

Prepared for:



FINAL REPORT

TOWN CENTER TRANSPORTATION STUDY



June 2020

Introduction

The Town of Cape Elizabeth contracted with T.Y. Lin International (TYLI) to conduct a transportation study of the intersection of Route 77, Scott Dyer Road, and Shore Road with a purpose of improving mobility and safety for all users – vehicles, pedestrians and bicyclists. The Study evaluated transportation conditions and developed recommendations and included the following:

- Conducting a video intersection traffic count that collected vehicles, pedestrians and bicyclists. The count was performed for a minimum of 12-hour.
- Obtaining crash data for the most recent three-year period from MaineDOT.
- Conducting a field inventory of the intersection documenting existing conditions.
- Obtaining all prior studies/information for the study intersection from the Town.
- Conducting a traffic signal warrant analysis according to MUTCD methods.
- Developing conceptual recommendations on aerial base maps. Recommendations will include intersection geometry, traffic control, traffic calming, pavement markings and signs, pedestrian facilities, bicycle facilities, access management, etc.

Prior Studies and Historic Changes

Prior Studies / Projects

- This intersection has been studied for many years. The first study available is a TYLI study from June 1990. The study found no significant safety or capacity problems at the intersection of Route 77, Scott Dyer Road, and Shore Road. The study also stated that while traffic signal warrants may be met, a traffic signal was not recommended due to the degradation of level of service to Route 77.
- The intersection was studied again in December of 2003 by Wilbur Smith Associates. The report recommended signaling the intersection and realigning the approaches to create a four-way intersection with through movements directly aligned from Shore Road to Scott Dyer Road. The recommended alternative did not include left-turn lanes on any approach, but all approaches operated at levels of service A or B.
- On November 10, 2008, the Cape Elizabeth City Council tabled the proposal to signalize the intersection until the following spring where it eventually failed. Many citizens spoke on the cost and the operation of a traffic signal, citing challenges with the newly installed signal at

the High School. Some citizens spoke in favor of the traffic signal. This was related to plans developed by MaineDOT.

- On November 24, 2008, the Town Manager proposed a list of short-term improvements for pedestrians at the intersection. These recommendations did not address vehicle level of service concerns, focusing strictly on pedestrian safety. The recommendations included:
 1. Installing a new signalized crosswalk across Route 77 at the High School driveway. This would be tied into the existing traffic signal.
 2. Installing in-road stanchions at the Key Bank crosswalk and at the town hall crosswalks. “State Law, Yield to Pedestrians Within Crosswalk” or same message partially with pictographs.
 3. Providing a bucket of red flags at either side of the three crosswalks for individuals to carry from one side of the road to the other.
 4. Enhancing the painting of each crosswalk so that they are more prominent.
 5. Installing six signs indicating “No Passing in the Bike Lane.”
 6. Installing signs at the sides of each crosswalk indicating “Stop for Pedestrians in Crosswalks” or same message partially with Pictographs.
 7. Stronger enforcement of law requiring vehicles to stop for pedestrians in crosswalks.
 8. Requesting the MaineDOT Commissioner to review the speed limit in the town center area.
 9. Convened a working group of Town Councilors, a School Board member, the Chief of Police and Town Manager four times in 2009 to evaluate pedestrian issues in the town center, to review progress and to make additional recommendations.

Historic Changes

- More pedestrian activity to Cumberland Farms, where students sometimes cross the northerly leg of Route 77.
- Pedestrian enhancements noted previously.
- High School Drive traffic signalization.

Existing Conditions

Field Inventory

A field inventory of existing conditions was performed and included general intersection conditions, regulatory signage, sidewalks, crosswalks, pavement markings and roadway width measurements. A summary is noted as follows and depicted on the aerial map.

- Movements from Shore Road and Scott Dyer Road are controlled by STOP signs.
- Crosswalks are provided on all intersection approaches except the northerly leg of Route 77.
- The Speed Limit is 35MPH.
- The crosswalk on the southerly leg of Route 77 has a push button activated pedestrian flashing warning sign system and an in-road sign.
- The intersection has a single lens flashing beacon system (red on side streets and yellow on Route 77).
- Sidewalks are provided on the west side of Route 77, east side from Shore Road to Cumberland Farms, south side of Shore Road and both sides of Scott Dyer Road.
- Formal bicycle lanes are not provided on Route 77, but paved shoulder space is available for bicycle use.
- Motorists use the roadway shoulder to by-pass turning vehicles and compromise bicycle safety.



Traffic Volumes

A video traffic count was conducted on Thursday May 23, 2019 from 6:00AM to 6:00PM. According to the count the AM peak hour occurred between 7:30 and 8:30AM and the PM peak hour occurred between 3:45

and 4:45PM. To account for seasonal traffic volume variation, traffic volumes were adjusted according to MaineDOT Statewide Factors. According to the roadway classification, volumes were increased by up to 28%. **Figure 1** depicts the 2019 Existing Design Hour traffic volumes during the AM and PM peak hours. As noted, the heaviest movements are the through movements on Route 77.

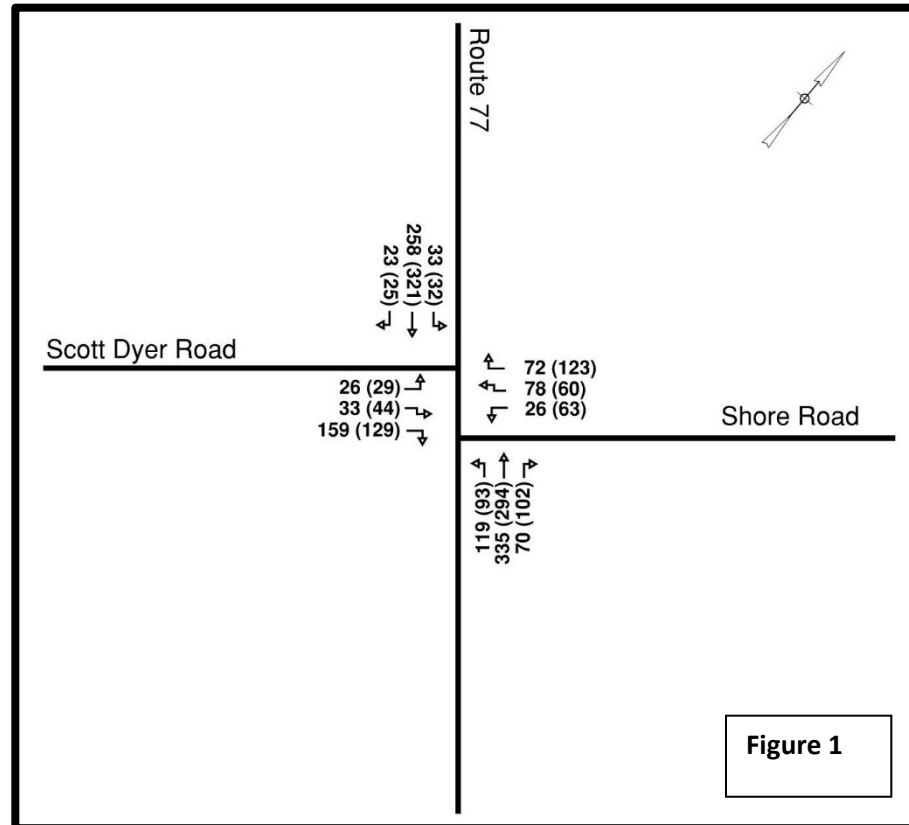


Figure 1

Pedestrian/Bicycle Volumes

Pedestrian and bicycle volumes were recorded during the 12-hour video count. **Figure 2** depicts the volumes during the AM and PM peak hours. Over the 12-hour period the number of pedestrians included the following:

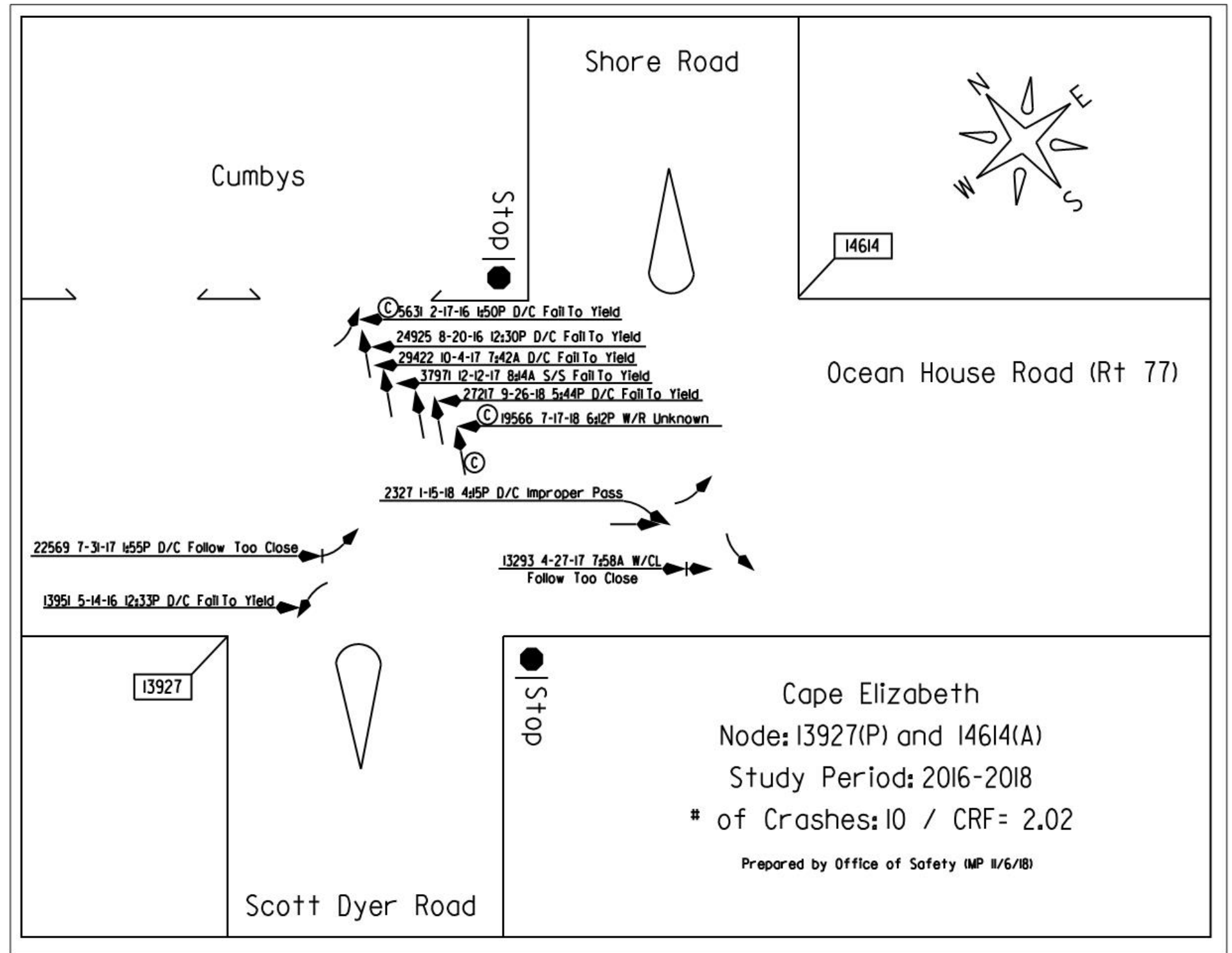
- 5 pedestrians crossed the Route 77 northerly leg (no crosswalk).
- 23 pedestrians crossed Shore Road.
- 39 pedestrians crossed the Route 77 southerly leg.
- 21 pedestrians crossed Scott Dyer Road.



Figure 2

Safety

The intersection is considered a High Crash Location (HCL) by the MaineDOT. An HCL is any intersection or segment with 8 or more crashes in the most recent 3-year period and a Critical Rate Factor (CRF) equal or greater than 1. This intersection had 10 crashes between 2016-2018 and a CRF of 2.02. Six (6) of the crashes involved vehicles from Scott Dyer Road to either Shore Road or Cumberland Farms (see collision diagram to the right).



Alternatives for Consideration

Recommendations should account not just for the current transportation conditions, but also for future conditions. As such traffic volumes were increased using a growth factor determined by studying recent growth in Cape Elizabeth. A growth factor of 0.5% per year was assumed based on the population growth in Cape Elizabeth. The growth factor was applied to the 2019 existing turning movement volumes at the intersection to forecast the turning movements in a design year 20 years in the future (2039).

The standard used to evaluate traffic operating conditions of the transportation system is referred to as the Level of Service (LOS). This is a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays, and freedom to maneuver.

Level of Service provides a measurement of the delay experienced at an intersection as a result of traffic operations at that intersection. In general, there are six levels of service: Level of Service A to Level of Service F. The highest, Level of Service A, describes a condition of free-flow operations where the effects of incidents are easily absorbed. Level of Service B describes a state in which maneuverability and speed limits are beginning to be restricted by other motorists although level of comfort is still high. In Level of Service C, experienced drivers are still comfortable, but maneuverability is noticeably restricted. Level of Service D brings noticeable congestion and driver comfort levels decrease. In Level of Service E, roadway capacity is reached, and disruptions are much more prevalent – driver comfort has declined. Finally, Level of Service F is the results of volumes greater than roadway capacity with congestion and possible stopped conditions. MaineDOT has determined that Levels of Service A-D are acceptable conditions for intersections.

The measures of delay for each Level of Service rating for unsignalized and signalized intersections are found in **Table 1**.

Table 1 LOS CRITERIA		
LOS	Signalized Intersection	Unsignalized Intersection
A	≤10 sec	≤10 sec
B	10–20 sec	10–15 sec
C	20–35 sec	15–25 sec
D	35–55 sec	25–35 sec
E	55–80 sec	35–50 sec
F	>80 sec	>50 sec

Queue estimates represent the distance of vehicles waiting at the stop bar. Most commonly reported as the 95th percentile queue, in other words the queue that will not be exceeded 95% of the time. A vehicle length of 20 feet can be used to visualize the queues. While it does not impact the level of service directly, it is another measure of the effectiveness of the intersection.

No-Build

All alternatives are compared to the existing intersection with no changes. This is known as the No-Build condition. The No-Build scenario was modeled assuming through vehicles on Route 77 pass left-turning vehicles using the shoulder (our field observations confirmed this assumption). The intersection was also modeled as two separate intersections due to the offset nature of Shore Road and Scott Dyer Road. **Table 2** shows the performance of the intersection during the afternoon peak hour (worst-case time period).

Table 2 2039 NO-BUILD LEVEL OF SERVICE					
	Shore Road		Route 77		Overall
	WBLR	NBTR	SBL	SBT	
Delay (Sec/Veh)	139.9	0.3	6.1	0.5	28.4
LOS	F	A	A	A	D
Queue (ft)	664	75	49	75	
	Scott Dyer Road		Route 77		Overall
	EBLR	NBL	NBT	SBTR	
Delay (Sec/Veh)	13.1	2.4	0.4	0.2	2.8
LOS	B	A	A	A	A
Queue (ft)	122	48	75	46	

The Shore Road approach operates poorly as vehicles queue and struggle to find an adequate gap on Route 77.

Increased Separation between Intersections

The offset nature of the intersection creates problematic movements. Scott Dyer Road and Shore Road through movements enter the intersection at awkward angles. The Scott Dyer Road left and Shore Road right-turn movements (or vice versa) are also aligned opposite of each other and motorists on either approach do not see each other and this creates a point of conflict. One solution to these conflicts would be to remove the median islands on both approaches and separate the roadways as far as possible. The increased separation makes through movements impossible. Instead, vehicles would turn right onto Route 77 in the travel lane and then turn left. This option prevents vehicles from stopping perpendicular to the travel lane as they are currently doing. It

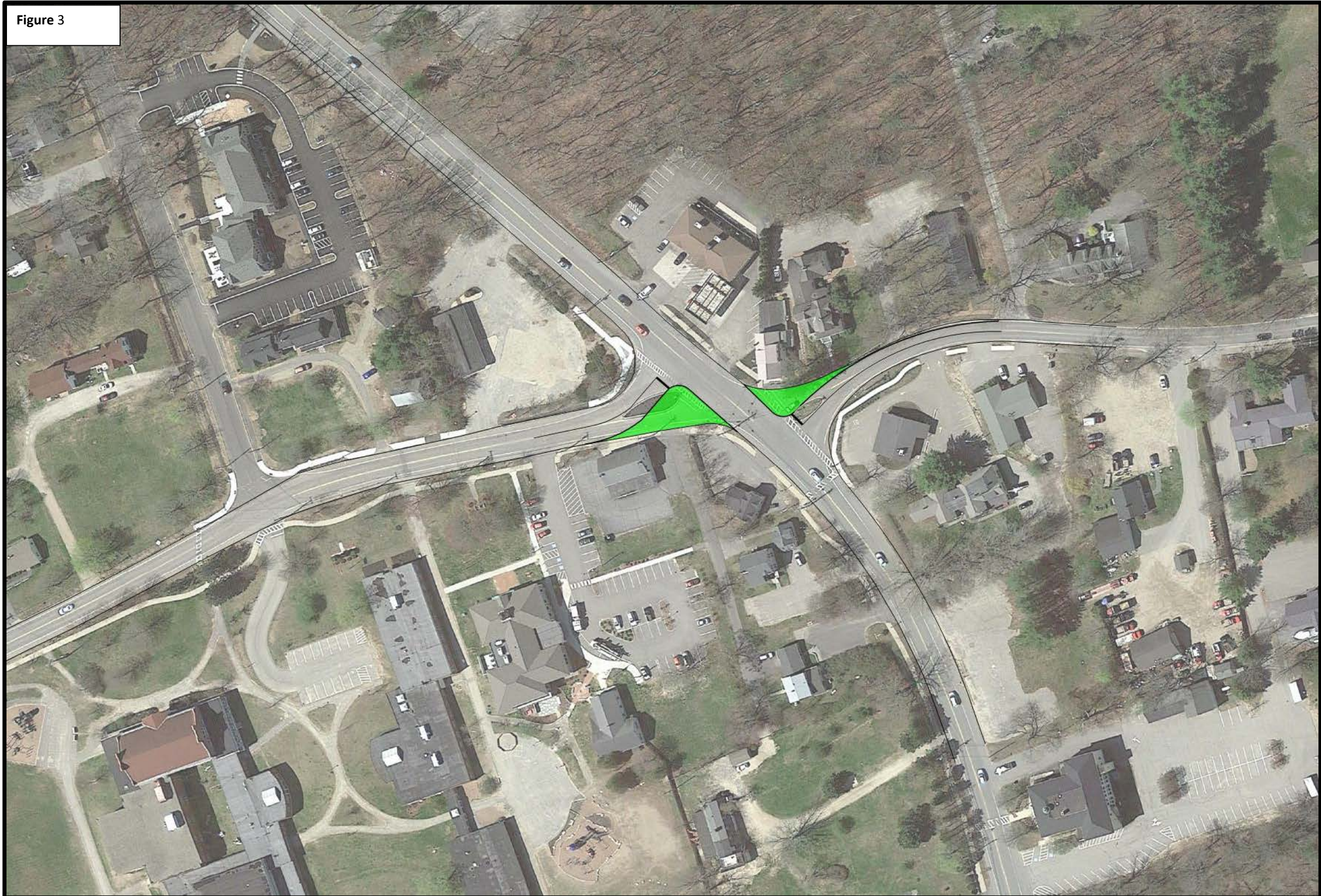
also removes the conflict between left and right turning vehicles on opposite approaches. The performance of the intersections is shown in **Table 3**. This concept is visualized on **Figure 3** (with supporting vehicle turning templates depicted on **Figures 4A and 4B**). This idea was originally presented in the 2003 WSA Study, but that alternative assumed traffic signalization.

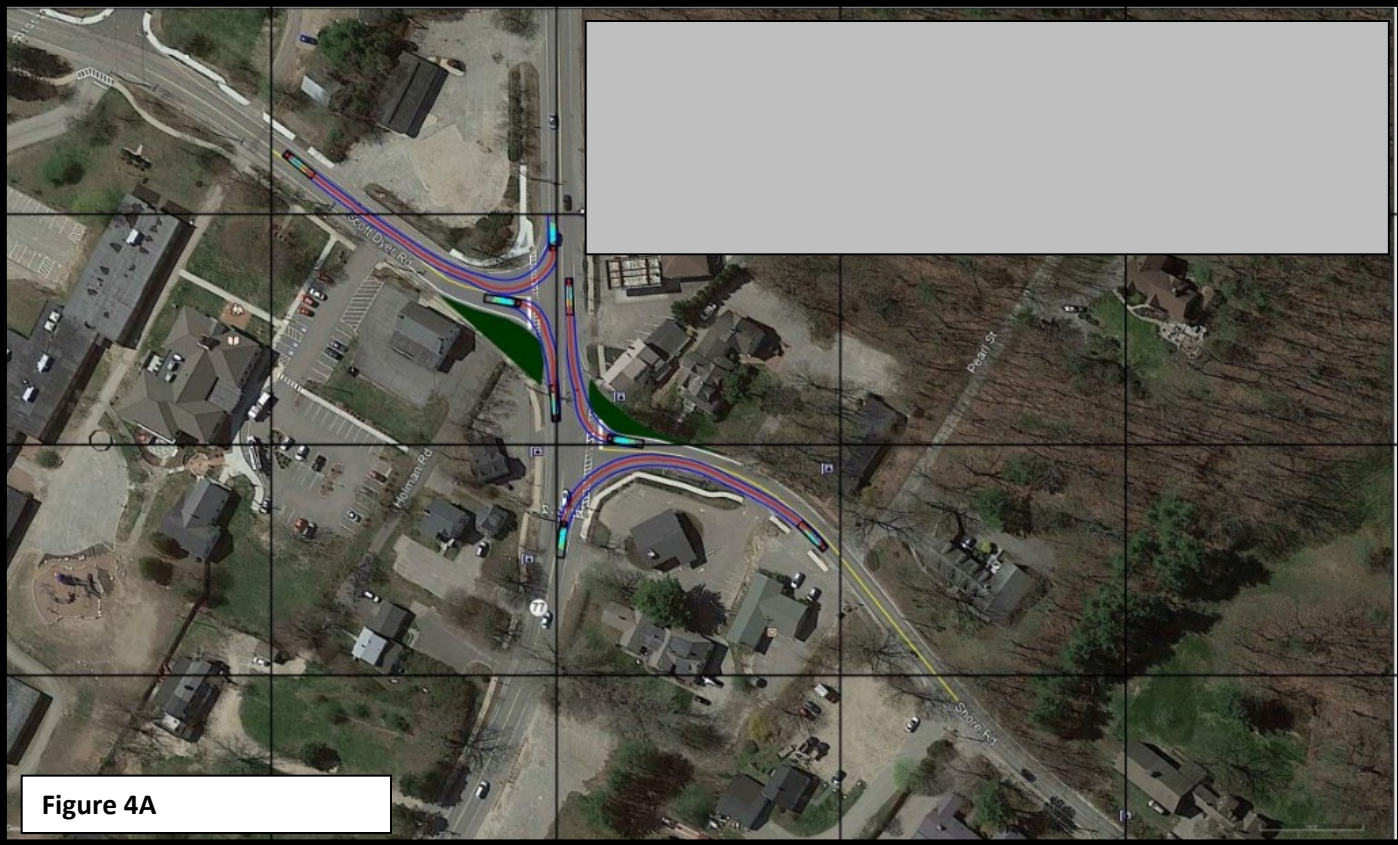
Table 3 2039 INCREASED INTERSECTION SEPARATION LEVEL OF SERVICE					
	Shore Road		Route 77		Overall
	WBLR	NBTR	SBL	SBT	
Delay (Sec/Veh)	89.1	0.2	4.3	0.4	18.3
LOS	F	A	A	A	C
Queue (ft)	533	57	50	71	
	Scott Dyer Road		Route 77		Overall
	EBLR	NBL	NBT	SBTR	
Delay (Sec/Veh)	10.1	2.4	0.4	0.0	2.3
LOS	B	A	A	A	A
Queue (ft)	113	46	80	22	

The Shore Road approach operates poorly, but considerably better than the No-Build alternative. All approaches will operate with the same or less delay versus the No-Build alternative. The following should be noted:

- The southerly driveway servicing Cumberland Farms shall be restricted to entry movements only.
- Howland Street shall be closed. A new connection shall be provided through the Library parking lot. Site Plan approval and access easements will be required.
- Rectangular Rapid Flash Beacons (RRFB) are recommended at both Route 77 crosswalks (one is a replacement of the existing flashing system).
- Ornamental pedestrian scale street lights that meet Town Center standards are recommended.

Figure 3





Traffic Signalized Intersection

A traffic signal warrant analysis was performed according to requirements contained in the Manual on Uniform Traffic Control Devices, Federal Highway Administration. **Table 4** summarizes the signal warrants that were evaluated.

Table 4 TRAFFIC SIGNAL WARRANT ANALYSIS		
Warrant	With Minor Right Turns	Without Minor Right Turns
Warrant 1: 8 Hour Volumes	Met	Met
Warrant 2: 4 Hour Volumes	Met	Not Met
Warrant 3: Peak Hour Volume	Met	Not Met
Warrant 4: Pedestrians	Not Met	Not Met
Warrant 5: School Crossing	N/A	N/A
Warrant 6: Coordinated Signal	N/A	N/A
Warrant 7: Crash Experience	Not Met	Not Met
Warrant 8: Roadway Network	N/A	N/A
Warrant 9: Near a Grade Crossing	N/A	N/A

The intersection does warrant a traffic signal based on Condition C for towns with populations less than 10,000 residents. Therefore, a traffic signal was modeled using the existing geometry of the intersection. **Table 5** summarizes the traffic signal performance.

Table 5 TRAFFIC SIGNAL CONTROL LEVEL OF SERVICE							
	Scott Dyer Road	Shore Road	Route 77				Overall
	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR	
Delay (Sec/Veh)	47.2	46.5	46.8	64.9	31.2	51.7	53.3
LOS	D	D	D	E	C	D	D
Queue (ft)	234	306	90	678	66	479	

The delay on Shore Road is improved as compared to both the unsignalized options, however, every other approach incurs significantly more delay.

Recommendation

A comparison table was prepared that summarizes Pro's and Con's for the No-Build, Traffic Signalization and Intersection Separation Alternatives.

Table 6 IMPROVEMENT ALTERNATIVE PRO/CON SUMMARY			
Alternative/Measure	No-Build	Traffic Signal	Intersection Separation
Improves Safety	-	- +	+
Improves Vehicle Mobility	-	- +	+
Cost	- ¹	-	-
Community Support Historically	+	-	+
Pedestrian Mode	-	+	+
Bicycle Mode	-	-	
Impact on Cumberland Farms	-	-	+

1. While there is no construction cost there is a cost to society as a results of vehicle crashes.

Based upon the results of the level of service analysis traffic signalization is not recommended at this time given impacts to mobility along Route 77. It is recommended that increased separation between Scott Dyer Road and Shore Road be implemented. This change would be expected to decrease the number of crashes at the intersection as well as improve overall vehicle mobility. Other improvements that shall be implemented in conjunction with increased intersection separation include:

- Restricting movements at the southerly Cumberland Farms driveway to entry only.
- A new crosswalk should be installed across Route 77 between Scott Dyer Road and Shore Road.
- Install RRFB's at existing and proposed crosswalks.

Following the implementation of geometric improvements, conditions (delay and safety) should be monitored for further enhancement.

The planning-level cost estimate to implement this improvement concept is approximately \$493,000 (see appendix).

Appendix

- Traffic counts
- SimTraffic Analysis
- Cost Estimate

Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

Full Length (6 AM-6 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road,
Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T. Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US

Leg Direction Time	North Southbound							East Westbound							South Northbound							West Eastbound						
	R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*	
2019-05-23 6:00 AM	1	7	2	0	10	0		3	0	4	0	7	0		2	19	0	0	21	0		2	2	3	0	7	1	
6:15 AM	4	15	2	0	21	0		3	2	4	0	9	0		3	29	1	0	33	0		0	2	7	0	9	0	
6:30 AM	5	20	4	0	29	0		3	3	2	0	8	0		11	33	6	0	50	0		3	1	2	0	6	0	
6:45 AM	2	30	6	0	38	0		7	4	16	0	27	1		13	44	8	0	65	0		12	5	3	0	20	0	
Hourly Total	12	72	14	0	98	0		16	9	26	0	51	1		29	125	15	0	169	0		17	10	15	0	42	1	
7:00 AM	1	39	3	0	43	0		11	5	9	0	25	1		4	40	3	0	47	0		9	4	3	0	16	1	
7:15 AM	1	61	11	0	73	1		7	4	10	0	21	1		10	45	17	0	72	0		29	2	2	0	33	1	
7:30 AM	8	88	7	0	103	1		8	23	19	0	50	2		16	101	49	0	166	2		71	11	3	0	85	1	
7:45 AM	8	74	10	0	92	0		4	19	14	0	37	0		21	99	44	0	164	0		49	11	8	0	68	0	
Hourly Total	18	262	31	0	311	2		30	51	52	0	133	4		51	285	113	0	449	2		158	28	16	0	202	3	
8:00 AM	4	45	8	0	57	0		4	11	7	0	22	1		17	52	6	0	75	2		10	4	8	0	22	0	
8:15 AM	2	45	7	0	54	0		4	8	16	0	28	0		14	75	17	0	106	0		25	6	6	0	37	0	
8:30 AM	2	42	7	0	51	0		11	5	13	0	29	0		14	63	16	0	93	0		28	7	11	0	46	0	
8:45 AM	5	65	9	0	79	0		14	6	18	0	38	0		17	60	8	0	85	1		14	9	3	0	26	0	
Hourly Total	13	197	31	0	241	0		33	30	54	0	117	1		62	250	47	0	359	3		77	26	28	0	131	0	
9:00 AM	8	45	7	0	60	0		8	7	20	0	35	0		12	48	11	0	71	2		5	4	4	0	13	0	
9:15 AM	5	55	9	0	69	0		8	7	15	0	30	0		12	56	9	0	77	0		11	4	2	0	17	0	
9:30 AM	7	43	4	0	54	1		6	6	10	0	22	0		11	60	10	0	81	0		11	3	3	0	17	0	
9:45 AM	7	57	9	0	73	0		7	6	17	0	30	0		13	42	9	0	64	1		13	5	5	0	23	0	
Hourly Total	27	200	29	0	256	1		29	26	62	0	117	0		48	206	39	0	293	3		40	16	14	0	70	0	
10:00 AM	10	52	7	0	69	0		6	3	18	0	27	0		12	54	18	0	84	1		11	3	8	0	22	2	
10:15 AM	5	47	6	0	58	0		6	6	16	0	28	0		18	47	11	0	76	1		16	8	4	0	28	2	
10:30 AM	8	46	4	0	58	0		5	4	10	0	19	0		12	41	14	0	67	1		10	3	9	0	22	1	
10:45 AM	4	42	10	0	56	0		10	5	20	0	35	0		13	37	11	0	61	0		13	3	6	0	22	0	
Hourly Total	27	187	27	0	241	0		27	18	64	0	109	0		55	179	54	0	288	4		50	17	27	0	94	5	
11:00 AM	9	44	4	1	58	0		10	13	19	0	42	0		8	62	13	0	83	0		11	1	9	0	21	1	
11:15 AM	5	50	4	1	60	0		8	7	12	0	27	0		20	55	13	0	88	1		4	11	5	0	20	0	
11:30 AM	6	60	6	0	72	0		11	7	18	0	36	0		10	72	10	0	92	0		11	4	2	0	17	0	
11:45 AM	5	58	2	0	65	0		9	8	20	0	37	0		25	64	6	0	95	0		6	9	5	0	20	0	
Hourly Total	25	212	16	2	255	0		38	35	69	0	142	0		63	253	42	0	358	1		32	25	21	0	78	1	
12:00 PM	7	51	7	0	65	0		13	9	27	0	49	0		13	61	15	0	89	0		11	8	6	0	25	1	
12:15 PM	9	62	12	0	83	0		7	4	17	0	28	0		23	61	6	0	90	0		9	5	2	0	16	0	
12:30 PM	11	45	6	0	62	0		8	10	21	0	39	0		22	51	12	0	85	1		13	5	4	0	22	0	
12:45 PM	13	59	9	0	81	0		7	4	22	0	33	0		20	68	13	0	101	1		22	5	9	0	36	0	
Hourly Total	40	217	34	0	291	0		35	27	87	0	149	0		78	241	46	0	365	2		55	23	21	0	99	1	
1:00 PM	8	46	12	0	66	1		10	4	25	0	39	1		21	65	11	0	97	2		12	3	5	0	20	1	
1:15 PM	8	55	9	0	72	0		11	10	25	0	46	0		16	59	5	0	80	2		10	6	5	1	22	0	
1:30 PM	3	56	5	0	64	0		9	6	13	0	28	1		16	51	12	0	79	1		9	8	5	0	22	1	
1:45 PM	10	57	9	0	76	0		5	4	15	0	24	0		28	67	5	0	100	0		12	4	6	0	22	0	
Hourly Total	29	214	35	0	278	1		35	24	78	0	137	2		81	242	33	0	356	5		43	21	21	1	86	2	
2:00 PM	9	68	11	0	88	0		10	1	12	0	23	1		22	58	14	0	94	0		17	4	4	0	25	0	
2:15 PM	9	75	7	0	91	0		11	6	23	0	40	0		33	72	34	0	139	0		26	8	12	0	46	0	
2:30 PM	3	44	2	0	49	1		8	5	23	0	36	0		24	88	31	0	143	2		27	15	4	0	46	0	
2:45 PM	1	48	9	0	58	0		19	15	17	0	51	1		25	65	14	0	104	0		23	13	3	0	39	3	
Hourly Total	22	235	29	0	286	1		48	27	75	0	150	2		104	283	93	0	480	2		93	40	23	0	156	3	
3:00 PM	8	64	8	0	80	0		22	20	14	0	46	0		22	79	12	0	113	3		41	19	8	0	68	0	
3:15 PM	3	71	1	0	75	0		10	9	21	0	40	2		19	76	11	0	106	3		24	9	7	0	40	0	
3:30 PM	1	79	3	0	83	0		8	10	24	0	42	0		26	57	16	0	99	0		29	13	2	0	44	0	
3:45 PM	4	71	5	0	80	0		17	17	21	0	55	5		25	72	19	0	116	4		30	11	12	0	53	2	
Hourly Total	16	285	17	0	318	0		57	46	80	0	183	7		92	284	58	0	434	10		124	52	29	0	205	2	
4:00 PM	10	72	6	0	88	0		9	14	20	0	43	4		25	64	26	0	115	3		41	16	5	0	62	0	
4:15 PM	5	74	7	0	86	0		12	11	27	0	50	0		18	76	27	0	121	0		34	10	7	0	51	0	
4:30 PM	5	97	13	0	115	0		11	5	28	0	44	0		32	75	19	0	126	1		21	6	4	0	31	0	
4:45 PM	7	80	8	0	95	0		15	13	20	0	48	0		24	54	14	0	92	0		25	8	8	0	41	1	
Hourly Total	27	323	34	0	384	0		47	43	95	0	185	4		99	269	86	0	454	4		121	40	24	0	185	1	
5:00 PM	4	98	6	0	108	0		8	15	22	0	45	0		34	55	15	0	104	0		30	6	2	0	38	0	
5:15 PM	6	91	6	0	103	0		13	8	22	0	43	1		24	74	22	0	120	1		28	13	6	0	47	1	
5:30 PM	7	79	9	0	95	0		6	4	26	0	36	0		20	57	15	0	92	1		25	9	3	0	37	0	
5:45 PM	4	85	4	0	93	0		11	9	17	0	37	1		11	77	29	0	117	1		16	11	8	0	35	1	
Hourly Total	21	353	25	0	399	0		38	36	87	0	161	2		89	263	81	0	433	3		99	39	19	0	157	2	
Total	277																											

Leg Direction	North Southbound					East Westbound					South Northbound					West Eastbound									
	R	T	L	U	Ped*	R	T	L	U	Ped*	R	T	L	U	Ped*	R	T	L	U	Ped*					
% Bicycles on Road	0%	0.4%	0%	0%	0.3%	-	0.2%	0.3%	1.4%	0%	0.9%	-	3.4%	0.5%	0.4%	0%	1.1%	-	0.6%	0%	1.2%	0%	0.5%	-	0.7%
Pedestrians	-	-	-	-	-	5	-	-	-	-	21	-	-	-	-	32	-	-	-	-	-	15	-	-	
% Pedestrians	-	-	-	-	-	-100%	-	-	-	-	-91.3%	-	-	-	-	-82.1%	-	-	-	-	-	-71.4%	-	-	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	2	-	-	-	-	7	-	-	-	-	-	6	-	-	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	8.7%	-	-	-	-	17.9%	-	-	-	-	-	28.6%	-	-	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

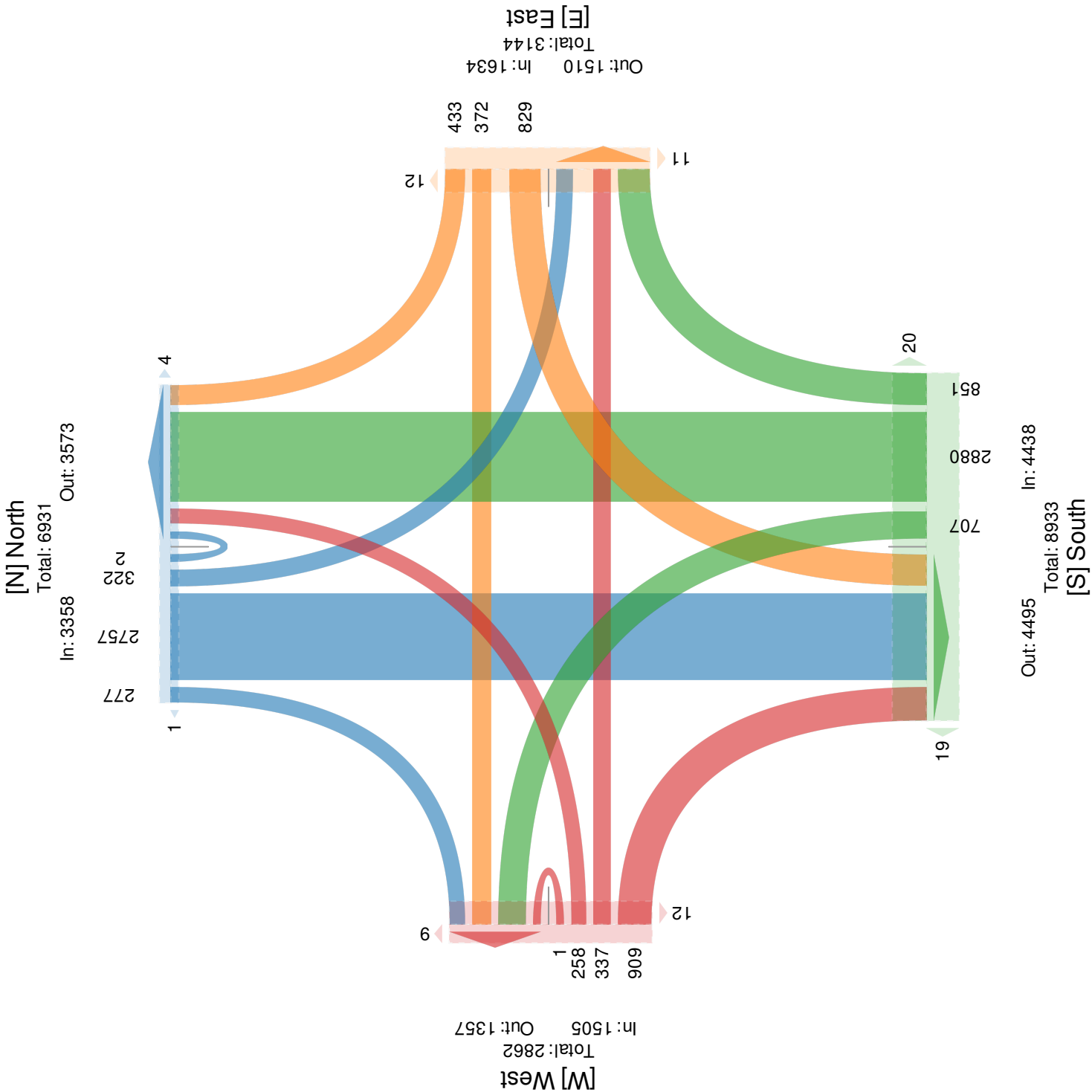
Full Length (6 AM-6 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians,
Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: -43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US



Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US

Leg Direction	North Southbound				East Westbound				South Northbound				West Eastbound												
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int						
2019-05-23 7:30AM	8	88	7	0	103	1	8	23	19	0	50	2	16	101	49	0	166	2	71	11	3	0	85	1	404
7:45AM	8	74	10	0	92	0	4	19	14	0	37	0	21	99	44	0	164	0	49	11	8	0	68	0	361
8:00AM	4	45	8	0	57	0	4	11	7	0	22	1	17	52	6	0	75	2	10	4	8	0	22	0	176
8:15AM	2	45	7	0	54	0	4	8	16	0	28	0	14	75	17	0	106	0	25	6	6	0	37	0	225
Total	22	252	32	0	306	1	20	61	56	0	137	3	68	327	116	0	511	4	155	32	25	0	212	1	1166
% Approach	7.2%	82.4%	10.5%	0%	-	-	14.6%	44.5%	40.9%	0%	-	-	13.3%	64.0%	22.7%	0%	-	-	73.1%	15.1%	11.8%	0%	-	-	-
% Total	1.9%	21.6%	2.7%	0%	26.2%	-	1.7%	5.2%	4.8%	0%	11.7%	-	5.8%	28.0%	9.9%	0%	43.8%	-	13.3%	2.7%	2.1%	0%	18.2%	-	-
PHF	0.688	0.721	0.800	-	0.748	-	0.625	0.663	0.737	-	0.685	-	0.813	0.813	0.592	-	0.767	-	0.546	0.727	0.781	-	0.624	-	0.721
Lights	22	241	32	0	295	-	20	60	49	0	129	-	64	315	111	0	490	-	151	32	25	0	208	-	1122
% Lights	100%	95.6%	100%	0%	96.4%	-	100%	98.4%	87.5%	0%	94.2%	-	94.1%	96.3%	95.7%	0%	95.9%	-	97.4%	100%	100%	0%	98.1%	-	96.2%
Single-Unit Trucks	0	8	0	0	8	-	0	1	1	0	2	-	0	7	3	0	10	-	1	0	0	0	1	-	21
% Single-Unit Trucks	0%	3.2%	0%	0%	2.6%	-	0%	1.6%	1.8%	0%	1.5%	-	0%	2.1%	2.6%	0%	2.0%	-	0.6%	0%	0%	0%	0.5%	-	1.8%
Articulated Trucks	0	0	0	0	0	-	0	0	1	0	1	-	0	1	0	0	1	-	0	0	0	0	0	-	2
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	1.8%	0%	0.7%	-	0%	0.3%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0.2%
Buses	0	2	0	0	2	-	0	0	5	0	5	-	1	2	2	0	5	-	3	0	0	0	3	-	15
% Buses	0%	0.8%	0%	0%	0.7%	-	0%	0%	8.9%	0%	3.6%	-	1.5%	0.6%	1.7%	0%	1.0%	-	1.9%	0%	0%	0%	1.4%	-	1.3%
Bicycles on Road	0	1	0	0	1	-	0	0	0	0	0	-	3	2	0	0	5	-	0	0	0	0	0	-	6
% Bicycles on Road	0%	0.4%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	-	4.4%	0.6%	0%	0%	1.0%	-	0%	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: Turn

Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

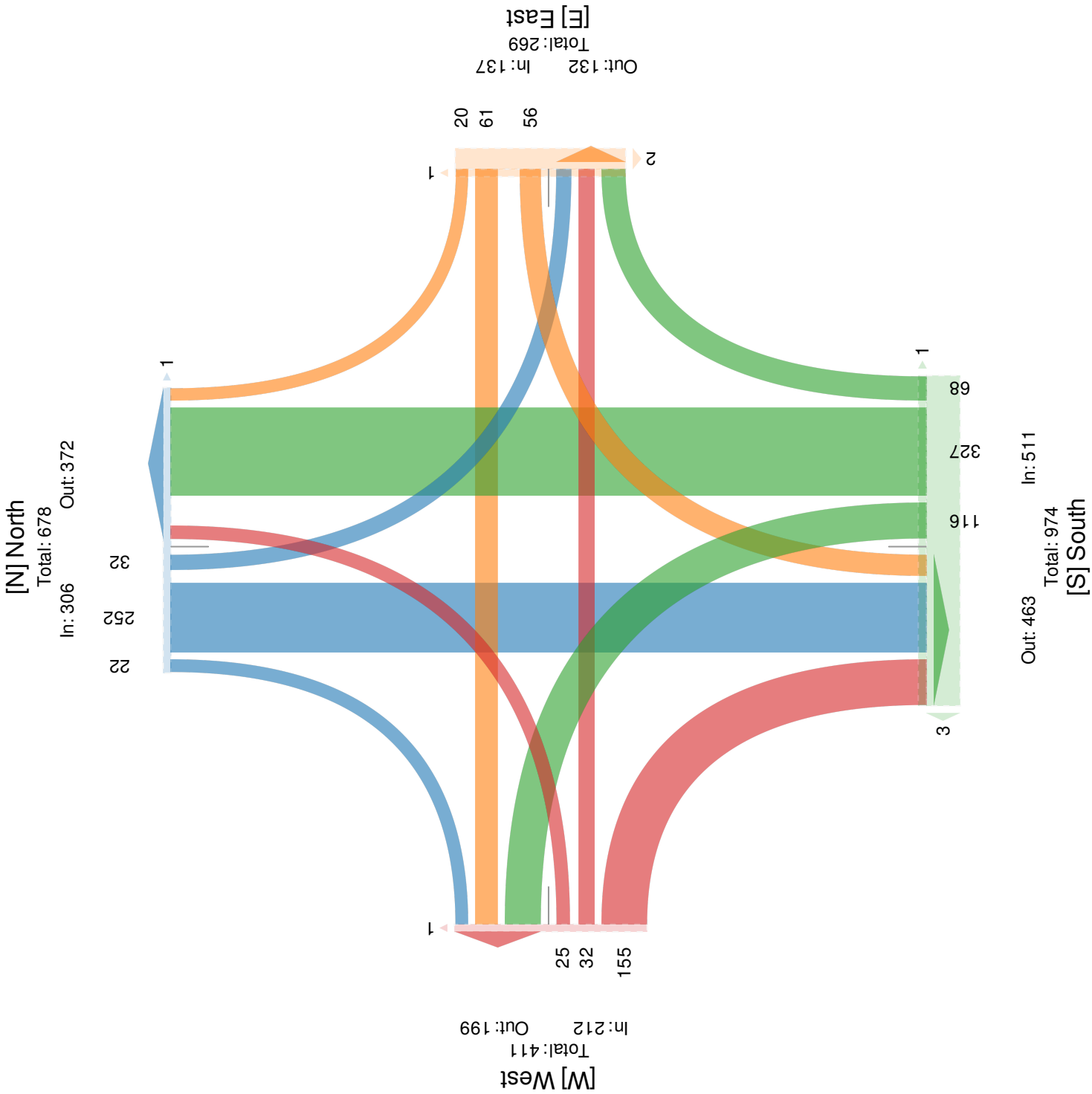
AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians,
Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US



Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

Midday Peak (12 PM - 1 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US

Leg Direction	North Southbound					East Westbound					South Northbound					West Eastbound								
	R	T	L	U	App Ped*	R	T	L	U	App Ped*	R	T	L	U	App Ped*	R	T	L	U	App Ped*				
2019-05-23 12:00PM	7	51	7	0	65	0	13	9	27	0	49	0	13	61	15	0	89	0	11	8	6	0	25	1
12:15PM	9	62	12	0	83	0	7	4	17	0	28	0	23	61	6	0	90	0	9	5	2	0	16	0
12:30PM	11	45	6	0	62	0	8	10	21	0	39	0	22	51	12	0	85	1	13	5	4	0	22	0
12:45PM	13	59	9	0	81	0	7	4	22	0	33	0	20	68	13	0	101	1	22	5	9	0	36	0
Total	40	217	34	0	291	0	35	27	87	0	149	0	78	241	46	0	365	2	55	23	21	0	99	1
% Approach	13.7%	74.6%	11.7%	0%	-	-	23.5%	18.1%	58.4%	0%	-	-	21.4%	66.0%	12.6%	0%	-	-	55.6%	23.2%	21.2%	0%	-	-
% Total	4.4%	24.0%	3.8%	0%	32.2%	-	3.9%	3.0%	9.6%	0%	16.5%	-	8.6%	26.7%	5.1%	0%	40.4%	-	6.1%	2.5%	2.3%	0%	11.0%	-
PHF	0.769	0.875	0.708	-	0.877	-	0.673	0.675	0.806	-	0.760	-	0.893	0.886	0.804	-	0.894	-	0.625	0.719	0.583	-	0.688	-
Lights	37	207	34	0	278	-	32	27	82	0	141	-	74	233	43	0	350	-	51	22	20	0	93	-
% Lights	92.5%	95.4%	100%	0%	95.5%	-	91.4%	100%	94.3%	0%	94.6%	-	94.9%	96.7%	93.5%	0%	95.9%	-	92.7%	95.7%	95.2%	0%	93.9%	-
Single-Unit Trucks	3	9	0	0	12	-	2	0	5	0	7	-	1	7	2	0	10	-	2	0	1	0	3	-
% Single-Unit Trucks	7.5%	4.1%	0%	0%	4.1%	-	5.7%	0%	5.7%	0%	4.7%	-	1.3%	2.9%	4.3%	0%	2.7%	-	3.6%	0%	4.8%	0%	3.0%	-
Articulated Trucks	0	1	0	0	1	-	1	0	0	0	1	-	0	1	0	0	1	-	1	1	0	0	2	-
% Articulated Trucks	0%	0.5%	0%	0%	0.3%	-	2.9%	0%	0%	0%	0.7%	-	0%	0.4%	0%	0%	0.3%	-	1.8%	4.3%	0%	0%	2.0%	-
Buses	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	1	0	0	0	1	-
% Buses	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	1.8%	0%	0%	0%	1.0%	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	3	0	1	0	4	-	0	0	0	0	0	-
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	3.8%	0%	2.2%	0%	1.1%	-	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	0%	

*Pedestrians and Bicycles on Crosswalk L: Left, R: Right, T: Thru, U: U-Turn

Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

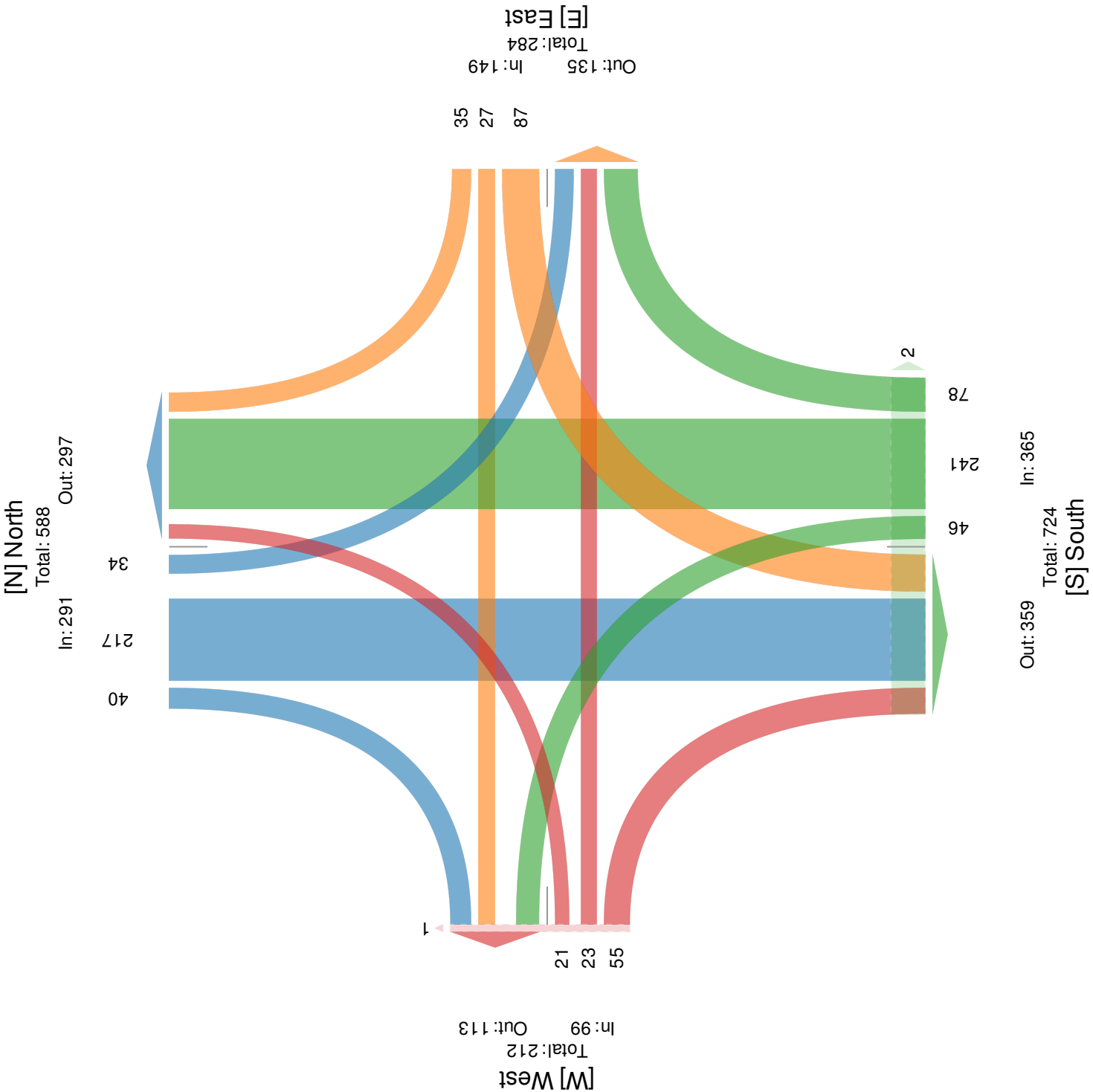
Midday Peak (12 PM - 1 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians,
Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US



Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: 43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US

Leg Direction	North Southbound				East Westbound				South Northbound				West Eastbound			
	R	T	L	U	R	T	L	U	R	T	L	U	R	T	L	U
2019-05-23 3:45PM	4	71	5	0	17	17	21	0	25	72	19	0	30	11	12	0
4:00PM	10	72	6	0	9	14	20	0	25	64	26	0	41	16	5	0
4:15PM	5	74	7	0	12	11	27	0	18	76	27	0	34	10	7	0
4:30PM	5	97	13	0	11	5	28	0	32	75	19	0	21	6	4	0
Total	24	314	31	0	49	47	96	0	100	287	91	0	126	43	28	0
% Approach	6.5%	85.1%	8.4%	0%	25.5%	24.5%	50.0%	0%	20.9%	60.0%	19.0%	0%	64.0%	21.8%	14.2%	0%
% Total	1.9%	25.4%	2.5%	0%	4.0%	3.8%	7.8%	0%	8.1%	23.2%	7.4%	0%	10.2%	3.5%	2.3%	0%
PHF	0.600	0.809	0.596	-	0.721	0.691	0.857	-	0.773	0.944	0.843	-	0.768	0.672	0.583	-
Lights	24	309	31	0	47	43	94	0	97	282	89	0	125	43	28	0
% Lights	100%	98.4%	100%	0%	95.9%	91.5%	97.9%	0%	97.0%	98.3%	97.8%	0%	99.2%	100%	100%	0%
Single-Unit Trucks	0	2	0	0	2	3	1	0	1	2	0	0	0	0	0	0
% Single-Unit Trucks	0%	0.6%	0%	0%	4.1%	6.4%	1.0%	0%	1.0%	0.7%	0%	0%	0%	0%	0%	0%
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%
Buses	0	3	0	0	0	1	1	0	1	2	2	0	1	0	0	0
% Buses	0%	1.0%	0%	0%	0%	2.1%	1.0%	0%	1.0%	0.7%	2.2%	0%	0.8%	0%	0%	0%
Bicycles on Road	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
% Bicycles on Road	0%	0%	0%	0%	0%	0%	0%	0%	1.0%	0%	0%	0%	0%	0%	0%	0%
Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Cape Elizabeth Route 77/Shore Road - TMC

Thu May 23, 2019

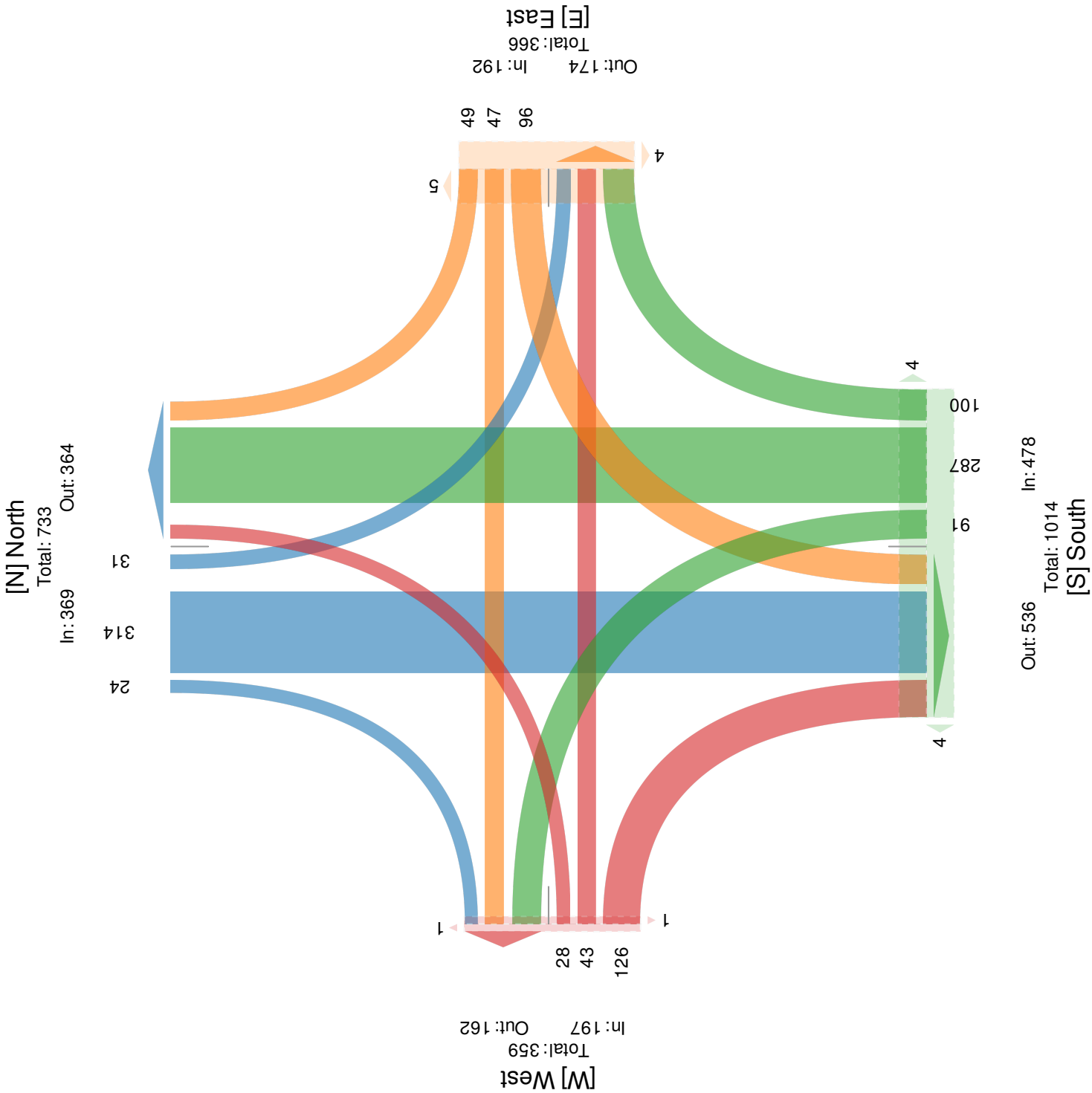
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians,
Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 673931, Location: -43.596339, -70.228285

Provided by: T.Y. Lin International
12 Northbrook Drive, Building A, Suite One,
Falmouth, ME, 04105, US



2039 NO-Build PM Peak Hour

Sim Traffic Simulation Summary Baseline

11/04/2019

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
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	1396	1413	1413	1445	1460	1424
Vehs Exited	1421	1425	1408	1429	1441	1425
Starting Vehs	37	24	18	20	13	21
Ending Vehs	12	12	23	36	32	23
Travel Distance (mi)	261	260	259	263	266	262
Travel Time (hr)	19.5	15.8	22.5	40.1	24.6	24.5
Total Delay (hr)	9.2	5.6	12.4	29.8	14.2	14.2
Total Stops	647	642	674	586	643	639
Fuel Used (gal)	12.6	11.8	13.4	17.4	13.9	13.8

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
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	1396	1413	1413	1445	1460	1424
Vehs Exited	1421	1425	1408	1429	1441	1425
Starting Vehs	37	24	18	20	13	21
Ending Vehs	12	12	23	36	32	23
Travel Distance (mi)	261	260	259	263	266	262
Travel Time (hr)	19.5	15.8	22.5	40.1	24.6	24.5
Total Delay (hr)	9.2	5.6	12.4	29.8	14.2	14.2
Total Stops	647	642	674	586	643	639
Fuel Used (gal)	12.6	11.8	13.4	17.4	13.9	13.8

Sim Traffic Performance Report

Baseline

11/04/2019

1: Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	LR	TR	L	T	
Stop Del/Veh (s)	139.9	0.3	6.1	0.5	28.4

5: Performance by lane

Lane	EB	NB	NB	SB	All
Movements Served	LR	L	T	TR	
Stop Del/Veh (s)	13.1	2.4	0.4	0.2	2.8

Total Network Performance

Stop Del/Veh (s)	29.6
------------------	------

Queuing and Blocking Report
Baseline

11/04/2019

Intersection: 1:

Movement	WB	NB	SB	SB	SB	SB
Directions Served	LR	TR	L	T	L	T
Maximum Queue (ft)	600	118	46	79	46	79
Average Queue (ft)	319	24	28	27	28	27
95th Queue (ft)	664	75	49	75	49	75
Link Distance (ft)	650	389		61		61
Upstream Blk Time (%)	10		0	1	0	1
Queuing Penalty (veh)	0		0	8	0	8
Storage Bay Dist (ft)			15		15	
Storage Blk Time (%)			10	1	10	1
Queuing Penalty (veh)			52	1	52	1

Intersection: 5:

Movement	EB	NB	NB	NB	SB	SB
Directions Served	LR	L	T	T	TR	TR
Maximum Queue (ft)	177	50	80	91	80	91
Average Queue (ft)	64	32	25	10	25	10
95th Queue (ft)	122	48	75	46	75	46
Link Distance (ft)	563		61	200		200
Upstream Blk Time (%)		0	1		0	1
Queuing Penalty (veh)		0	6		0	6
Storage Bay Dist (ft)		15			15	
Storage Blk Time (%)		10	0		10	0
Queuing Penalty (veh)		39	1		39	1

Network Summary

Network wide Queuing Penalty: 107

2039 Increase Separation PM Peak Hour

Sim Traffic Simulation Summary

Baseline

11/04/2019

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
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	1453	1390	1402	1459	1392	1418
Vehs Exited	1475	1404	1400	1451	1390	1423
Starting Vehs	38	22	21	18	14	23
Ending Vehs	16	8	23	26	16	17
Travel Distance (mi)	285	268	270	280	268	274
Travel Time (hr)	22.5	14.6	17.7	28.1	15.3	19.6
Total Delay (hr)	11.3	4.2	7.2	17.1	4.8	8.9
Total Stops	677	620	634	588	618	628
Fuel Used (gal)	13.9	11.6	12.4	15.0	11.7	12.9

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
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	1453	1390	1402	1459	1392	1418
Vehs Exited	1475	1404	1400	1451	1390	1423
Starting Vehs	38	22	21	18	14	23
Ending Vehs	16	8	23	26	16	17
Travel Distance (mi)	285	268	270	280	268	274
Travel Time (hr)	22.5	14.6	17.7	28.1	15.3	19.6
Total Delay (hr)	11.3	4.2	7.2	17.1	4.8	8.9
Total Stops	677	620	634	588	618	628
Fuel Used (gal)	13.9	11.6	12.4	15.0	11.7	12.9

Sim Traffic Performance Report

Baseline

11/04/2019

1: Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	LR	TR	L	T	
Stop Del/Veh (s)	89.1	0.2	4.3	0.4	18.3

5: Performance by lane

Lane	EB	NB	NB	SB	All
Movements Served	LR	L	T	TR	
Stop Del/Veh (s)	10.1	2.4	0.4	0.0	2.3

Total Network Performance

Stop Del/Veh (s)	19.5
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Queuing and Blocking Report
Baseline

11/04/2019

Intersection: 1:

Movement	WB		NB		SB		SB	
	LR	TR	LR	TR	L	T	L	T
Directions Served								
Maximum Queue (ft)	504	88	51	111				
Average Queue (ft)	228	16	27	20				
95th Queue (ft)	533	57	50	71				
Link Distance (ft)	657	396		122				
Upstream Blk Time (%)	5			0				
Queuing Penalty (veh)	0			0				
Storage Bay Dist (ft)			15					
Storage Blk Time (%)			8	1				
Queuing Penalty (veh)			41	1				

Intersection: 5:

Movement	EB		NB		NB		SB	
	LR	TR	L	T	L	T	L	T
Directions Served								
Maximum Queue (ft)	150	45	115	52				
Average Queue (ft)	62	32	25	3				
95th Queue (ft)	113	46	80	22				
Link Distance (ft)	565		122	213				
Upstream Blk Time (%)	5		0					
Queuing Penalty (veh)			0					
Storage Bay Dist (ft)			15					
Storage Blk Time (%)			10	0				
Queuing Penalty (veh)			39	0				

Network Summary

Network wide Queuing Penalty: 81

2039 With Traffic Signal PM Peak Hour

Sim Traffic Simulation Summary Baseline

11/04/2019

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
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	1446	1463	1387	1443	1428	1434
Vehs Exited	1450	1468	1402	1455	1409	1437
Starting Vehs	54	40	50	49	43	47
Ending Vehs	50	35	35	37	62	44
Travel Distance (mi)	408	411	392	408	397	403
Travel Time (hr)	50.4	42.9	35.3	42.1	37.1	41.6
Total Delay (hr)	35.1	27.4	20.6	26.7	22.2	26.4
Total Stops	1669	1557	1416	1474	1400	1502
Fuel Used (gal)	24.0	22.5	20.1	22.0	20.5	21.8

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
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	1446	1463	1387	1443	1428	1434
Vehs Exited	1450	1468	1402	1455	1409	1437
Starting Vehs	54	40	50	49	43	47
Ending Vehs	50	35	35	37	62	44
Travel Distance (mi)	408	411	392	408	397	403
Travel Time (hr)	50.4	42.9	35.3	42.1	37.1	41.6
Total Delay (hr)	35.1	27.4	20.6	26.7	22.2	26.4
Total Stops	1669	1557	1416	1474	1400	1502
Fuel Used (gal)	24.0	22.5	20.1	22.0	20.5	21.8

1: Performance by lane

Lane	EB	WB	NB	NB	SB	SB	All
Movements Served	LTR	LTR	L	TR	L	TR	
Stop Del/Veh (s)	47.2	46.5	46.8	64.9	31.2	51.7	53.3

Total Network Performance

Stop Del/Veh (s)	53.0
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Queuing and Blocking Report
Baseline

11/04/2019

Intersection: 1:

Movement	EB		WB		NB		SB	
	LTR	LTR	L	TR	L	TR	L	TR
Directions Served								
Maximum Queue (ft)	256	338	75	677	74	524		
Average Queue (ft)	133	179	62	393	25	283		
95th Queue (ft)	234	306	90	678	66	479		
Link Distance (ft)	573	622		696		588		
Upstream Blk Time (%)				3		1		
Queuing Penalty (veh)				0		0		
Storage Bay Dist (ft)			50		50			
Storage Blk Time (%)			43		50		3	63
Queuing Penalty (veh)			187		52		10	22

Network Summary

Network wide Queuing Penalty: 271

**Draft Quantities
ENGINEER'S ESTIMATE**

**Rt 77, Shore Rd and Scott Dyer Rd
Client: CAPE ELIZABETH
#VALUE!**

Length: 0.193 mi

Filename: Copy of Concept Level Quantities 5-11-20.xls

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
200.15	REMOVING EXISTING MANHOLE OR CATCH BASIN	EA	2	\$ 400.00	\$ 800
203.20	COMMON EXCAVATION	CY	990	\$ 28.00	\$ 27,720
203.25	GRANULAR BORROW	CY	10	\$ 35.00	\$ 350
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	CY	880	\$ 40.00	\$ 35,200
403.213	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE (Base & Intermediate Base Course	Ton	274	\$ 150.00	\$ 41,100
403.208	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE	Ton	130	\$ 170.00	\$ 22,100
403.209	HOT MIX ASPHALT 9.5 MM HMA (SIDEWALKS, DRIVES & INCIDENTAL)	Ton	20	\$ 190.00	\$ 3,800
409.15	BITUMINOUS TACK COAT - APPLIED	G	114	\$ 14.00	\$ 1,602
604.092	CATCH BASIN TYPE B1-C	EA	1	\$ 5,000.00	\$ 5,000
608.07	PLAIN CONCRETE SIDEWALK	SY	17	\$ 250.00	\$ 4,200
608.26	CURB RAMP DETECTABLE WARNING FIELD	SF	16	\$ 100.00	\$ 1,600
609.111	VERTICAL CURB TYPE I	LF	420	\$ 45.00	\$ 18,900
627.18	12" SOLID WHITE PAVEMENT MARKING	LF	32	\$ 2.00	\$ 64
627.733	4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	LF	1030	\$ 0.50	\$ 515
627.75	WHITE OR YELLOW PAVEMENT & CURB MARKING	SF	820	\$ 8.00	\$ 6,560
629.05	HAND LABOR, STRAIGHT TIME	HR	12	\$ 50.00	\$ 600
631.12	ALL-PURPOSE EXCAVATOR (INCLUDING OPERATOR)	HR	5	\$ 190.00	\$ 950
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	HR	5	\$ 100.00	\$ 500
631.21	ROAD BROOM (INCLUDING OPERATORS AND HAULER)	HR	5	\$ 100.00	\$ 500
631.22	FRONT END LOADER (INCLUDING OPERATOR)	HR	5	\$ 140.00	\$ 700
639.19	FIELD OFFICE, TYPE B	EA	1.0	\$ 10,000.00	\$ 10,000
652.33	DRUM	EA	25	\$ 80.00	\$ 2,000
652.34	CONE	EA	50	\$ 30.00	\$ 1,500
652.35	CONSTRUCTION SIGNS	SF	200	\$ 15.00	\$ 3,000
652.36	MAINT OF TRAFFIC CONTROL DEVICES	CD	60	\$ 500.00	\$ 30,000
652.38	FLAGGER	HR	1800	\$ 25.00	\$ 45,000
652.41	PORTABLE-CHANGEABLE MESSAGE SIGN	EA	4	\$ 4,000.00	\$ 16,000
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LS	1	\$ 15,000.00	\$ 15,000
659.10	MOBILIZATION	LS	1	\$ 29,526.06	\$ 29,526
	RRFB	LS	1	\$ 15,000.00	\$ 15,000

Sub Total: \$ 339,787
 15% Const. Svcs \$ 50,968
 10% Design Svcs \$ 33,979
 20% Contingency \$ 67,957

Total \$ 492,691