

TRAFFIC IMPACT STUDY

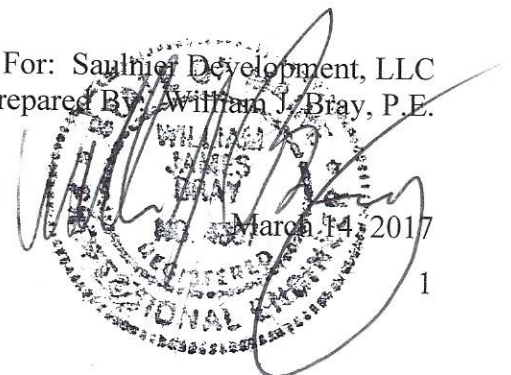
FOR

PROPOSED

**155 Sheridan Street**

**Residential Condominium  
Project**

Prepared For: Saultier Development, LLC  
Prepared By: William J. Bray, P.E.



## **INTRODUCTION**

Saulnier Development, LLC is proposing to construct 19 residential condominiums on a parcel of property located at 155 Sheridan Street in the City of Portland. The proposed project provides a total of 19 covered parking spaces on-site.

Access to the proposed condominium units is provided through a single site driveway that exits directly onto Sheridan Street.

The purpose of this study is to examine existing traffic conditions in the general vicinity of the proposed project, estimate the total number of site trips generated by the project, and make a determination as to whether the existing transportation system can safely accommodate the added traffic demand generated by the project.

## **EXISTING CONDITIONS**

**Existing Traffic:** Manual turning movement counts were conducted at the following intersections on the dates noted during the summer of 2016:

1. Washington Avenue, Fox Street and Walnut Street - July 13, 2016
2. Sheridan Street @ Cumberland Avenue - July 20, 2016
3. Sheridan Street, Walnut Street and Munjoy Heights Condo Drive - July 21, 2016

All vehicular traffic entering each intersection was recorded in 15-minute intervals between the hours of 7:00 to 9:00 AM and between 3:00 and 6:00 PM (Copies of the field data summary sheets are attached).

MaineDOT utilizes highway classifications of I, II, or III for all State and Local roadways. Group I roadways are defined as urban roadways or those roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year. Group II roadways or arterial roads are those that see a combination of commuter and recreational traffic and; therefore, experience moderate fluctuations during the year. Group III roads or recreational roadways are typically used for recreational purposes and experience significant seasonal fluctuations. MaineDOT has classified each approach roadway as a Group I road. Based upon MaineDOT's seasonal adjustment factors; the traffic data was considered representative of "peak" summer travel conditions, with no further adjustment.

Figure 1 illustratively presents the estimated 2016 AM and PM design hour traffic conditions at each of the three study intersections.

## **TRAFFIC ACCIDENTS**

**Existing Safety Trends:** The Maine Department of Transportation's (MaineDOT) Accident Records Section provided three-year (2013 through 2015) safety records for the Washington Avenue, Walnut Street and Fox Street intersection; the section of Walnut Street between Washington Avenue and North Street and the section of Sheridan Street between Walnut Street and Cumberland Avenue. MaineDOT's report for the noted road sections is presented as follows:



**2013 - 2015 Accident Summary**  
**Sections of Washington Avenue, Sheridan Street and Walnut Street**

<u>Location</u>	<u>Number of Accidents</u>	<u>Critical Rate Factor</u>
1. Washington Avenue, Fox Street and Walnut Street	11	2.20
2. Sheridan Street, Walnut Street and Munjoy Heights	3	4.80
3. Walnut Street @ Poplar Street	1	2.50
4. Sheridan Street @ Cumberland Avenue	1	0.49
5. Walnut Street btw. Sheridan Street and Washington Avenue	4	4.14
6. Sheridan Street btw. Cumberland Avenue and Walnut Street	1	0.81

The MaineDOT considers any roadway segment or intersection a high crash location if both of the following criteria are met:

- 8 or more accidents
- A Critical Rate Factor greater than 1.00

As the data presented in the table shows (location highlighted in yellow), the Washington Avenue/Walnut Street/Fox Street intersection meets MaineDOT’s criteria for a high crash location. A total of 11 crashes and a Critical Rate Factor (CRF) of 2.20 were reported for the intersection. A more in-depth review (preparation of detailed vehicle collision diagrams) was prepared for the intersection to determine if a clear pattern of accident is occurring (Copies of the Collision Diagrams are attached as an appendix to the report). The remaining street segments and intersections within the study area experience very low numbers of traffic crashes during the three-year time period.

The detailed review of the vehicle crash reports for the intersection would suggest two clear patterns of concern: 1) A total of four collisions involved vehicles approaching Washington Avenue from the Walnut Street approach sliding through the intersection and striking a thru vehicle on Washington Avenue or other fixed object. 2) The second pattern, with two reported crashes, involved vehicles on the Fox Street approach turning left onto Washington Avenue being struck by thru vehicles traveling southbound on Washington Avenue.

Implementation of one or both of the following suggested remediation measures should help reduce the frequency of traffic crashes occurring at this “off-set” intersection:

- Utilization of an anti-icing agent during periods of inclement weather on the full length of Walnut Street would potentially reduce vehicle skidding problems on Walnut Street.
- Alternatively, or in conjunction with utilization of the anti-icing agent, the City may want to consider closure of Walnut Street at North Street during periods of severe winter road conditions using a remotely operated flashing “Street Closed” beacon placed at the top of the Walnut Street “hill”.

In October of 2014 a detailed Traffic Signal Warrant Study was completed for the intersection to determine if prevailing traffic conditions warrant signalization of the intersection. That study concluded 2014 travel conditions do not meet the minimum requirements for traffic control signals.

**SITE TRAFFIC**

**Site Trip Generation:** The ninth edition of the Institute of Transportation Engineers (ITE) “TRIP GENERATION” manual was used to determine the volume of site traffic generated by the proposed 19-unit residential condominium project. The ITE publication provides numerous land-use categories and the average volume of trips that are generated by each category. The following trip rates were used to calculate the trip generation of the proposed project:

**Land Use #230 – Residential Condominium/Townhouse**

AM Peak Hour = 0.44 trips per occupied unit

PM Peak Hour = 0.52 trips per occupied unit.

Accordingly, the proposed 19 condominium units can be expected to generate a total of 8 trips in the morning peak hour and 10 trips during the afternoon peak hour.

**Site Trip Composition:** Trips generated by the proposed project are assumed to be “new” or “primary” trips.

**Site Trip Distribution:** The Institute of Transportation Engineers handbook provides the following directional distribution rates for a condominium unit during the AM and PM peak hours:

AM Peak Hour = 17% enter site and 83% exit site

PM Peak Hour = 67% enter site and 33% exit site

Based upon the noted directional distribution patterns; three (1) trip during the morning peak hour and 7 trips in the evening peak hour will enter the proposed site and the remaining trips (7 AM trips and 3 PM trips) during both peak time periods will exit the site.

**Site Trip Assignment:** Vehicle trips generated by the proposed project were assigned through the three study intersections based on existing travel patterns and the Consultants knowledge of travel patterns in the City of Portland. Figure 2 graphically depicts the assignment of the site traffic during both peak commuter time periods.

**FUTURE TRAFFIC**

**Annual Growth:** The Traffic Impact Study has been prepared based upon a projected build-out year of 2018. MaineDOT’s historical traffic data for the study area would suggest the appropriateness of zero growth in annual traffic for the corridor. However, to ensure a conservative assessment of traffic impact; the 2016 design hour traffic values, as highlighted on Figure 1, were increased by an annual growth rate of 1.5% per year to approximate future 2018 design hour traffic values for each study intersection. The estimated 2018 design hour traffic volumes for the study intersections are illustratively presented on Figure 3.

**Other Development Traffic:** Traffic generated by projects that have been approved by the local Planning Board and/or the Maine Department of Transportation, yet are not opened, must be included in the estimate of pre-development traffic. Peak hour trips generated by the following projects were appropriately assigned through the three study intersections:

- *180 Washington Avenue Condominiums*
- *169 Newbury Street Apartments*
- *121 Newbury Street – Mixed-Use Development*
- *65 Munjoy Street Condominiums*
- *Midtown – Mixed-Use Development*
- *Merrill Street Condominiums*
- *89 Anderson Apartments*
- *Chestnut Street Apartments*
- *Portland Gateway Hotel*
- *Ocean Gateway Retail*
- *62 India Street*

Figure 4 illustratively presents the Other Development traffic assignment for the study intersections.



**2018 Pre-Development Traffic:** 2018 Pre-Development traffic forecasts were prepared for the study intersections by combining the 2018 Design Hour traffic volumes shown on Figure 3 with the Other Development traffic values displayed on Figure 4. Figure 5 presents the 2018 Pre-Development traffic forecasts at each of the three study intersections.

**2018 Post-Development Traffic:** 2018 Post-Development traffic forecasts were prepared for each study intersection by combining the 2018 Pre-Development travel forecasts illustrated on Figure 5 with the estimated site generated trips highlighted on Figure 2. Figure 6 presents the estimated 2018 Post-Development Traffic forecasts for the study intersections.

**MOBILITY ANALYSIS**

Capacity analyses of both 2018 Pre-and Post-Development traffic conditions were performed for each study intersection utilizing the Synchro and SimTraffic computer traffic models.

Levels of Service rankings are similar to the academic grading system, where an “A” is very good with little delay and “F” represents very poor conditions. The following table summarizes the relationship between delay and Level of Service for an unsignalized intersection:

**Level of Service Criteria for Unsignalized Intersections**

<u>Level of Service</u>	<u>Total Control Delay (sec/veh)</u>
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The results of the unsignalized intersection capacity analyses are presented in the following table:

**Unsignalized Intersection  
Level of Service Summary  
2018 Pre and Post-Development Conditions**

<u>Intersection/Approach</u>	<u>2018 Pre-Development</u>				<u>2018 Post-Development</u>			
	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>
1. Sheridan Street @ Cumberland Avenue								
<u>Sheridan Street NB</u>	5 sec.	A	6 sec.	A	5 sec.	A	6 sec.	A
<u>Sheridan Street SB</u>	4 sec.	A	5 sec.	A	4 sec.	A	5 sec.	A
<u>Cumberland Avenue EB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<u>Cumberland Avenue WB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<u>Overall Intersection</u>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>
2. Sheridan Street/Walnut Street/Munjoy Heights Condominiums								
<u>Sheridan Street NB</u>	4 sec.	A	5 sec.	A	4 sec.	A	5 sec.	A

<u>Munjoy Heights Condos SB</u>	3 sec.	A	4 sec.	A	3 sec.	A	4 sec.	A
<u>Walnut Street EB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<u>Walnut Street WB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<b>Overall Intersection</b>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>	<b>1 sec.</b>	<b>A</b>
3. Washington Avenue & Walnut Street								
<u>Washington Avenue NB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<u>Washington Avenue SB</u>	2 sec.	A	3 sec.	A	3 sec.	A	3 sec.	A
<u>Walnut Street WB</u>	37 sec.	E	25 sec.	C	37 sec.	E	28 sec.	D
<b>Overall Intersection</b>	<b>6 sec.</b>	<b>A</b>	<b>3 sec.</b>	<b>A</b>	<b>6 sec.</b>	<b>A</b>	<b>3 sec.</b>	<b>A</b>
4. Washington Avenue @ Fox Street								
<u>Fox Street EB</u>	27 sec.	D	51 sec.	F	29 sec.	D	69 sec.	F
<u>Washington Avenue NB</u>	6 sec.	A	5 sec.	A	7 sec.	A	6 sec.	A
<u>Washington Avenue SB</u>	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
<b>Overall Intersection</b>	<b>4 sec.</b>	<b>A</b>	<b>9 sec.</b>	<b>A</b>	<b>5 sec.</b>	<b>A</b>	<b>11 sec.</b>	<b>B</b>

As presented in the preceding chart, each of the three unsignalized study intersections were determined to operate overall at acceptable levels of service (A or B) under both 2018 Pre- and Post-development travel conditions. Motorists approaching Washington Avenue on either the Walnut or Fox Street approaches experience considerable delay during the evening peak hour entering Washington Avenue under both the 2018 Pre- and Post-development travel conditions.

## SUMMARY

1. The proposed 19 residential condominiums will generate approximately 8 trips in the AM peak hour and an additional 10 trips during the PM peak hour. A single trip in the morning peak hour and 7 trips in the evening peak hour will enter the proposed site and the remaining trips (7 AM trips and 3 PM trips) during both peak time periods will exit the site.
2. The three-year roadway safety audit completed for the study area identified one intersection; the Washington Avenue/Fox Street/Walnut Street as a high crash location. MaineDOT's roadway safety report for the years 2013 through 2015 shows a total of 11 vehicle crashes occurred at the intersection with a Critical Rate Factor of 2.20. Both values meet and exceed MaineDOT's criteria for identification of a high crash location. The remaining roadway segments and intersections in the study area experienced a very low number of traffic crashes over the same time period.

A detailed review of the vehicle crash reports for the Washington Avenue/Walnut Street/Fox Street intersection identified two clear crash patterns: 1) four collisions involved vehicles approaching Washington Avenue from the Walnut Street approach sliding through the intersection and striking a thru vehicle on Washington Avenue and/or fixed object. 2) The second pattern, with two reported crashes, involved vehicles on the Fox Street approach turning left onto Washington Avenue being struck by thru vehicles traveling southbound on Washington Avenue.



Implementation of one or both following winter operational changes should effectively reduce the number of inclement weather related traffic crashes on the Walnut Street approach to Washington Avenue. Both suggested safety improvements are “*low cost - high benefit*” options.

- *Utilization of an anti-icing agent during periods of inclement weather on the full length of Walnut Street would potentially reduce vehicle skidding problems on Walnut Street.*
- *Alternatively, or in conjunction with utilization of the anti-icing agent, the City may want to consider closure of Walnut Street at North Street during periods of severe winter road conditions using a remotely operated flashing “Street Closed” beacon placed at the top of the Walnut Street “hill”.*

3. The Mobility Analysis completed for the 2018 Pre- and Post-Development travel conditions at the three study intersections demonstrates the proposed project has no measurable impact on traffic operations at each of the three intersections. Both Sheridan Street intersections with Cumberland Avenue and at Walnut Street were found to operate at Level of Service A, the highest level of operation, under both 2018 travel conditions. The results of the analysis completed for the Washington Avenue/Walnut Street/Fox Street intersection, again, shows very little change in overall vehicle delay between 2018 Pre- and 2018 Post-development conditions. Both side street approaches at Washington Avenue were found to experience high levels of vehicle delay under both forecast future travel conditions. The high levels of vehicle delay are typically experienced on all minor street approaches to busy urban arterial roadways.
4. A 2014 Traffic Signal Warrant Study was completed for the Washington Avenue/Walnut Street/Fox Street intersection to determine if sequenced traffic control signals were warranted at the intersection. That study concluded average 2014 traffic loadings measured at the intersection were less than the minimum requirements established in the 2009 Manual on Uniform Traffic Control Devices for signalization of an intersection.

Summary of All Intervals

Run Number	1	4	5	6	7	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1879	1898	1878	1900	1933	1897
Vehs Exited	1878	1884	1856	1886	1925	1886
Starting Vehs	39	30	30	29	33	31
Ending Vehs	40	44	52	43	41	42
Travel Distance (mi)	884	889	878	898	907	891
Travel Time (hr)	37.4	38.1	37.7	39.1	39.9	38.4
Total Delay (hr)	4.0	4.6	4.6	5.2	5.6	4.8
Total Stops	449	447	445	466	478	457
Fuel Used (gal)	29.4	29.6	29.2	30.3	30.5	29.8

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	4	5	6	7	Avg
Vehs Entered	1879	1898	1878	1900	1933	1897
Vehs Exited	1878	1884	1856	1886	1925	1886
Starting Vehs	39	30	30	29	33	31
Ending Vehs	40	44	52	43	41	42
Travel Distance (mi)	884	889	878	898	907	891
Travel Time (hr)	37.4	38.1	37.7	39.1	39.9	38.4
Total Delay (hr)	4.0	4.6	4.6	5.2	5.6	4.8
Total Stops	449	447	445	466	478	457
Fuel Used (gal)	29.4	29.6	29.2	30.3	30.5	29.8



3: Sheridan Street & Cumberland Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.2
Total Del/Veh (s)	0.3	0.2	4.7	4.3	1.1

8: Sheridan Street/Munjoy Heights Condos & Walnut Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.1
Total Del/Veh (s)	0.3	0.2	4.3	3.2	0.7

13: Washington Avenue & Walnut Street Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.7	0.5
Total Del/Veh (s)	37.2	0.6	2.4	6.0

15: Washington Avenue & Fox Street Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.1
Total Del/Veh (s)	26.7	5.6	0.7	4.1

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	8.6

Intersection: 3: Sheridan Street & Cumberland Ave

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	19	40	36
Average Queue (ft)	1	21	18
95th Queue (ft)	11	46	44
Link Distance (ft)	912	492	462
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Sheridan Street/Munjy Heights Condos & Walnut Street

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	17	36	31
Average Queue (ft)	1	14	8
95th Queue (ft)	10	39	31
Link Distance (ft)	671	510	446
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Washington Avenue & Walnut Street

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	198	25	113
Average Queue (ft)	83	1	13
95th Queue (ft)	164	11	67
Link Distance (ft)	1019	32	1062
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



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Intersection: 15: Washington Avenue & Fox Street

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Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	146	180	36
Average Queue (ft)	62	58	5
95th Queue (ft)	117	128	23
Link Distance (ft)	1048	1764	32
Upstream Blk Time (%)			0
Queuing Penalty (veh)			2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Network Summary

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Network wide Queuing Penalty: 2

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Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1868	1921	1908	1903	1892	1901
Vehs Exited	1874	1922	1917	1891	1870	1895
Starting Vehs	39	44	43	30	30	37
Ending Vehs	33	43	34	42	52	40
Travel Distance (mi)	876	906	909	892	878	892
Travel Time (hr)	37.5	39.4	40.8	38.6	37.7	38.8
Total Delay (hr)	4.4	5.2	6.6	4.9	4.5	5.1
Total Stops	470	475	515	456	476	478
Fuel Used (gal)	29.3	30.9	30.8	29.8	29.2	30.0

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	1868	1921	1908	1903	1892	1901
Vehs Exited	1874	1922	1917	1891	1870	1895
Starting Vehs	39	44	43	30	30	37
Ending Vehs	33	43	34	42	52	40
Travel Distance (mi)	876	906	909	892	878	892
Travel Time (hr)	37.5	39.4	40.8	38.6	37.7	38.8
Total Delay (hr)	4.4	5.2	6.6	4.9	4.5	5.1
Total Stops	470	475	515	456	476	478
Fuel Used (gal)	29.3	30.9	30.8	29.8	29.2	30.0



3: Sheridan Street & Cumberland Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	0.4	0.2	4.7	4.3	1.2

8: Sheridan Street/Munjoy Heights Condos & Walnut Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.1
Total Del/Veh (s)	0.3	0.3	4.1	3.0	0.8

13: Washington Avenue & Walnut Street Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.8	0.5
Total Del/Veh (s)	36.3	0.6	2.7	6.2

15: Washington Avenue & Fox Street Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.1
Total Del/Veh (s)	29.0	7.0	0.8	4.7

Total Network Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	9.1

Intersection: 3: Sheridan Street & Cumberland Ave

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	17	41	45
Average Queue (ft)	1	22	22
95th Queue (ft)	11	46	47
Link Distance (ft)	912	492	462
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Sheridan Street/Munjoy Heights Condos & Walnut Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	6	6	31	31
Average Queue (ft)	0	1	18	6
95th Queue (ft)	4	7	43	27
Link Distance (ft)	671	784	510	446
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: Washington Avenue & Walnut Street

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	190	15	87
Average Queue (ft)	83	0	15
95th Queue (ft)	162	8	59
Link Distance (ft)	1019	32	1062
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Intersection: 15: Washington Avenue & Fox Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	169	206	43
Average Queue (ft)	67	62	6
95th Queue (ft)	128	146	27
Link Distance (ft)	1048	1764	32
Upstream Blk Time (%)			0
Queuing Penalty (veh)			2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 2

Summary of All Intervals

Run Number	3	4	5	6	7	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2151	2105	2150	2208	2135	2151
Vehs Exited	2163	2121	2144	2210	2137	2156
Starting Vehs	53	52	38	47	41	43
Ending Vehs	41	36	44	45	39	40
Travel Distance (mi)	994	973	1007	1028	983	997
Travel Time (hr)	43.0	42.3	44.7	46.3	42.5	43.7
Total Delay (hr)	5.2	5.3	6.3	7.3	5.0	5.8
Total Stops	429	463	502	483	417	459
Fuel Used (gal)	33.2	32.6	33.9	34.9	33.0	33.5

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	3	4	5	6	7	Avg
Vehs Entered	2151	2105	2150	2208	2135	2151
Vehs Exited	2163	2121	2144	2210	2137	2156
Starting Vehs	53	52	38	47	41	43
Ending Vehs	41	36	44	45	39	40
Travel Distance (mi)	994	973	1007	1028	983	997
Travel Time (hr)	43.0	42.3	44.7	46.3	42.5	43.7
Total Delay (hr)	5.2	5.3	6.3	7.3	5.0	5.8
Total Stops	429	463	502	483	417	459
Fuel Used (gal)	33.2	32.6	33.9	34.9	33.0	33.5



**3: Sheridan Street & Cumberland Ave Performance by approach**

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.2
Total Del/Veh (s)	0.6	0.3	6.2	4.9	1.1

**8: Sheridan Street/Munjoy Heights Condos & Walnut Street Performance by approach**

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	0.4	0.1	4.9	4.1	0.9

**13: Washington Avenue & Walnut Street Performance by approach**

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.4	0.1
Total Del/Veh (s)	25.2	0.7	3.2	3.0

**15: Washington Avenue & Fox Street Performance by approach**

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.8	0.0	0.5
Total Del/Veh (s)	50.6	5.4	0.6	8.6

**Total Network Performance**

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	9.1

**Intersection: 3: Sheridan Street & Cumberland Ave**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	19	40	54
Average Queue (ft)	2	1	18	20
95th Queue (ft)	17	9	44	48
Link Distance (ft)	912	914	492	462
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 8: Sheridan Street/Munjoy Heights Condos & Walnut Street**

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	6	40	35
Average Queue (ft)	0	18	14
95th Queue (ft)	6	44	40
Link Distance (ft)	671	510	446
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 13: Washington Avenue & Walnut Street**

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	107	32	178
Average Queue (ft)	51	3	41
95th Queue (ft)	93	17	124
Link Distance (ft)	1019	32	1062
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



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Intersection: 15: Washington Avenue & Fox Street

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Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	232	246	26
Average Queue (ft)	99	50	1
95th Queue (ft)	195	153	11
Link Distance (ft)	1048	1764	32
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Network Summary

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Network wide Queuing Penalty: 1

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Summary of All Intervals

Run Number	3	4	5	6	7	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2184	2151	2168	2235	2160	2182
Vehs Exited	2197	2167	2167	2237	2170	2186
Starting Vehs	57	52	44	47	51	47
Ending Vehs	44	36	45	45	41	41
Travel Distance (mi)	1007	996	1014	1043	995	1011
Travel Time (hr)	45.8	44.3	45.8	47.0	43.7	45.3
Total Delay (hr)	7.5	6.4	7.1	7.4	5.7	6.8
Total Stops	471	467	514	507	435	481
Fuel Used (gal)	34.3	33.7	34.4	35.5	33.5	34.3

Interval #0 Information Seeding

Start Time 4:25  
End Time 4:30  
Total Time (min) 5

Volumes adjusted by Growth Factors.  
No data recorded this interval.

Interval #1 Information Recording

Start Time 4:30  
End Time 5:30  
Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	3	4	5	6	7	Avg
Vehs Entered	2184	2151	2168	2235	2160	2182
Vehs Exited	2197	2167	2167	2237	2170	2186
Starting Vehs	57	52	44	47	51	47
Ending Vehs	44	36	45	45	41	41
Travel Distance (mi)	1007	996	1014	1043	995	1011
Travel Time (hr)	45.8	44.3	45.8	47.0	43.7	45.3
Total Delay (hr)	7.5	6.4	7.1	7.4	5.7	6.8
Total Stops	471	467	514	507	435	481
Fuel Used (gal)	34.3	33.7	34.4	35.5	33.5	34.3



3: Sheridan Street & Cumberland Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.1	0.2
Total Del/Veh (s)	0.7	0.3	6.3	4.9	1.2

8: Sheridan Street/Munjoy Heights Condos & Walnut Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.2
Total Del/Veh (s)	0.4	0.1	4.6	4.2	0.9

13: Washington Avenue & Walnut Street Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.4	0.1
Total Del/Veh (s)	28.2	0.8	3.4	3.4

15: Washington Avenue & Fox Street Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.8	0.0	0.5
Total Del/Veh (s)	68.7	5.5	0.6	10.5

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	10.6

**Intersection: 3: Sheridan Street & Cumberland Ave**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	45	19	40	62
Average Queue (ft)	3	1	17	22
95th Queue (ft)	20	10	43	50
Link Distance (ft)	912	914	492	462
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 8: Sheridan Street/Munjoy Heights Condos & Walnut Street**

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	12	36	35
Average Queue (ft)	1	18	13
95th Queue (ft)	8	44	39
Link Distance (ft)	671	510	446
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 13: Washington Avenue & Walnut Street**

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	112	42	178
Average Queue (ft)	55	2	43
95th Queue (ft)	95	18	129
Link Distance (ft)	1019	32	1062
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Intersection: 15: Washington Avenue & Fox Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	316	188	30
Average Queue (ft)	120	53	2
95th Queue (ft)	258	142	15
Link Distance (ft)	1048	1764	32
Upstream Blk Time (%)			0
Queuing Penalty (veh)			1
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1