of Service:	C
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	

Lanes, Volumes, Timings
 14: South River Rd & East Point Dr

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	40.0
Total Split (s)	40.0
Total Split (%)	33%
Maximum Green (s)	34.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	30.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

14: South River Rd & East Point Dr

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

Splits and Phases: 14: South River Rd & East Point Dr

↙ Ø1	↓ Ø2	↙ ↘ Ø4	↙ ↘ Ø8	🚶 Ø9
10 s	45 s	10 s	15 s	40 s
↙ Ø5	↑ Ø6			
15 s	40 s			

HCM 6th TWSC
 13: South River Rd & Somerville Dr

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↓		↔↑↑	
Traffic Vol, veh/h	5	15	1041	5	5	655
Future Vol, veh/h	5	15	1041	5	5	655
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	28	1197	6	5	704

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1492	602	0	0	1203	0
Stage 1	1200	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.29	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	141	443	-	-	576	-
Stage 1	243	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	139	443	-	-	576	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	243	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	576
HCM Lane V/C Ratio	-	-	0.132	0.009
HCM Control Delay (s)	-	-	19.5	11.3
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

HCM 6th TWSC
 22: South River Rd & Site Driveway

Intersection

Int Delay, s/veh 3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗ ↑↑↑	↑↑↑		↙	↑↑
Traffic Vol, veh/h	93	151	570	12	19	880
Future Vol, veh/h	93	151	570	12	19	880
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	164	620	13	21	957

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	1148	317	0	0	633
Stage 1	627	-	-	-	-
Stage 2	521	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12
Pot Cap-1 Maneuver	224	579	-	-	586
Stage 1	418	-	-	-	-
Stage 2	543	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	216	579	-	-	586
Mov Cap-2 Maneuver	216	-	-	-	-
Stage 1	418	-	-	-	-
Stage 2	523	-	-	-	-





















Approach

	WB	NB	SB
HCM Control Delay, s	22	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt

	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	216	579	586	-
HCM Lane V/C Ratio	-	-	0.468	0.283	0.035	-
HCM Control Delay (s)	-	-	35.5	13.7	11.4	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	2.3	1.2	0.1	-













Lanes, Volumes, Timings
15: Elm St & Valley St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	31	25	345	27	340	25	575	140	305	805	28
Future Volume (vph)	68	31	25	345	27	340	25	575	140	305	805	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	170		125	100		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Frt		0.973				0.850			0.850		0.990	
Flt Protected		0.971			0.956			0.996		0.950		
Satd. Flow (prot)	0	1795	0	0	1798	1599	0	3596	1615	1787	3574	0
Flt Permitted		0.260			0.625			0.806		0.950		
Satd. Flow (perm)	0	481	0	0	1176	1599	0	2910	1615	1787	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				371			139		9	
Link Speed (mph)		30			30			30		30		30
Link Distance (ft)		400			550			619		407		407
Travel Time (s)		9.1			12.5			14.1		9.3		9.3
Peak Hour Factor	0.53	0.75	0.58	0.86	0.79	0.91	0.53	0.95	0.85	0.93	0.94	0.45
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	128	41	43	401	34	374	47	605	165	328	856	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	212	0	0	435	374	0	652	165	328	918	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50		50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Prot	Prot	NA	
Protected Phases		8			4			6	6	5	2	
Permitted Phases	8			4		4	6					
Detector Phase	8	8		4	4	4	6	6	6	5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0

Lanes, Volumes, Timings
 15: Elm St & Valley St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	29.0

Lanes, Volumes, Timings
15: Elm St & Valley St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	25.0	25.0		25.0	25.0	25.0	25.0	25.0	25.0	15.0	40.0	
Total Split (%)	26.6%	26.6%		26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	16.0%	42.6%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	9.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0			6.0	6.0		6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	None	None	None	None	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		19.4			19.4	19.4		19.4	19.4	9.2	34.7	
Actuated g/C Ratio		0.27			0.27	0.27		0.27	0.27	0.13	0.49	
v/c Ratio		1.51			1.35	0.53		0.82	0.30	1.41	0.52	
Control Delay		287.4			203.6	6.5		36.1	8.8	238.7	15.5	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.3	
Total Delay		287.4			203.6	6.5		36.1	8.8	238.7	15.7	
LOS		F			F	A		D	A	F	B	
Approach Delay		287.4			112.5			30.6			74.4	
Approach LOS		F			F			C			E	
Queue Length 50th (ft)		~114			~223	1		122	7	~173	112	
Queue Length 95th (ft)		#269			#491	78		#346	58	#470	312	
Internal Link Dist (ft)		320			470			539			327	
Turn Bay Length (ft)						200			125	100		
Base Capacity (vph)		140			322	707		798	543	232	1758	
Starvation Cap Reductn		0			0	0		0	0	0	279	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		1.51			1.35	0.53		0.82	0.30	1.41	0.62	

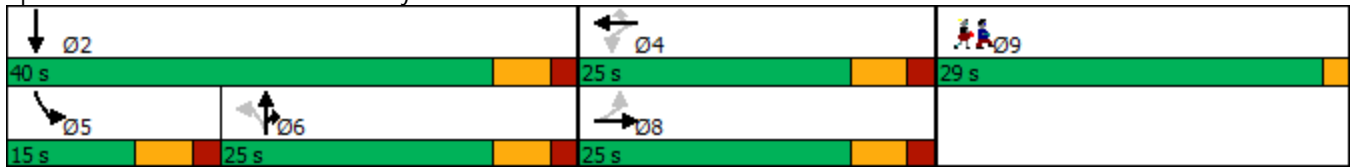
Intersection Summary

Area Type:	Other
Cycle Length:	94
Actuated Cycle Length:	70.8
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.51
Intersection Signal Delay:	87.4
Intersection LOS:	F
Intersection Capacity Utilization:	82.0%
ICU Level of Service:	D
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Lanes, Volumes, Timings

15: Elm St & Valley St




















Splits and Phases: 15: Elm St & Valley St



Lanes, Volumes, Timings
 15: Elm St & Valley St

Lane Group	Ø9
Total Split (s)	29.0
Total Split (%)	31%
Maximum Green (s)	27.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	20.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
16: Elm St & Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	245	0	0	5	195	723	0	5	893	35
Future Volume (vph)	30	0	245	0	0	5	195	723	0	5	893	35
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	0.95	0.95	0.95
Frt			0.850		0.865							0.994
Flt Protected		0.950					0.950					0.999
Satd. Flow (prot)	0	1805	1615	0	1644	0	1805	1900	0	0	3551	0
Flt Permitted		0.950					0.950					0.714
Satd. Flow (perm)	0	1805	1615	0	1644	0	1805	1900	0	0	2538	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			306		579							4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		388			270			407				709
Travel Time (s)		8.8			6.1			9.3				16.1
Peak Hour Factor	0.69	0.92	0.80	0.25	0.92	0.25	0.91	0.92	0.92	0.38	0.95	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	43	0	306	0	0	20	214	786	0	13	940	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	306	0	20	0	214	786	0	0	996	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA	pt+ov		NA		Prot	NA		Perm	NA	
Protected Phases	3	3	3 1	4	4		1	6				2
Permitted Phases										2		
Detector Phase	3	3	3 1	4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		5.0	15.0		10.0	10.0	
Minimum Split (s)	10.0	10.0		11.0	11.0		11.0	25.0		25.0	25.0	
Total Split (s)	20.0	20.0		15.0	15.0		15.0	40.0		25.0	25.0	
Total Split (%)	19.6%	19.6%		14.7%	14.7%		14.7%	39.2%		24.5%	24.5%	
Maximum Green (s)	14.0	14.0		9.0	9.0		9.0	34.0		19.0	19.0	

Lanes, Volumes, Timings

16: Elm St & Site

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	26%
Maximum Green (s)	25.0

Lanes, Volumes, Timings

16: Elm St & Site



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag			Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		7.3	23.2		5.8		9.5	36.0				20.1
Actuated g/C Ratio		0.12	0.38		0.10		0.16	0.59				0.33
v/c Ratio		0.20	0.38		0.03		0.76	0.70				1.19
Control Delay		30.8	4.5		0.0		47.8	18.2				118.9
Queue Delay		0.0	0.0		0.0		0.0	1.3				0.0
Total Delay		30.8	4.5		0.0		47.8	19.6				118.9
LOS		C	A		A		D	B				F
Approach Delay		7.7						25.6				118.9
Approach LOS		A						C				F
Queue Length 50th (ft)		12	0		0		63	118				~191
Queue Length 95th (ft)		57	37		0		#303	#784				#624
Internal Link Dist (ft)		308			190			327				629
Turn Bay Length (ft)												
Base Capacity (vph)		438	965		745		282	1122				840
Starvation Cap Reductn		0	0		0		0	162				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		0.10	0.32		0.03		0.76	0.82				1.19

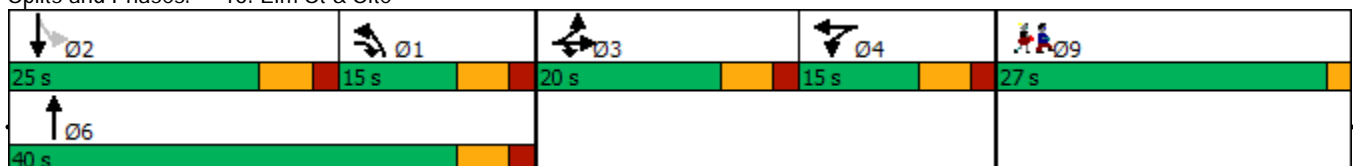
Intersection Summary

Area Type: Other
 Cycle Length: 102
 Actuated Cycle Length: 60.9
 Natural Cycle: 105
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 62.1
 Intersection LOS: E
 Intersection Capacity Utilization 87.3%
 ICU Level of Service E
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

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

Splits and Phases: 16: Elm St & Site























Lanes, Volumes, Timings

16: Elm St & Site

Lane Group	Ø9
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
17: Elm St & Auburn St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	145	355	46	110	15	264	376	23	25	477	90
Future Volume (vph)	45	145	355	46	110	15	264	376	23	25	477	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	150		150	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.988				0.850		0.974	
Flt Protected		0.987			0.986		0.950				0.997	
Satd. Flow (prot)	0	1875	1599	0	1851	0	1805	1900	1615	0	3506	0
Flt Permitted		0.855			0.829		0.259				0.905	
Satd. Flow (perm)	0	1624	1599	0	1556	0	492	1900	1615	0	3182	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			428		6				71		31	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		444			563			709			834	
Travel Time (s)		10.1			12.8			16.1			19.0	
Peak Hour Factor	0.80	0.91	0.83	0.65	0.71	0.65	0.92	0.88	0.94	0.69	0.96	0.80
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	56	159	428	71	155	23	287	427	24	36	497	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	428	0	249	0	287	427	24	0	646	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		8	8 1		4		1	6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8	8 1	4	4		1	6	6	2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	13.0	13.0		11.0	11.0		7.0	11.0	11.0	11.0	11.0	

Lanes, Volumes, Timings

17: Elm St & Auburn St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	25.0

Lanes, Volumes, Timings

17: Elm St & Auburn St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	20.0	20.0		20.0	20.0		7.0	32.0	32.0	25.0	25.0	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		9.1%	41.6%	41.6%	32.5%	32.5%	
Maximum Green (s)	14.0	14.0		14.0	14.0		3.0	26.0	26.0	19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0	6.0		6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		14.6	21.1		14.6		24.7	22.6	22.6			15.4
Actuated g/C Ratio		0.27	0.40		0.27		0.46	0.42	0.42			0.29
v/c Ratio		0.48	0.48		0.58		0.94	0.53	0.03			0.69
Control Delay		25.0	4.6		27.5		57.1	16.1	0.1			22.0
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0			0.0
Total Delay		25.0	4.6		27.5		57.1	16.1	0.1			22.0
LOS		C	A		C		E	B	A			C
Approach Delay		11.4			27.5			31.5				22.0
Approach LOS		B			C			C				C
Queue Length 50th (ft)		49	0		57		43	77	0			75
Queue Length 95th (ft)		#197	42		#158		#292	261	0			#225
Internal Link Dist (ft)		364			483			629				754
Turn Bay Length (ft)							150		150			
Base Capacity (vph)		445	891		431		306	967	857			1203
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		0.48	0.48		0.58		0.94	0.44	0.03			0.54

Intersection Summary

Area Type: Other

Cycle Length: 77

Actuated Cycle Length: 53.2

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 75.9%

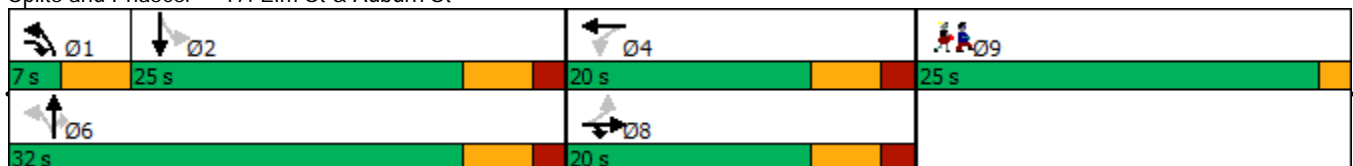
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Elm St & Auburn St

























Lanes, Volumes, Timings

17: Elm St & Auburn St

Lane Group	Ø9
Total Split (s)	25.0
Total Split (%)	32%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	15
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	275	145	139	330	95	150	403	73	30	458	185
Future Volume (vph)	180	275	145	139	330	95	150	403	73	30	458	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	510		0	200		0	600		0	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frnt			0.850		0.964				0.850			0.850
Flt Protected	0.950			0.950				0.986			0.996	
Satd. Flow (prot)	1570	1637	1364	1525	3028	0	0	3075	1378	0	3089	1391
Flt Permitted	0.950			0.950				0.590			0.728	
Satd. Flow (perm)	1570	1637	1364	1525	3028	0	0	1840	1378	0	2258	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165		26				94			153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		947			565			834			584	
Travel Time (s)		21.5			12.8			19.0			13.3	
Peak Hour Factor	0.88	0.89	0.88	0.69	0.88	0.81	0.83	0.91	0.83	0.63	0.90	0.86
Heavy Vehicles (%)	0%	1%	3%	3%	0%	0%	0%	1%	2%	4%	1%	1%
Adj. Flow (vph)	205	309	165	201	375	117	181	443	88	48	509	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	309	165	201	492	0	0	624	88	0	557	215
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	custom

Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	

Lanes, Volumes, Timings

18: Elm St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2				8		8	4		5
Detector Phase	5	2	2	1	6		3	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	25.0	35.0	35.0	22.0	32.0		14.0	49.0	49.0	35.0	35.0	25.0
Total Split (%)	17.9%	25.0%	25.0%	15.7%	22.9%		10.0%	35.0%	35.0%	25.0%	25.0%	17.9%
Maximum Green (s)	19.0	29.0	29.0	16.0	26.0		8.0	43.0	43.0	29.0	29.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	Min	Min	Min	Min	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	21.6	45.8	45.8	18.0	42.2		43.0	43.0		43.0		21.6
Actuated g/C Ratio	0.15	0.33	0.33	0.13	0.30		0.31	0.31		0.31		0.15
v/c Ratio	0.85	0.58	0.30	1.03	0.53		1.15dl	0.18		0.80		0.62
Control Delay	75.6	30.3	2.8	130.2	41.3		114.4	6.7		54.8		26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	75.6	30.3	2.8	130.2	41.3		114.4	6.7		54.8		26.6
LOS	E	C	A	F	D		F	A		D		C
Approach Delay		37.3			67.1		101.1			47.0		
Approach LOS		D			E		F			D		
Queue Length 50th (ft)	190	248	13	~215	188		~339	0		245		52
Queue Length 95th (ft)	#345	289	23	#251	240		#463	29		323		130
Internal Link Dist (ft)		867			485		754			504		
Turn Bay Length (ft)	510			200								150
Base Capacity (vph)	242	535	557	196	930		565	488		693		344
Starvation Cap Reductn	0	0	0	0	0		0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0	0		0		0
Reduced v/c Ratio	0.85	0.58	0.30	1.03	0.53		1.10	0.18		0.80		0.63

Intersection Summary

Area Type: CBD

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 63.1

Intersection LOS: E

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	34.0
Total Split (s)	34.0
Total Split (%)	24%
Maximum Green (s)	31.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	60
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

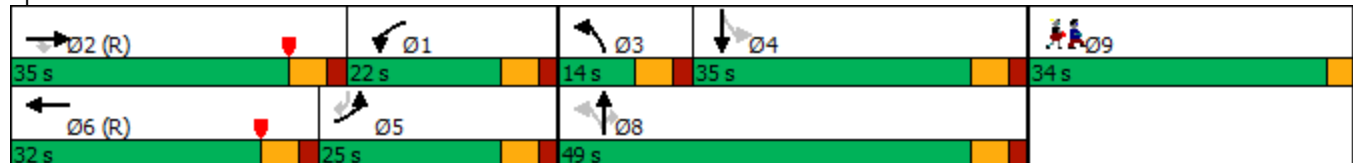
Queue shown is maximum after two cycles.

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
























Queue shown is maximum after two cycles.

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

Splits and Phases: 18: Elm St















Lanes, Volumes, Timings
 19: Canal St & Granite Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	460	590	486	5	720	150	347	307	20	75	164	270
Future Volume (vph)	460	590	486	5	720	150	347	307	20	75	164	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	140		250	120		120	260		0
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.932				0.850		0.991				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3334	0	1805	3574	1583	1770	3578	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3334	0	1805	3574	1583	1770	3578	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		138				163		4				293
Link Speed (mph)		30			30			30				30
Link Distance (ft)		329			947			835				503
Travel Time (s)		7.5			21.5			19.0				11.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	1%	2%	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	500	641	528	5	783	163	377	334	22	82	178	293
Shared Lane Traffic (%)												
Lane Group Flow (vph)	500	1169	0	5	783	163	377	356	0	82	178	293
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	5	2		1	6	6 7	3	8		7	4	4 5

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lanes, Volumes, Timings
 19: Canal St & Granite Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	5	2		1	6	6 7	3	8		7	4	4 5
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	16.0	38.0		14.0	36.0		29.0	29.0		22.0	22.0	
Total Split (%)	11.4%	27.1%		10.0%	25.7%		20.7%	20.7%		15.7%	15.7%	
Maximum Green (s)	10.0	32.0		8.0	30.0		23.0	23.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	37.8	80.7		8.0	39.7	59.3	23.0	18.9		19.6	15.5	59.3
Actuated g/C Ratio	0.27	0.58		0.06	0.28	0.42	0.16	0.14		0.14	0.11	0.42
v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.30	0.73		0.33	0.87	0.35
Control Delay	47.6	18.7		53.4	39.0	1.7	203.1	66.6		59.5	96.7	4.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.6	18.7		53.4	39.0	1.7	203.1	66.6		59.5	96.7	4.2
LOS	D	B		D	D	A	F	E		E	F	A
Approach Delay		27.3			32.7			136.8			42.2	
Approach LOS		C			C			F			D	
Queue Length 50th (ft)	207	291		4	233	0	-438	164		68	161	0
Queue Length 95th (ft)	276	453		m8	m263	m10	#642	213		127	#290	59
Internal Link Dist (ft)		249			867			755			423	
Turn Bay Length (ft)	200			140		250	120			260		
Base Capacity (vph)	936	1980		103	1013	764	290	591		248	212	833
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.30	0.60		0.33	0.84	0.35

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 134 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.30
 Intersection Signal Delay: 51.3 Intersection LOS: D
 Intersection Capacity Utilization 86.4% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	37.0
Total Split (s)	37.0
Total Split (%)	26%
Maximum Green (s)	31.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

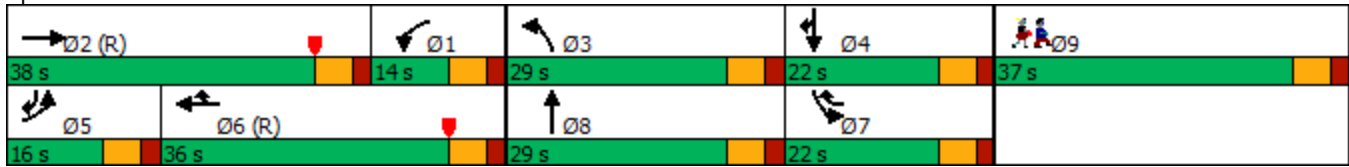
Lanes, Volumes, Timings

19: Canal St & Granite Street

Queue shown is maximum after two cycles.

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

Splits and Phases: 19: Canal St & Granite Street



Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗			↕↗	↗
Traffic Volume (vph)	75	10	35	192	5	25	55	515	145	10	585	85
Future Volume (vph)	75	10	35	192	5	25	55	515	145	10	585	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		135
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Frt			0.850		0.985			0.967				0.850
Flt Protected		0.958			0.959		0.950				0.999	
Satd. Flow (prot)	0	1785	1583	0	1760	0	1770	3422	0	0	3536	1583
Flt Permitted		0.679			0.684		0.950				0.940	
Satd. Flow (perm)	0	1265	1583	0	1255	0	1770	3422	0	0	3327	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		7			70				105
Link Speed (mph)		30			30			30				30
Link Distance (ft)		286			297			569				586
Travel Time (s)		6.5			6.8			12.9				13.3
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	90	12	42	231	6	30	61	572	161	12	722	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	42	0	267	0	61	733	0	0	734	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Prot	Perm	NA		Prot	NA		Perm	NA	Prot
Protected Phases		7	7		3		1	6			2	2

Lanes, Volumes, Timings

1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	7			3						2			
Detector Phase	7	7	7	3	3		1	6		2	2	2	
Switch Phase													
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		21.0	21.0	21.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0		20.0	58.0		38.0	38.0	38.0	
Total Split (%)	35.6%	35.6%	35.6%	35.6%	35.6%		22.2%	64.4%		42.2%	42.2%	42.2%	
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0		15.0	53.0		33.0	33.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0			5.0	5.0	
Lead/Lag							Lead				Lag	Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		Min	Min	Min	
Act Effct Green (s)		19.1	19.1		19.1		8.6	30.3			23.3	23.3	
Actuated g/C Ratio		0.31	0.31		0.31		0.14	0.50			0.38	0.38	
v/c Ratio		0.26	0.08		0.67		0.24	0.42			0.57	0.16	
Control Delay		21.2	1.3		30.2		32.7	9.1			19.0	4.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0	
Total Delay		21.2	1.3		30.2		32.7	9.1			19.0	4.7	
LOS		C	A		C		C	A			B	A	
Approach Delay		15.4			30.2			10.9			17.2		
Approach LOS		B			C			B			B		
Queue Length 50th (ft)		30	0		89		22	70			124	0	
Queue Length 95th (ft)		74	3		187		67	129			191	23	
Internal Link Dist (ft)		206			217			489			506		
Turn Bay Length (ft)												135	
Base Capacity (vph)		638	841		636		496	2840			2052	1016	
Starvation Cap Reductn		0	0		0		0	0			0	0	
Spillback Cap Reductn		0	0		0		0	0			0	0	
Storage Cap Reductn		0	0		0		0	0			0	0	
Reduced v/c Ratio		0.16	0.05		0.42		0.12	0.26			0.36	0.10	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 60.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 66.9%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 1: Middlesex Rd & Shopping Plaza Dr/Smokey Bones Dr



Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	148	265	20	239	15	200	405	10	10	395	695
Future Volume (vph)	505	148	265	20	239	15	200	405	10	10	395	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275		175	0		0	125		0	550		0
Storage Lanes	2		1	0		0	1		0	1		1
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	0.91	0.91	1.00	0.95	0.95	0.95	1.00	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.992			0.996				0.850
Flt Protected	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (prot)	1610	3285	1583	0	3497	0	1770	5065	0	1770	3539	1583
Flt Permitted	0.950	0.969			0.996		0.950			0.950		
Satd. Flow (perm)	1610	3285	1583	0	3497	0	1770	5065	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			315		4			3				584
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1049			446			586			1047	
Travel Time (s)		23.8			10.1			13.3			23.8	
Peak Hour Factor	0.84	0.84	0.84	0.82	0.82	0.82	0.83	0.83	0.83	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	601	176	315	24	291	18	241	488	12	11	444	781
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	300	477	315	0	333	0	241	500	0	11	444	781
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		20	15		9	15		9	15		35
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	Prot
Protected Phases	3	3	3	4	4		1	6		5	2	2

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3	4	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	10.0		6.0	20.0	20.0
Minimum Split (s)	11.0	11.0	11.0	13.0	13.0		11.0	16.0		11.0	25.0	25.0
Total Split (s)	35.0	35.0	35.0	21.0	21.0		35.0	51.0		13.0	29.0	29.0
Total Split (%)	29.2%	29.2%	29.2%	17.5%	17.5%		29.2%	42.5%		10.8%	24.2%	24.2%
Maximum Green (s)	30.0	30.0	30.0	16.0	16.0		30.0	46.0		8.0	24.0	24.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Act Effct Green (s)	25.9	25.9	25.9		14.1		19.5	46.8		6.6	24.4	24.4
Actuated g/C Ratio	0.25	0.25	0.25		0.14		0.19	0.45		0.06	0.23	0.23
v/c Ratio	0.75	0.59	0.50		0.70		0.73	0.22		0.10	0.54	0.96
Control Delay	50.1	38.4	6.9		52.5		54.1	19.3		53.2	40.1	34.4
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.1	38.4	6.9		52.5		54.1	19.3		53.2	40.1	34.4
LOS	D	D	A		D		D	B		D	D	C
Approach Delay		32.5			52.5			30.6				36.6
Approach LOS		C			D			C				D
Queue Length 50th (ft)	206	156	0		116		162	76		8	147	168
Queue Length 95th (ft)	316	214	51		161		225	112		27	216	#459
Internal Link Dist (ft)		969			366			506				967
Turn Bay Length (ft)	275		175				125			550		
Base Capacity (vph)	470	960	685		548		517	2356		137	827	817
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.64	0.50	0.46		0.61		0.47	0.21		0.08	0.54	0.96

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 104.3

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 35.5

Intersection LOS: D

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

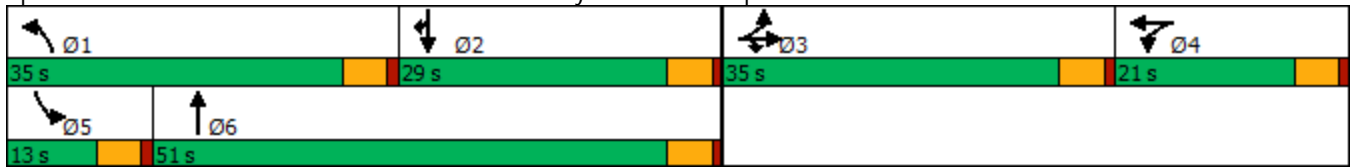
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance

Splits and Phases: 2: Middlesex Rd/Daniel Webster Hwy & Route 3 Ramps/Pheasant Lane Entrance



Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Future Volume (vph)	75	40	60	110	15	0	105	720	90	35	925	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	275		0	245		40
Storage Lanes	1		1	0		1	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Frt			0.850					0.983				0.850
Flt Protected	0.950				0.958		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	1785	1863	1770	4999	0	1770	5085	1583
Flt Permitted	0.668				0.721		0.950			0.950		
Satd. Flow (perm)	1244	1863	1583	0	1343	1863	1770	4999	0	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87					27				76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			242			1047			500	
Travel Time (s)		5.4			5.5			23.8			11.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	44	67	122	17	0	117	800	100	39	1028	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	44	67	0	139	0	117	900	0	39	1028	161
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Prot
Protected Phases		4			8		5	2		1	6	6

Lanes, Volumes, Timings

3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8						
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	16.0		10.0	16.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	27.0	48.0		27.0	48.0	48.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	27.0%	48.0%		27.0%	48.0%	48.0%
Maximum Green (s)	20.0	20.0	20.0	20.0	20.0	20.0	22.0	42.0		22.0	42.0	42.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	6.0		5.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	Min
Act Effct Green (s)	12.2	12.2	12.2		12.6		10.3	39.1		7.5	31.7	31.7
Actuated g/C Ratio	0.20	0.20	0.20		0.20		0.17	0.63		0.12	0.51	0.51
v/c Ratio	0.34	0.12	0.17		0.51		0.40	0.28		0.18	0.39	0.19
Control Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.0	24.9	5.6		32.8		31.9	9.0		32.9	14.8	9.2
LOS	C	C	A		C		C	A		C	B	A
Approach Delay		20.0			32.8			11.7			14.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	27	14	0		47		40	46		14	104	20
Queue Length 95th (ft)	79	47	23		124		109	137		50	186	68
Internal Link Dist (ft)		158			162			967			420	
Turn Bay Length (ft)	100		100				275			245		40
Base Capacity (vph)	445	667	622		481		697	3545		697	3597	1142
Starvation Cap Reductn	0	0	0		0		0	0		0	0	0
Spillback Cap Reductn	0	0	0		0		0	0		0	0	0
Storage Cap Reductn	0	0	0		0		0	0		0	0	0
Reduced v/c Ratio	0.19	0.07	0.11		0.29		0.17	0.25		0.06	0.29	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 61.7
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 14.8
 Intersection Capacity Utilization 50.6%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Daniel Webster Hwy & Pheasant Lane/Pheasant Lane



Lanes, Volumes, Timings

4: Daniel Webster Hwy & Dan Chan St



Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↗	↔	↑↑↑		↔↔	↑↑
Traffic Volume (vph)	220	206	30	645	120	474	860
Future Volume (vph)	220	206	30	645	120	474	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	250	75		0	545	
Storage Lanes	2	1	1		0	1	
Taper Length (ft)	100		100			100	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.97	0.95
Fr _t		0.850		0.977			
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	3433	1583	1770	4968	0	3433	3539
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3433	1583	1770	4968	0	3433	3539
Right Turn on Red		Yes			Yes		
Satd. Flow (RTOR)		139		41			
Link Speed (mph)	30			30			30
Link Distance (ft)	365			500			942
Travel Time (s)	8.3			11.4			21.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	244	229	33	717	133	527	956
Shared Lane Traffic (%)							
Lane Group Flow (vph)	244	229	33	850	0	527	956
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Right	Left	R NA
Median Width(ft)	24			18			24
Link Offset(ft)	0			0			0
Crosswalk Width(ft)	16			16			16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9		9	15	
Number of Detectors	1	1	1	2		1	2
Detector Template	Left	Right	Left	Thru		Left	Thru
Leading Detector (ft)	20	20	20	100		20	100
Trailing Detector (ft)	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0		0	0
Detector 1 Size(ft)	20	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)				94			94
Detector 2 Size(ft)				6			6
Detector 2 Type				Cl+Ex			Cl+Ex
Detector 2 Channel							
Detector 2 Extend (s)				0.0			0.0
Turn Type	Prot	custom	Prot	NA		Prot	NA
Protected Phases	4	4	5	2		1	6

Lanes, Volumes, Timings
 4: Daniel Webster Hwy & Dan Chan St

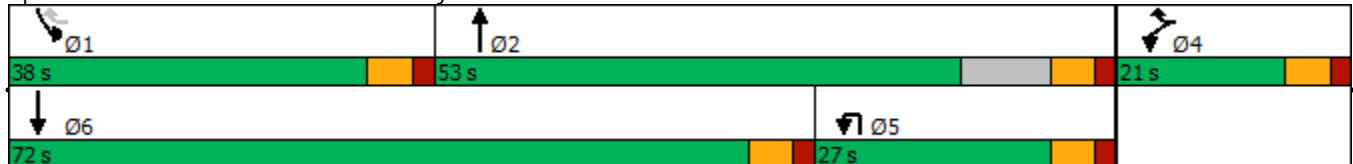


Lane Group	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Permitted Phases		1					
Detector Phase	4	4	5	2		1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	10.0		10.0	10.0
Minimum Split (s)	11.0	11.0	11.0	16.0		16.0	16.0
Total Split (s)	21.0	21.0	27.0	53.0		38.0	72.0
Total Split (%)	17.5%	17.5%	22.5%	44.2%		31.7%	60.0%
Maximum Green (s)	15.0	15.0	21.0	47.0		32.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag			Lag	Lag		Lead	Lead
Lead-Lag Optimize?			Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	Min		None	Min
Act Effect Green (s)	10.7	32.9	7.4	19.7		16.0	36.6
Actuated g/C Ratio	0.16	0.51	0.11	0.30		0.25	0.56
v/c Ratio	0.43	0.26	0.17	0.55		0.62	0.48
Control Delay	28.6	5.0	31.4	19.9		26.2	11.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	28.6	5.0	31.4	19.9		26.2	11.3
LOS	C	A	C	B		C	B
Approach Delay	17.2			20.3			16.6
Approach LOS	B			C			B
Queue Length 50th (ft)	44	17	12	94		93	78
Queue Length 95th (ft)	91	58	41	157		168	232
Internal Link Dist (ft)	285			420			862
Turn Bay Length (ft)		250	75			545	
Base Capacity (vph)	815	831	588	4250		1739	3356
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	0.30	0.28	0.06	0.20		0.30	0.28

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 64.9
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 49.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Daniel Webster Hwy & Dan Chan St



Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	190	60	140	70	50	50	25	165	681	55	15	200
Future Volume (vph)	190	60	140	70	50	50	25	165	681	55	15	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		185	0		100		215		0		440
Storage Lanes	1		1	0		1		1		0		1
Taper Length (ft)	100			100				100				100
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91	0.91	0.91	1.00
Frt			0.850				0.850		0.989			
Flt Protected	0.950	0.974			0.972			0.950				0.950
Satd. Flow (prot)	1681	1724	1583	0	1811	1583	0	1770	5029	0	0	1770
Flt Permitted	0.671	0.763			0.737			0.950				0.950
Satd. Flow (perm)	1187	1350	1583	0	1373	1583	0	1770	5029	0	0	1770
Right Turn on Red			Yes			Yes				Yes		
Satd. Flow (RTOR)			198			198			11			
Link Speed (mph)		30			30				30			
Link Distance (ft)		335			336				942			
Travel Time (s)		7.6			7.6				21.4			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	211	67	156	78	56	56	28	183	757	61	17	222
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	135	143	156	0	134	56	0	211	818	0	0	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Number of Detectors	1	2	1	1	2	1	1	1	2		1	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Left	Thru		Left	Left
Leading Detector (ft)	20	100	20	20	100	20	20	20	100		20	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0		0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	20	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94			94				94			
Detector 2 Size(ft)		6			6				6			
Detector 2 Type		Cl+Ex			Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases		4			4		5	5	2		1	1
Permitted Phases	4		4	4		4						

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	SBT	SBR	Ø9
Lane Configurations	↑↑↑		
Traffic Volume (vph)	1054	45	
Future Volume (vph)	1054	45	
Ideal Flow (vphpl)	1900	1900	
Storage Length (ft)		0	
Storage Lanes		0	
Taper Length (ft)			
Lane Util. Factor	0.91	0.91	
Frt	0.994		
Flt Protected			
Satd. Flow (prot)	5055	0	
Flt Permitted			
Satd. Flow (perm)	5055	0	
Right Turn on Red		Yes	
Satd. Flow (RTOR)	6		
Link Speed (mph)	30		
Link Distance (ft)	829		
Travel Time (s)	18.8		
Peak Hour Factor	0.90	0.90	
Adj. Flow (vph)	1171	50	
Shared Lane Traffic (%)			
Lane Group Flow (vph)	1221	0	
Enter Blocked Intersection	No	No	
Lane Alignment	Left	Right	
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	
Turning Speed (mph)		9	
Number of Detectors	2		
Detector Template	Thru		
Leading Detector (ft)	100		
Trailing Detector (ft)	0		
Detector 1 Position(ft)	0		
Detector 1 Size(ft)	6		
Detector 1 Type	Cl+Ex		
Detector 1 Channel			
Detector 1 Extend (s)	0.0		
Detector 1 Queue (s)	0.0		
Detector 1 Delay (s)	0.0		
Detector 2 Position(ft)	94		
Detector 2 Size(ft)	6		
Detector 2 Type	Cl+Ex		
Detector 2 Channel			
Detector 2 Extend (s)	0.0		
Turn Type	NA		
Protected Phases	6	9	
Permitted Phases			

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Detector Phase	4	4	4	4	4	4	5	5	2		1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	16.0		11.0	11.0
Total Split (s)	18.0	18.0	18.0	18.0	18.0	18.0	15.0	15.0	30.0		19.0	19.0
Total Split (%)	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	13.6%	13.6%	27.3%		17.3%	17.3%
Maximum Green (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	10.0	24.0		13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0		5.0	6.0			6.0
Lead/Lag							Lead	Lead	Lead		Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	Min		None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	12.1	12.1	12.1		12.1	12.1		10.0	17.8			16.9
Actuated g/C Ratio	0.19	0.19	0.19		0.19	0.19		0.15	0.27			0.26
v/c Ratio	0.61	0.57	0.34		0.53	0.12		0.77	0.59			0.52
Control Delay	40.4	36.3	4.7		33.9	0.6		49.4	21.9			25.9
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Total Delay	40.4	36.3	4.7		33.9	0.6		49.4	21.9			25.9
LOS	D	D	A		C	A		D	C			C
Approach Delay		26.2			24.1				27.5			
Approach LOS		C			C				C			
Queue Length 50th (ft)	52	54	0		49	0		82	101			80
Queue Length 95th (ft)	#137	#135	28		#116	0		#200	135			157
Internal Link Dist (ft)		255			256				862			
Turn Bay Length (ft)	200		185			100		215				440
Base Capacity (vph)	220	250	455		254	455		273	1874			468
Starvation Cap Reductn	0	0	0		0	0		0	0			0
Spillback Cap Reductn	0	0	0		0	0		0	0			0
Storage Cap Reductn	0	0	0		0	0		0	0			0
Reduced v/c Ratio	0.61	0.57	0.34		0.53	0.12		0.77	0.44			0.51

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	64.9
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	22.8
Intersection LOS:	C
Intersection Capacity Utilization:	66.2%
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.	

Lanes, Volumes, Timings

5: Daniel Webster Hwy & Danforth Rd

Splits and Phases: 5: Daniel Webster Hwy & Danforth Rd























↑ Ø2	↙ Ø1	↔ Ø4	🚶 Ø9
30 s	19 s	18 s	40 s
↙ Ø5	↓ Ø6		
15 s	37 s		

Lanes, Volumes, Timings
 5: Daniel Webster Hwy & Danforth Rd

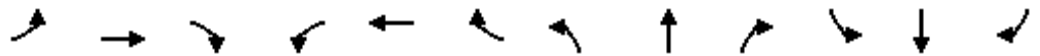


Lane Group	SBT	SBR	Ø9
Detector Phase	6		
Switch Phase			
Minimum Initial (s)	10.0		4.0
Minimum Split (s)	16.0		40.0
Total Split (s)	37.0		40.0
Total Split (%)	33.6%		36%
Maximum Green (s)	31.0		34.0
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		
Total Lost Time (s)	6.0		
Lead/Lag	Lag		
Lead-Lag Optimize?	Yes		
Vehicle Extension (s)	3.0		3.0
Recall Mode	Min		None
Walk Time (s)			4.0
Flash Dont Walk (s)			30.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)	25.7		
Actuated g/C Ratio	0.40		
v/c Ratio	0.61		
Control Delay	16.7		
Queue Delay	0.0		
Total Delay	16.7		
LOS	B		
Approach Delay	18.2		
Approach LOS	B		
Queue Length 50th (ft)	134		
Queue Length 95th (ft)	173		
Internal Link Dist (ft)	749		
Turn Bay Length (ft)			
Base Capacity (vph)	2427		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.50		
Intersection Summary			

Lanes, Volumes, Timings
6: Daniel Webster Hwy & Silver Dr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	20	45	65	15	260	50	911	35	235	1199	45
Future Volume (vph)	70	20	45	65	15	260	50	911	35	235	1199	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	100		0	150		0	130		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.994			0.995	
Flt Protected		0.962			0.961		0.950			0.950		
Satd. Flow (prot)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5060	0
Flt Permitted		0.962			0.961		0.950			0.950		
Satd. Flow (perm)	0	1792	1583	0	1790	1583	1770	5055	0	1770	5060	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			280		6		6		6
Link Speed (mph)		30			30			30		30		30
Link Distance (ft)		345			340			829		809		809
Travel Time (s)		7.8			7.7			18.8		18.4		18.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.92	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	78	22	50	72	16	280	56	1012	39	261	1332	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	50	0	88	280	56	1051	0	261	1382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12		12		12
Link Offset(ft)		0			0			0		0		0
Crosswalk Width(ft)		16			16			16		16		16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		5	2		1	6	

Lanes, Volumes, Timings
 6: Daniel Webster Hwy & Silver Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			3			4						
Detector Phase	3	3	3	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0	15.0	10.0	24.0		10.0	24.0	
Total Split (s)	22.0	22.0	22.0	21.0	21.0	21.0	15.0	40.0		25.0	50.0	
Total Split (%)	20.4%	20.4%	20.4%	19.4%	19.4%	19.4%	13.9%	37.0%		23.1%	46.3%	
Maximum Green (s)	17.0	17.0	17.0	16.0	16.0	16.0	10.0	35.0		20.0	45.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		11.3	11.3		11.0	11.0	8.6	45.5		20.2	59.2	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.08	0.42		0.19	0.55	
v/c Ratio		0.53	0.16		0.49	0.68	0.40	0.49		0.79	0.50	
Control Delay		55.5	1.0		53.9	14.2	55.0	25.3		49.1	25.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		55.5	1.0		53.9	14.2	55.0	25.3		49.1	25.4	
LOS		E	A		D	B	E	C		D	C	
Approach Delay		37.3			23.7			26.8			29.2	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)		67	0		59	0	37	193		168	297	
Queue Length 95th (ft)		117	0		104	76	77	273		#298	360	
Internal Link Dist (ft)		265			260			749			729	
Turn Bay Length (ft)			50				150			130		
Base Capacity (vph)		282	394		266	474	167	2134		351	2778	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.35	0.13		0.33	0.59	0.34	0.49		0.74	0.50	

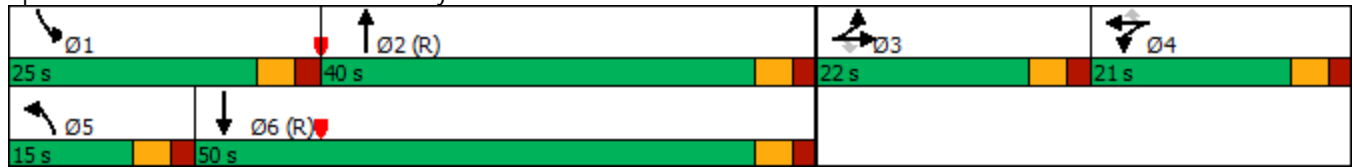
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 84 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 28.1 Intersection LOS: C
 Intersection Capacity Utilization 55.5% 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.

























Lanes, Volumes, Timings

6: Daniel Webster Hwy & Silver Dr

Splits and Phases: 6: Daniel Webster Hwy & Silver Dr



Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	60	594	55	100	50	569	622	15	45	765	135
Future Volume (vph)	145	60	594	55	100	50	569	622	15	45	765	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		115	160		160	500		0	275		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	0.91
Frt			0.850				0.850		0.996			0.978
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5065	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	1900	2842	1805	1900	1553	3502	3596	0	1805	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293			172			3			32
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		786			628			809			724	
Travel Time (s)		17.9			14.3			18.4			16.5	
Peak Hour Factor	0.84	0.84	0.84	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	173	71	707	71	130	65	612	669	16	49	841	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	71	707	71	130	65	612	685	0	49	989	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	pt+ov	Split	NA	Prot	Prot	NA		Prot	NA	
Protected Phases	3	3	3 5	4	4	4	5	2		1	6	

Lanes, Volumes, Timings
 7: Daniel Webster Hwy & Spit Brook Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	3	3	3 5	4	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	22.5	22.5		15.0	15.0	15.0	22.5	22.5		15.0	22.5	
Total Split (s)	25.0	25.0		18.0	18.0	18.0	30.0	50.0		15.0	35.0	
Total Split (%)	23.1%	23.1%		16.7%	16.7%	16.7%	27.8%	46.3%		13.9%	32.4%	
Maximum Green (s)	20.0	20.0		13.0	13.0	13.0	25.0	45.0		10.0	30.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	C-Min		Max	C-Min	
Act Effct Green (s)	17.2	17.2	48.9	11.5	11.5	11.5	31.7	42.6		16.7	27.6	
Actuated g/C Ratio	0.16	0.16	0.45	0.11	0.11	0.11	0.29	0.39		0.15	0.26	
v/c Ratio	0.61	0.23	0.49	0.37	0.65	0.20	0.60	0.48		0.18	0.75	
Control Delay	51.1	40.3	7.8	50.1	61.2	1.4	42.2	13.0		46.4	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.1	40.3	7.8	50.1	61.2	1.4	42.2	13.0		46.4	39.5	
LOS	D	D	A	D	E	A	D	B		D	D	
Approach Delay		18.1			43.6			26.8			39.9	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	110	42	62	46	87	0	94	188		31	221	
Queue Length 95th (ft)	166	78	86	77	125	0	286	66		70	267	
Internal Link Dist (ft)		706			548			729			644	
Turn Bay Length (ft)	250		115	160		160	500			275		
Base Capacity (vph)	330	351	1512	217	228	338	1027	1500		278	1430	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.52	0.20	0.47	0.33	0.57	0.19	0.60	0.46		0.18	0.69	

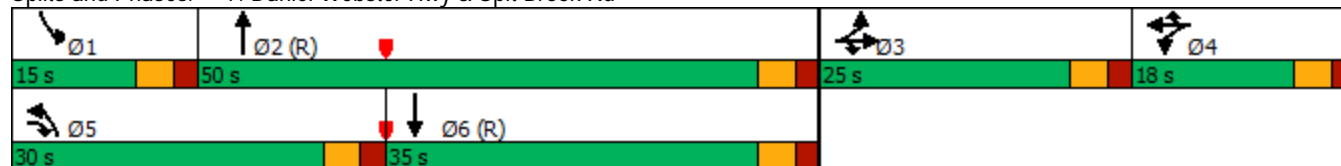
Intersection Summary

Area Type: Other
 Cycle Length: 108
 Actuated Cycle Length: 108
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 29.5
 Intersection Capacity Utilization 61.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B






















Lanes, Volumes, Timings

7: Daniel Webster Hwy & Spit Brook Rd

Splits and Phases: 7: Daniel Webster Hwy & Spit Brook Rd



Lanes, Volumes, Timings
15: Elm St & Valley St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	31	25	345	27	340	25	575	140	305	805	28
Future Volume (vph)	68	31	25	345	27	340	25	575	140	305	805	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	170		125	100		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Frt		0.923			0.862				0.850		0.990	
Flt Protected	0.950			0.950				0.996		0.950		
Satd. Flow (prot)	1805	1754	0	1787	1622	0	0	3596	1615	1787	3574	0
Flt Permitted	0.444			0.476				0.790		0.950		
Satd. Flow (perm)	844	1754	0	895	1622	0	0	2852	1615	1787	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			314				167		7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		400			550			619			407	
Travel Time (s)		9.1			12.5			14.1			9.3	
Peak Hour Factor	0.53	0.75	0.58	0.86	0.79	0.91	0.53	0.95	0.85	0.93	0.94	0.45
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	128	41	43	401	34	374	47	605	165	328	856	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	84	0	401	408	0	0	652	165	328	918	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	50	50		50	50		50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Prot	NA	
Protected Phases	3	8		7	4			6	6	5	2	
Permitted Phases	8			4			6					
Detector Phase	3	8		7	4		6	6	6	5	2	
Switch Phase												
Minimum Initial (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	11.0		10.0	11.0		11.0	11.0	11.0	11.0	11.0	

Lanes, Volumes, Timings
 15: Elm St & Valley St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	29.0

Lanes, Volumes, Timings

15: Elm St & Valley St

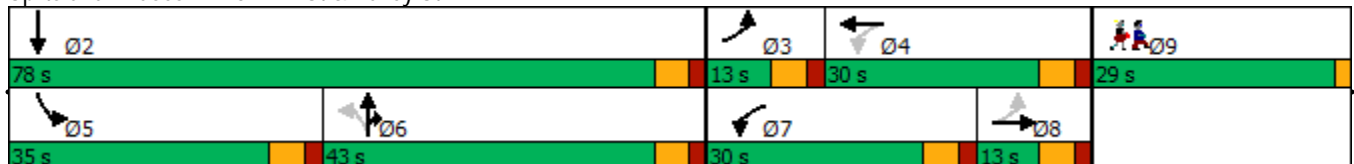


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	13.0	13.0		30.0	30.0		43.0	43.0	43.0	35.0	78.0	
Total Split (%)	8.7%	8.7%		20.0%	20.0%		28.7%	28.7%	28.7%	23.3%	52.0%	
Maximum Green (s)	7.0	7.0		24.0	24.0		37.0	37.0	37.0	29.0	72.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	0.0		-2.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0			6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	18.1	7.0		39.3	24.2		38.7	38.7	28.1	72.8		
Actuated g/C Ratio	0.14	0.05		0.30	0.18		0.29	0.29	0.21	0.55		
v/c Ratio	0.71	0.72		0.91	0.74		0.78	0.28	0.87	0.47		
Control Delay	63.4	77.5		69.1	22.4		52.7	7.2	74.2	20.8		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	4.7	3.2		
Total Delay	63.4	77.5		69.1	22.4		52.7	7.2	78.8	24.1		
LOS	E	E		E	C		D	A	E	C		
Approach Delay		69.0			45.6			43.5			38.5	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	73	45		273	63		241	0	240	192		
Queue Length 95th (ft)	90	#108		#507	140		#448	48	#516	386		
Internal Link Dist (ft)		320			470			539			327	
Turn Bay Length (ft)									125	100		
Base Capacity (vph)	181	118		442	553		832	589	395	1967		
Starvation Cap Reductn	0	0		0	0		0	0	31	921		
Spillback Cap Reductn	0	0		0	0		0	0	0	0		
Storage Cap Reductn	0	0		0	0		0	0	0	0		
Reduced v/c Ratio	0.71	0.71		0.91	0.74		0.78	0.28	0.90	0.88		

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 132.5
 Natural Cycle: 140
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 43.8
 Intersection LOS: D
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.




















Splits and Phases: 15: Elm St & Valley St



Lanes, Volumes, Timings
 15: Elm St & Valley St

Lane Group	Ø9
Total Split (s)	29.0
Total Split (%)	19%
Maximum Green (s)	27.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	20.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
16: Elm St & Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	245	0	0	5	195	723	0	5	893	35
Future Volume (vph)	30	0	245	0	0	5	195	723	0	5	893	35
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	0.95	0.95	0.95
Frt			0.850		0.865							0.994
Flt Protected		0.950					0.950					0.999
Satd. Flow (prot)	0	1805	1615	0	1644	0	1805	1900	0	0	3551	0
Flt Permitted		0.950					0.950					0.941
Satd. Flow (perm)	0	1805	1615	0	1644	0	1805	1900	0	0	3345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			306		422							4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		388			270			407				709
Travel Time (s)		8.8			6.1			9.3				16.1
Peak Hour Factor	0.69	0.92	0.80	0.25	0.92	0.25	0.91	0.92	0.92	0.38	0.95	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	43	0	306	0	0	20	214	786	0	13	940	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	306	0	20	0	214	786	0	0	996	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA	pt+ov		NA		Prot	NA		Perm	NA	
Protected Phases	3	3	3 1	4	4		1	6				2
Permitted Phases										2		
Detector Phase	3	3	3 1	4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		5.0	15.0		10.0	10.0	
Minimum Split (s)	10.0	10.0		11.0	11.0		11.0	25.0		25.0	25.0	
Total Split (s)	20.0	20.0		11.0	11.0		24.0	92.0		68.0	68.0	
Total Split (%)	13.3%	13.3%		7.3%	7.3%		16.0%	61.3%		45.3%	45.3%	
Maximum Green (s)	14.0	14.0		5.0	5.0		18.0	86.0		62.0	62.0	

Lanes, Volumes, Timings

16: Elm St & Site

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	18%
Maximum Green (s)	25.0

Lanes, Volumes, Timings

16: Elm St & Site



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.0			6.0		6.0	6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lag			Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.6	35.0		5.5		19.8	67.3			40.9	
Actuated g/C Ratio		0.09	0.36		0.06		0.21	0.70			0.43	
v/c Ratio		0.27	0.39		0.04		0.58	0.59			0.70	
Control Delay		54.9	6.0		0.2		48.4	12.6			26.1	
Queue Delay		0.0	0.0		0.0		0.0	0.6			0.0	
Total Delay		54.9	6.0		0.2		48.4	13.2			26.1	
LOS		D	A		A		D	B			C	
Approach Delay		12.0			0.2			20.7			26.1	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		21	0		0		96	131			196	
Queue Length 95th (ft)		82	40		0		#381	685			496	
Internal Link Dist (ft)		308			190			327			629	
Turn Bay Length (ft)												
Base Capacity (vph)		290	853		492		373	1643			2386	
Starvation Cap Reductn		0	0		0		0	464			39	
Spillback Cap Reductn		0	0		0		0	0			0	
Storage Cap Reductn		0	0		0		0	0			0	
Reduced v/c Ratio		0.15	0.36		0.04		0.57	0.67			0.42	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 95.9

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 21.5

Intersection LOS: C

Intersection Capacity Utilization 87.3%

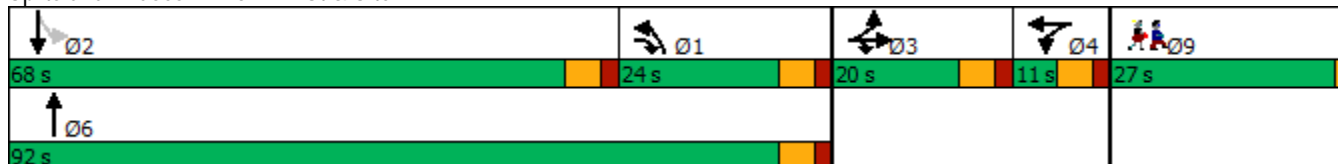
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 16: Elm St & Site























Lanes, Volumes, Timings

16: Elm St & Site

Lane Group	Ø9
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	10
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
17: Elm St & Auburn St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	145	355	46	110	15	264	376	23	25	477	90
Future Volume (vph)	45	145	355	46	110	15	264	376	23	25	477	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	150		150	0		0
Storage Lanes	1		1	0		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.988				0.850		0.974	
Flt Protected		0.987			0.986		0.950				0.997	
Satd. Flow (prot)	0	1875	1599	0	1851	0	1805	1900	1615	0	3506	0
Flt Permitted		0.848			0.825		0.228				0.904	
Satd. Flow (perm)	0	1611	1599	0	1549	0	433	1900	1615	0	3179	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			428		5				61		26	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		444			563			709			834	
Travel Time (s)		10.1			12.8			16.1			19.0	
Peak Hour Factor	0.80	0.91	0.83	0.65	0.71	0.65	0.92	0.88	0.94	0.69	0.96	0.80
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	56	159	428	71	155	23	287	427	24	36	497	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	428	0	249	0	287	427	24	0	646	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	50	50	50	50	50		50	50	50	50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA	pt+ov	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		8	8 1		4		1	6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8	8 1	4	4		1	6	6	2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	13.0	13.0		11.0	11.0		7.0	11.0	11.0	11.0	11.0	

Lanes, Volumes, Timings
 17: Elm St & Auburn St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	25.0

Lanes, Volumes, Timings

17: Elm St & Auburn St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	24.0	24.0		24.0	24.0		14.0	41.0	41.0	27.0	27.0	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		15.6%	45.6%	45.6%	30.0%	30.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		10.0	35.0	35.0	21.0	21.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0		4.0	6.0	6.0		6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		18.5	31.9		18.5		34.5	32.4	32.4			18.0
Actuated g/C Ratio		0.28	0.48		0.28		0.52	0.48	0.48			0.27
v/c Ratio		0.48	0.43		0.58		0.66	0.46	0.03			0.74
Control Delay		27.9	2.8		30.4		21.8	15.3	0.4			28.7
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0			0.0
Total Delay		27.9	2.8		30.4		21.8	15.3	0.4			28.7
LOS		C	A		C		C	B	A			C
Approach Delay		11.2			30.4			17.3				28.7
Approach LOS		B			C			B				C
Queue Length 50th (ft)		67	0		78		52	92	0			107
Queue Length 95th (ft)		#203	21		163		#219	274	2			#270
Internal Link Dist (ft)		364			483			629				754
Turn Bay Length (ft)							150		150			
Base Capacity (vph)		444	987		431		433	1019	895			1041
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		0.48	0.43		0.58		0.66	0.42	0.03			0.62

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 66.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 75.9%

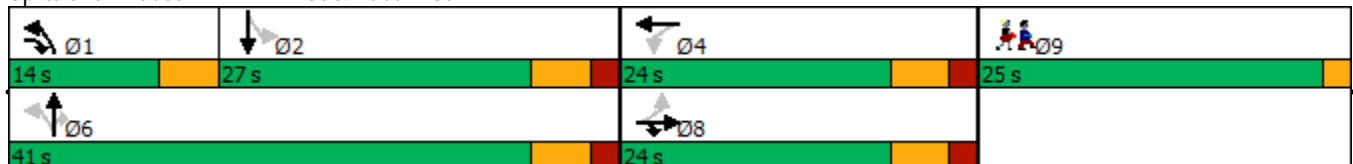
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Elm St & Auburn St

























Lanes, Volumes, Timings
 17: Elm St & Auburn St

Lane Group	Ø9
Total Split (s)	25.0
Total Split (%)	28%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	15
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	275	145	139	330	95	150	403	73	30	458	185
Future Volume (vph)	180	275	145	139	330	95	150	403	73	30	458	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	510		0	200		0	600		0	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frnt			0.850		0.964				0.850			0.850
Flt Protected	0.950			0.950				0.986			0.996	
Satd. Flow (prot)	1570	1637	1364	1525	3028	0	0	3075	1378	0	3089	1391
Flt Permitted	0.950			0.950				0.590			0.728	
Satd. Flow (perm)	1570	1637	1364	1525	3028	0	0	1840	1378	0	2258	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165		26				94			153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		947			565			834			584	
Travel Time (s)		21.5			12.8			19.0			13.3	
Peak Hour Factor	0.88	0.89	0.88	0.69	0.88	0.81	0.83	0.91	0.83	0.63	0.90	0.86
Heavy Vehicles (%)	0%	1%	3%	3%	0%	0%	0%	1%	2%	4%	1%	1%
Adj. Flow (vph)	205	309	165	201	375	117	181	443	88	48	509	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	309	165	201	492	0	0	624	88	0	557	215
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA	Perm	Perm	NA	custom













Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	

Lanes, Volumes, Timings

18: Elm St

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2				8		8	4		5
Detector Phase	5	2	2	1	6		3	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	25.0	35.0	35.0	22.0	32.0		14.0	49.0	49.0	35.0	35.0	25.0
Total Split (%)	17.9%	25.0%	25.0%	15.7%	22.9%		10.0%	35.0%	35.0%	25.0%	25.0%	17.9%
Maximum Green (s)	19.0	29.0	29.0	16.0	26.0		8.0	43.0	43.0	29.0	29.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0		6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	Min	Min	Min	Min	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	21.6	45.8	45.8	18.0	42.2			43.0	43.0		43.0	21.6
Actuated g/C Ratio	0.15	0.33	0.33	0.13	0.30			0.31	0.31		0.31	0.15
v/c Ratio	0.85	0.58	0.30	1.03	0.53			1.15dl	0.18		0.80	0.62
Control Delay	75.6	30.3	2.8	130.2	41.3			114.4	6.7		54.8	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	75.6	30.3	2.8	130.2	41.3			114.4	6.7		54.8	26.6
LOS	E	C	A	F	D			F	A		D	C
Approach Delay		37.3			67.1			101.1			47.0	
Approach LOS		D			E			F			D	
Queue Length 50th (ft)	190	248	13	~215	188			~339	0		245	52
Queue Length 95th (ft)	#345	289	23	#251	240			#463	29		323	130
Internal Link Dist (ft)		867			485			754			504	
Turn Bay Length (ft)	510			200								150
Base Capacity (vph)	242	535	557	196	930			565	488		693	344
Starvation Cap Reductn	0	0	0	0	0			0	0		0	0
Spillback Cap Reductn	0	0	0	0	0			0	0		0	0
Storage Cap Reductn	0	0	0	0	0			0	0		0	0
Reduced v/c Ratio	0.85	0.58	0.30	1.03	0.53			1.10	0.18		0.80	0.63

Intersection Summary

Area Type: CBD

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 63.1

Intersection LOS: E

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Lanes, Volumes, Timings

18: Elm St

Lane Group	Ø9
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	34.0
Total Split (s)	34.0
Total Split (%)	24%
Maximum Green (s)	31.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	60
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

18: Elm St

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

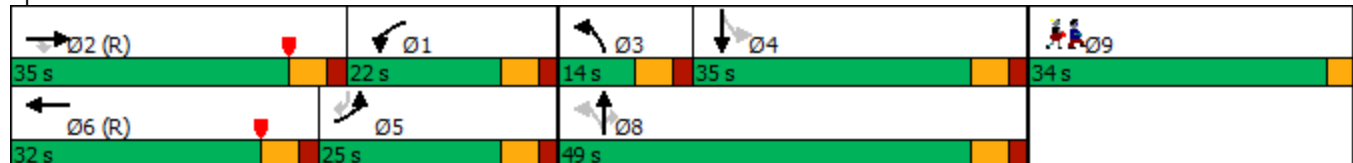
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 18: Elm St



Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	460	590	486	5	720	150	347	307	20	75	164	270
Future Volume (vph)	460	590	486	5	720	150	347	307	20	75	164	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	140		250	120		120	260		0
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.932				0.850		0.991				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	3334	0	1805	3574	1583	1770	3578	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3467	3334	0	1805	3574	1583	1770	3578	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		138				163		4				293
Link Speed (mph)		30			30			30				30
Link Distance (ft)		329			947			835				503
Travel Time (s)		7.5			21.5			19.0				11.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	0%	1%	2%	2%	0%	0%	2%	2%	2%
Adj. Flow (vph)	500	641	528	5	783	163	377	334	22	82	178	293
Shared Lane Traffic (%)												
Lane Group Flow (vph)	500	1169	0	5	783	163	377	356	0	82	178	293
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	5	2		1	6	6 7	3	8		7	4	4 5

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lanes, Volumes, Timings
 19: Canal St & Granite Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	5	2		1	6	6 7	3	8		7	4	4 5
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	16.0	38.0		14.0	36.0		29.0	29.0		22.0	22.0	
Total Split (%)	11.4%	27.1%		10.0%	25.7%		20.7%	20.7%		15.7%	15.7%	
Maximum Green (s)	10.0	32.0		8.0	30.0		23.0	23.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	37.8	80.7		8.0	39.7	59.3	23.0	18.9		19.6	15.5	59.3
Actuated g/C Ratio	0.27	0.58		0.06	0.28	0.42	0.16	0.14		0.14	0.11	0.42
v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.30	0.73		0.33	0.87	0.35
Control Delay	47.6	18.7		53.4	39.0	1.7	203.1	66.6		59.5	96.7	4.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.6	18.7		53.4	39.0	1.7	203.1	66.6		59.5	96.7	4.2
LOS	D	B		D	D	A	F	E		E	F	A
Approach Delay		27.3			32.7			136.8				42.2
Approach LOS		C			C			F				D
Queue Length 50th (ft)	207	291		4	233	0	-438	164		68	161	0
Queue Length 95th (ft)	276	453		m8	m263	m10	#642	213		127	#290	59
Internal Link Dist (ft)		249			867			755				423
Turn Bay Length (ft)	200			140		250	120			260		
Base Capacity (vph)	936	1980		103	1013	764	290	591		248	212	833
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.59		0.05	0.77	0.21	1.30	0.60		0.33	0.84	0.35

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 134 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.30
 Intersection Signal Delay: 51.3 Intersection LOS: D
 Intersection Capacity Utilization 86.4% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
 19: Canal St & Granite Street

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	37.0
Total Split (s)	37.0
Total Split (%)	26%
Maximum Green (s)	31.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings

19: Canal St & Granite Street

Queue shown is maximum after two cycles.

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

Splits and Phases: 19: Canal St & Granite Street

