#### 157-169 Lowland Street, Holliston, MA

Traffic Impact Assessment

Prepared for **Town of Holliston** 

Prepared by
Howard Stein Hudson

September 2022



Engineers + Planners

#### TRAFFIC IMPACT ASSESSMENT



TO:

Henrique Oliveira, Master Paving

DATE:

September 30, 2022

FROM:

Keri Pyke, P.E., PTOE

Melissa Restrepo

HSH PROJECT NO .:

2022135.00

SUBJECT:

Traffic Impact Assessment

157-165 Lowland Street, Holliston, Massachusetts

#### Introduction

This memorandum, prepared by *Howard Stein Hudson (HSH)*, describes the traffic impacts of the proposed expansion of pavement processing and paving services facility at 157-165 Lowland Street (hereinafter the "Project" or "Project Site") located in Holliston, Massachusetts. This traffic impact assessment follows the methodology provide below:

- The Existing (2022) Condition analysis includes an inventory of the existing transportation conditions such as roadway characteristics, site conditions, and crash data. Existing traffic counts were collected at the study area intersection. The traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.
- The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 2029, based on a seven-year horizon from the year of the filing of this traffic study.
- The No-build (2029) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project Site.
- The Build (2029) Condition analysis includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-build (2029) Condition analysis. The transportation study identifies any expected roadway impacts.
- The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, safety, or construction-related issues that are necessary to accommodate the Project.

#### **Project Description**

The Project aims to improve the current pavement recycling process with new additional equipment, as well as providing parking for the paving operations trucks in a new building. The Project will limit the recycling process to cleaner concrete and asphalt pavement and eliminate bricks and other

earth materials including wood chips and loam. The new building will primarily serve as parking for the paving trucks and repair space for the equipment on-site.

#### **Study Area**

The study area includes one unsignalized intersection, shown in **Figure 1**, at Washington Street/Whitney Street.

#### **Existing Condition**

This section includes descriptions of existing study area roadway geometries, intersection traffic control, peak-hour vehicular volumes, and crash data.

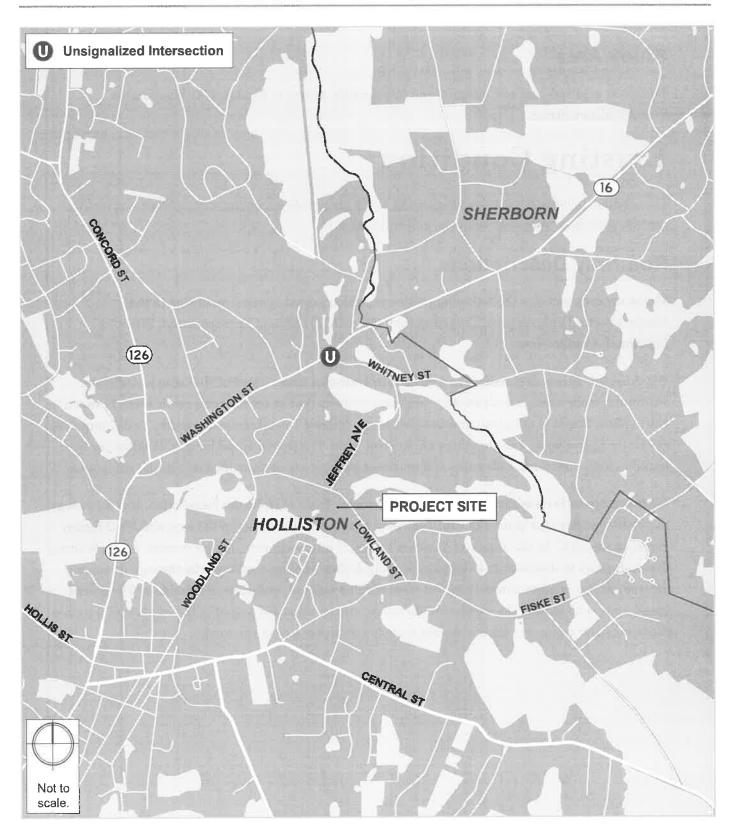
#### **Roadway Descriptions**

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning functional classifications:

Washington Street is classified as a rural minor arterial under Town of Holliston jurisdiction within the study area. It is a two-way, two-lane roadway that generally runs north-south between North Main Street to the north and the Holliston – Milford Town Line to the south. Travel lanes are generally 11 feet wide, and shoulders are 2-8 feet wide. The posted speed limit is 35 miles per hour (mph) in both directions. Sidewalks and on-street parking are not provided within the study area.

Whitney Street is classified as a local roadway under Town of Holliston jurisdiction. It is a two-way, two-lane roadway that generally runs east-west between Hollis Street to the east and Washington Street to the west. At the middle of Whitney Street, it intersects with Jeffrey Avenue where Whitney Street appears to intersect at a right angle while Jeffrey Avenue continues the through direction. Whitney Street is approximately 30 feet wide with no painted centerline or shoulders. The posted speed limit is 25 mph in the westbound direction, and no signs are posted in the eastbound direction. Sidewalks and on-street parking are not provided on either side of the road.

Figure 1. Study Area





#### **Intersection Descriptions**

Existing conditions at the study area intersection are described below:

Washington Street/Whitney Street is a three-legged, unsignalized intersection with a commercial driveway approaching from the north. The Washington Street northbound, Washington Street southbound, and Whitney Street westbound approaches each consist of a single left-turn/through/right-turn lane. The Whitney Street westbound approach is stop-controlled and has an approximately six-foot-wide median island. The commercial driveway on the southbound approach allows left-turn/through/right-turn movements and is not stop-controlled. Crosswalks are not provided across any of the approaches.

#### **Data Collection**

Turning Movement Counts (TMCs) were recorded during the morning peak hours (7:00-9:00 a.m.) and evening peak hours (4:00-6:00 p.m.) on Thursday, October 8, 2020. The TMCs included car, heavy vehicle, bicycle, and pedestrian counts at the study area intersection. The results of the counts indicate that the vehicle morning peak hour occurs between 7:00-8:00 a.m. and the evening peak hour between 4:30-5:30 p.m. The detailed traffic counts are provided in **Appendix A** attached hereto.

#### SEASONAL ADJUSTMENT

To account for the seasonal variation in traffic volumes throughout the year, data provided by MassDOT, were reviewed. The most recent (2019) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the October 2020 TMCs. The 2019 seasonal adjustment factor for October for roadways like the study area (R4 and R7) is 0.98. This indicates that traffic volumes for October are approximately 2% greater than average traffic volumes for the year. The traffic counts were not adjusted down to reflect average month conditions to provide a conservatively high analysis consistent with the peak-season traffic volumes. The MassDOT 2019 Weekday Seasonal Factors table is provided in **Appendix B** attached hereto.

#### **COVID-19 ADJUSTMENT**

Collected data from October 2020 were compared to historical nearby traffic data, pre-pandemic, to evaluate if recent traffic has changed. Counts from March 2020, just before the start of the pandemic, were used at MassDOT count location ID 4815 for comparison. This spot counter is located on Washington Street just east of Whitney Street. Counts along Washington Street were generally lower in October than in March, therefore the counts were adjusted up for this study by approximately 50%. COVID adjustments were determined to provide some general correction for

COVID-19 variation; however, they are not expected to adjust volumes exactly to pre-COVID numbers. Research shows that post-pandemic volumes might not completely recover to pre-COVID patterns.

#### **Existing Traffic Volumes**

The existing traffic volumes that were collected in October 2020 were adjusted based on the seasonal and COVID-19 factors to develop the Existing (2022) Condition traffic volumes. The Existing Condition weekday a.m. and p.m. peak hour vehicle volumes are shown in **Figure 2**. Note that the counts collected at this intersection captured part of the existing ABC facility vehicle activity; therefore, the Build Condition analysis, presented under Traffic Operations Analysis in this report, represents a conservative analysis.

#### **Motor Vehicle Collision Data**

HSH compiled motor vehicle crash data from the MassDOT crash records on the IMPACT portal for the most recent three-year period for which they are available (2017-2019). No segment crashes occurred along Whitney Street/Jeffrey Avenue, and there were six crashes at the intersection of Washington Street and Whitney Street. No crashes between 2017 – 2019 involved heavy trucks or trailers. Crashes were primarily property damage only under dry conditions in the daylight.

The crash rate for an intersection is based on crashes per million entering vehicles (MEV). At the study area intersection, the crash rate is 0.47 crashes per MEV, lower than the District 3 average of 0.61 crashes per MEV. Crash data are summarized in **Table 1**. The crash rate worksheet is provided in **Appendix C** attached hereto.

Figure 2. Existing Condition Vehicle Volumes, Weekday a.m. and p.m. Peak Hours

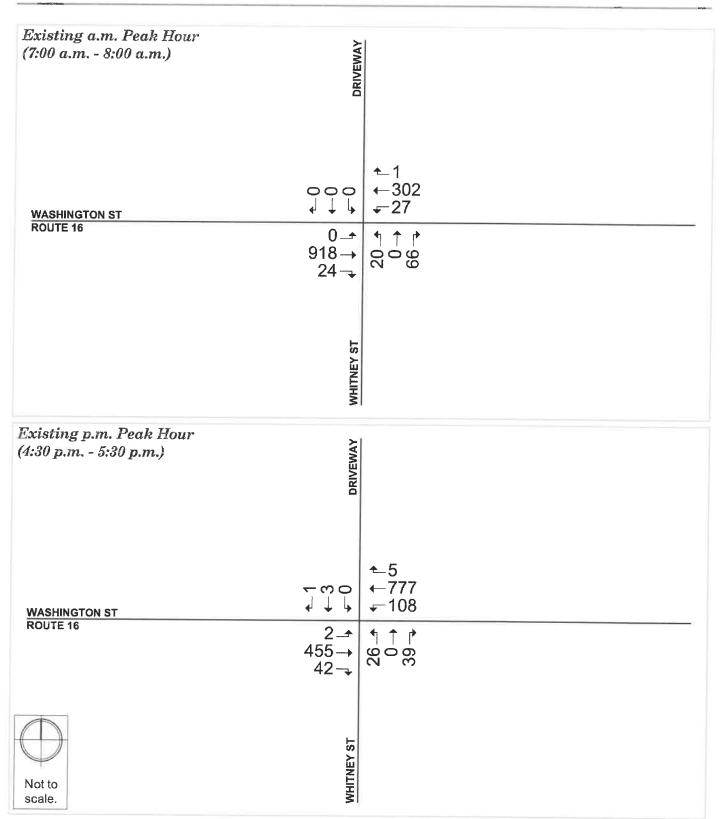


Table 1. Crash Data Summary

		Segment	Intersection
	Description/Scenario	Whitney Street/Jeffrey Avenue Between Washington St and Lowland St	Washington Street at Whitney Street
Total Crasi	nes	0	6
	2017	0	1
Year	2018	0	1
	2019	0	4
0 15	Property Damage Only	0	5
Severity	Injury	0	1
	Angle	0	2
Collision	Rear-end	0	2
Туре	Sideswipe, opposite direction	0	0
	Single vehicle crash	0	2
	Weekday a.m. Peak (7 - 9 a.m.)	0	3
Time of	Weekday p.m. Peak (4 – 6 p.m.)	0	2
Day	Weekday Off-Peak	0	1
Roadway	Dry	0	6
Surface	Snow	0	0
Light	Daylight	0	5
Condition	Dark – roadway not lighted	0	1
nvolving H	eavy Truck/Trailer	0	0
Crash Rate			0.47
District Cra	sh Rate	1.20	0.61**

Source: MassDOT, Impact Crash Data Portal \*\*Crashes per million entering vehicles (MEV)

#### No-build (2029) Condition

The No-build (2029) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area.

#### **Background Traffic Growth**

The methodology to account for general background traffic growth, independent of the Project, may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent and historic traffic data from the MassDOT MS2 Transportation Data Management System, a traffic growth rate of 1% per year, compounded



annually was selected. This is also consistent with growth rates used for other development projects in the area. The traffic volumes were grown to the Future Year of 2029, as is prescribed in the MassDOT Traffic Impact Study Guidelines.

#### Specific Development Projects

Based on a review of the Town of Holliston website, the following projects were identified in the Project area. It is assumed that any unidentified projects will be captured by the background growth rate.

- 245 Washington Street (Village on the Green 40B) This project includes 16 detached single-family homes. The project will have site access via a driveway on Washington Street.
- 555 Hopping Brook Road This project consists of 800,000 square feet (sf) of warehouse space within the Hopping Brook Business Park.
- 194 Lowland Street This project consists of a vehicle storage facility for approximately 585 cars and a 26-sf security booth.

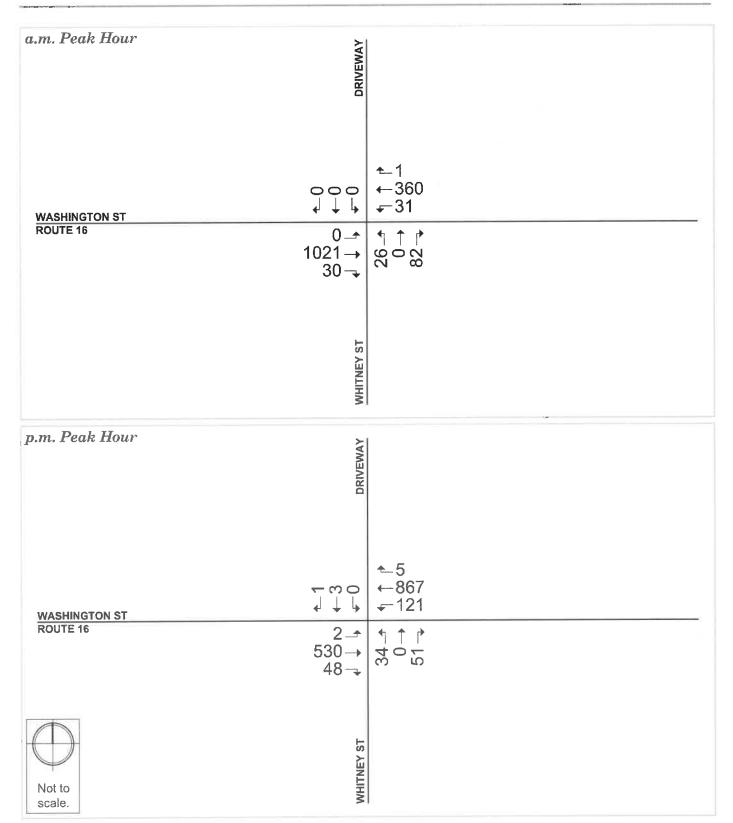
#### **Roadway Improvement Projects**

Based on a review of the Town of Holliston website, no future roadway improvement projects were identified to be completed by 2029 outside of routine maintenance work.

#### No-build (2029) Traffic Volumes

The 1% per year annual growth rate, compounded annually, was applied to the Existing (2022) Condition traffic volumes; then the traffic volumes associated with the background development projects listed previously were added to develop the No-build (2029) Condition traffic volumes. The No-build (2029) peak hour vehicle volumes for the a.m. and p.m. peak hours are shown in **Figure 3**.

Figure 3. No-build (2029) Condition Vehicle Volumes, Weekday a.m. and p.m. Peak Hours





#### Build (2029) Condition

The proposed Project will consist of the expansion of the current facility, providing parking for the paving trucks in a new building and streamlining the current recycling process with new additional equipment. The site plan is shown in **Figure 4**.

#### **Project Trip Generation**

Typically, the number of trips expected to be generated by a project are estimated using data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*, 11<sup>th</sup> Edition. Because this is an atypical use, the ITE Trip Generation Manual does not have land use data that covers this use; therefore, trips for the Project were estimated based on expected facility operations and assumptions based on Proponent-provided data. Based on the type of land use and location of the Project, all trips to the Project Site are expected to be vehicle trips, by car or truck.

As previously described, the Project is seeking to improve the current ABC recycling services and incorporate a new building to serve as parking storage for paving trucks. The following sections describe the assumptions that were used to calculate the Project's vehicle trips. A summary of trip generation is shown in **Table 2.** Note that the counts collected captured part of the existing ABC facility vehicle activity, but no credit was taken for the existing ABC facility activity; therefore, the Build Condition analysis, presented under Traffic Operations Analysis in this report, represents a conservative analysis.

#### **ABC RECYCLING FACILITY**

The ABC recycling facility operates from 7:00 a.m. – 7:00 p.m. Monday through Friday and from 7:00 a.m. – 3:00 p.m. on Saturday. The facility will employ a total of three (3) employees, which are expected to arrive before 7:00 a.m. and depart after 7:00 p.m. In a typical day, the facility is expecting approximately 100 truck trips throughout the day, with approximately 25 trucks entering full, unloading, and departing empty, twice a day. The majority of these trips will occur between 7:00 a.m. and 4:00 p.m.

#### PAVING TRUCK STORAGE FACILITY

The paving truck storage facility will operate from 6:00 a.m. – 7:00 p.m. Monday through Friday and from 7:00 a.m. – 3:00 p.m. on Saturday. The proposed new building will only serve as parking storage for the paving trucks. The facility will employ a total of 16 employees, which are expected to arrive before 6:00 a.m. and depart after 7:00 p.m. In a typical day, employees will arrive in their own private vehicles, park on-site, and depart in one of the company's paving trucks (one employee per

truck). Depending on the work available and the season, pavers' trucks may return to the Site before 7:00 p.m. and occasionally (1-2 times per month) between 8:00-9:00 p.m. During the typical day, some trucks may occasionally return to the Site to unload materials at the ABC facility and return to the corresponding work site. As shown in **Table 2**, there are expected to be 12 vehicle trips (six in and six out) during the a.m. peak hour and 22 vehicle trips (22 in and 22 out) during the p.m. peak hour. There are expected to be 188 daily vehicle trips (94 in and 94 out).

Table 2. Project Vehicle Trip Generation

Time Perio Direction		ABC Recycling Facility	Paving Truck Storage Facility	Total Trips
	In	54	40	94
Daily	Out	<u>54</u>	<u>40</u>	<u>94</u>
	Total	108	80	188
	In	6	0	6
a.m. Peak Hour	Out	<u>6</u>	<u>0</u>	<u>6</u>
	Total	12	0	12
ATTITUTE TRANSPORTED	In	6	16	22
p.m. Peak Hour	Out	<u>6</u>	<u>16</u>	<u>22</u>
	Total	12	32	44

#### **Trip Distribution**

The trip distribution identifies the various travel paths for vehicles associated with the Project. Based on information provided by the Proponent, it is expected that approximately 50% of truck trips will come from Route 16 east of the Project Site and the remaining 50% of truck trips will come from either I-495 east on Route 16 or I-90 south on Route 126 to the Project Site. The trip distribution percentages were applied to the vehicle trip generation to determine the project-generated trips for the weekday a.m. and p.m. peak hours as shown in **Figure 5**.

#### **Build (2029) Traffic Volumes**

Project-generated vehicle trips were added to the No-build (2029) Condition vehicular traffic volumes to develop the Build (2029) Condition vehicular traffic volumes. The Build (2029) Condition a.m. and p.m. peak hour traffic volumes are shown in **Figure 6**.

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Site Plan and Driveway Access

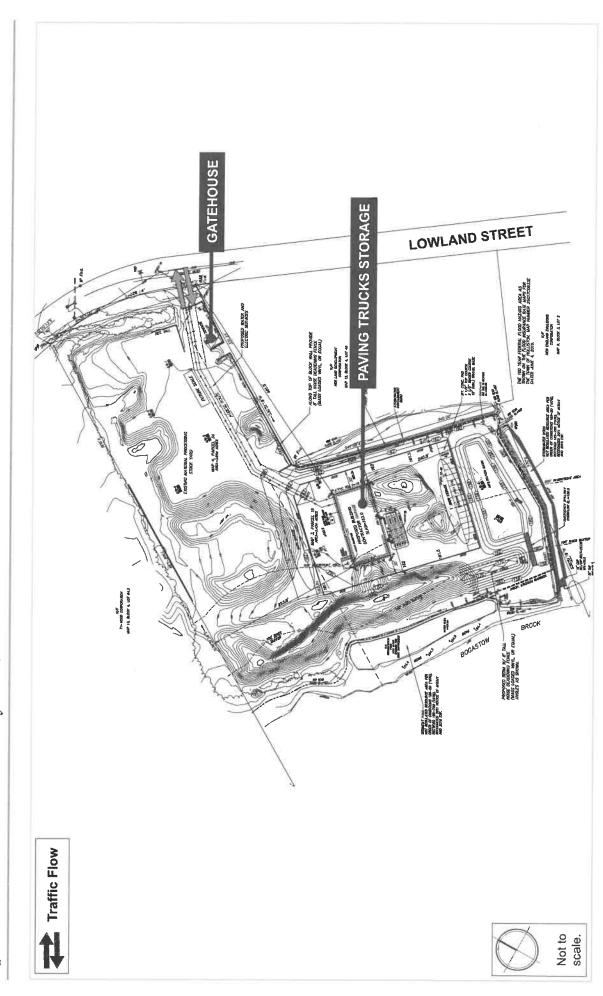




Figure 5. Project-generated Vehicle Trips, Weekday a.m. and p.m. Peak Hours

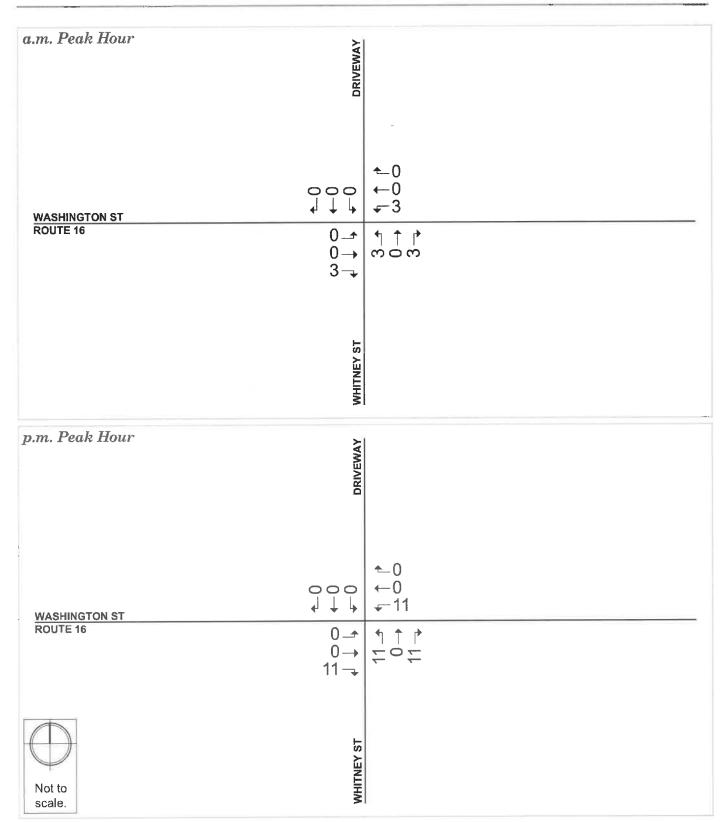
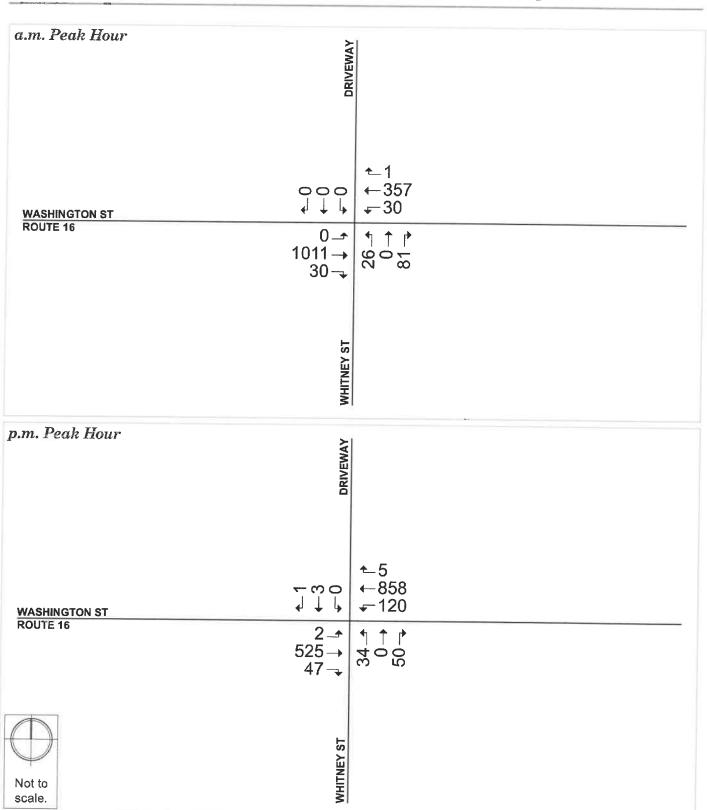




Figure 6. Build (2029) Condition Vehicle Volumes, Weekday a.m. and p.m. Peak Hours



#### Traffic Operations Analysis

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. The latest Trafficware's Synchro (version 11) software package was used to calculate average delay and associated LOS at all study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6<sup>th</sup> *Edition*. The latest HCM edition, 6<sup>th</sup>, methodology outputs were used.

In accordance with MassDOT guidelines, the peak 15 minutes of data collected during the peak hour were isolated to calculate the peak-hour factors (PHFs) for each approach. In the future conditions, a peak hour factor of 0.88 was applied to all approaches based on MassDOT guidelines for rural areas. The percentage of heavy vehicles was noted for each land group movement.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 3,** an excerpt from the HCM, provides LOS criteria for signalized intersections. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered desirable during the peak hours of traffic in urban and suburban settings. However, LOS E or LOS F is often typical for a stop-controlled minor street that intersects a major roadway.

Table 3. Level of Service Criteria

	Average Stopped Delay (sec.)
Level of Service	Unsignalized Intersection
Α	0.0–10.0
В	10.1–15.0
С	15.1–25.0
D	25.1–35.0
E	35.1–50.0
	>50.0

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes the other measures.



The volume-to-capacity ratio (v/c ratio) is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 95<sup>th</sup> percentile queue, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95<sup>th</sup> percentile queue represents what can be considered a "worst case" condition. Queues at an intersection are generally below the 95<sup>th</sup> percentile length throughout most of the peak hour. It is also unlikely that 95<sup>th</sup> percentile queues for each approach to an intersection occur simultaneously.

Table 4 summarizes the LOS, delay, volume to capacity ratio, and queue analysis for the study area intersection during the morning and evening peak hours for the Existing, No-build 2029, and Build 2029 Conditions.

#### SYNCHRO METHODOLOGY

At unsignalized intersections, it is not uncommon for the minor street approaches to operate at LOS E or F. This is partly due to the conservative gap acceptance time used in the Synchro software for vehicles waiting to enter the main street from a stopped condition. Under these conservative conditions, small and large increases in volumes may show large changes in delay. When activity is more continuous on the main road, drivers are more willing to turn with smaller gaps between vehicles rather than wait for a larger gap. Under normal conditions, this typically would be corrected for by collecting actual gap acceptance times through field observations. As discussed previously, the current volumes are lower than pre-pandemic volumes, therefore there is not a reliable way to adjust for actual conditions in the field as current traffic is not comparable to the higher volume conditions represented in the traffic model. Instead, the operations analysis will also be presented for the Existing, No-build 2029, and Build 2029 Conditions where volumes are not adjusted to correct for COVID-19 traffic variation, shown in Table 5. Even though levels of traffic are slowly returning, the future traffic is not certain and may be somewhere in between these two analysis scenarios.

Operations Analysis Summary (with COVID-19 Adjustment), Weekday a.m. and p.m. Peak Hours Table 4.

		Existing Condition	Conditi	uo	No-	No-build (2029) Condition	(6) Cond	lition	ā	Build (2029) Condition	9) Cond	ition
Intersection/Movement	SOT	Delay (sec)	V/C Ratio	95th % Queue (ff)	SOT	Delay (sec)	V/C Ratio	95th % Queue (ft)	ros	Delay (sec)	V/C Ratio	95th % Queue (ft)
Ēra				a.m. Peak Hour	k Hour							
Washington Street/Whitney Street	-	-	· ·	ì		1		ı	ı	8	•	
Washington St NB left/thru/right	Α	0	0	0	×	0	0	0	A	0	0	0
Washington St SB left/thru/right	В	10.9	90.0	5	В	11.8	90.0	2	М	11.8	90.0	2
Whitney St WB left/thru/right	ш	>50.0	0.64	06	ட	>50.0	0.88	145	L	>50.0	0.98	170
Driveway EB left/thru/right	4	0	0	0	<	0	0	0	A	0	0	0
				p.m. Peak Hour	k Hour							
Washington Street/Whitney Street	-	1	•	*	•	ı	1		1			
Washington St NB left/thru/right	А	9.6	0	0	മ	10.1	0	0	В	10.1	0	0
Washington St SB left/thru/right	Α	9.0	0.12	10	А	9.6	0.15	13	Α	8.6	0.16	15
Whitney St WB left/thru/right	ш	>50.0	0.67	90	ш	>50.0	1.25	185	L	>50.0	1.79	273
Driveway EB left/thru/right	Ш	45.0	0.08	8	ц	>50.0	0.08	2	ш	>50.0	0.09	80

Grey shading indicates LOS E or F under the Existing Condition or a change from LOS D or better in a previous condition to LOS E or F. #=95th percentile volume exceeds capacity; queue may be longer. = -50th percentile volume exceeds capacity, queue is theoretically infinite.

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Operations Analysis Summary (without COVID-19 Adjustment), Weekday a.m. and p.m. Peak Hours Table 5.

		Existing Condition	Conditi	on	No	No-build (2029) Condition	29) Cone	lition	ā	Build (2029) Condition	9) Cond	ition
Intersection/Movement	ros	Delay (sec)	V/C Ratio	95th % Queue (ft)	ros	Delay (sec)	V/C Ratio	95th % Queue (ft)	ros	Delay (sec)	V/C Ratio	95th % Queue (ff)
				a.m. Peak Hour	k Hour							
Washington Street/Whitney Street		-	-	1	a	ā		r	-			
Washington St NB left/thru/right	А	0	0	0	A	0	0	0	A	0	0	0
Washington St SB left/thru/right	∢	9.3	0.04	က	A	9.8	0.04	3	A	9.8	0.04	5
Whitney St WB leff/thru/right	ပ	21.9	0.35	38	Q	28.8	0.45	55	۵	30.9	0.45	63
Driveway EB left/thru/right	А	0	0	0	A	0	0	0	A	0	0	0
				p.m. Peak Hour	k Hour							
Washington Street/Whitney Street	'				i.	1		1	,			
Washington St NB left/thru/right	A	8.6	0	0	A	8.9	0	0	<	8.9	0	0
Washington St SB left/thru/right	Α	8.4	0.10	œ	A	8.8	0.13	10	A	8.9	0.14	13
Whitney St WB left/thru/right	۵	25.1	0.33	35	ш	42.8	0.51	65	<b>L</b>	>50.0	0.70	108
Driveway EB left/thru/right	ပ	24.1	0.04	3	۵	32.4	0.03	3	۵	34.4	0.03	3

Grey shading indicates LOS E or F under the Existing Condition or a change from LOS D or better in a previous condition to LOS E or F

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<sup># = 95</sup>th percentile volume exceeds capacity; queue may be longer.  $\sim$  = Volume exceeds capacity, queue is theoretically infinite.

#### **EXISTING CONDITION**

All intersection approaches operate at LOS D or better in the Existing Condition except the Whitney Street westbound approach, which operates at LOS F during the a.m. and p.m. peak hours and the driveway opposite of Whitney Street, which operates at LOS E during the p.m. peak hour. Note that without the COVID-19 adjustment, these approaches operate at LOS D, more closely representing the current existing conditions in the field.

#### NO-BUILD (2029) CONDITION

All intersection approaches continue to operate at similar levels of service in the No-build (2029) Condition as the Existing Condition, except for the Driveway eastbound approach during the p.m. peak hour in the scenario with the COVID-19 adjustments and the Whitney Street westbound approach during the peak hour in the scenario without the COVID-19 adjustments.

#### **BUILD (2029) CONDITION**

The intersections and approaches are expected to operate the same in the Build (2029) Condition as in the No-build (2029) Condition except for the increases in delay on the Whitney Street westbound approach. It is not uncommon to experience an increase in delay at a stop-controlled approach; however, the large increase in delay in the scenario with COVID-19 adjustment is likely representative of the model's sensitivity to volume changes without correcting for gap acceptance.

In the Build (2029) Condition, with COVID-19 adjustments, the 95<sup>th</sup> percentile queue is 273 feet, about 11 vehicles, during the p.m. peak hour, while the scenario without COVID-19 adjustments shows a queue of 108 feet, or four vehicles. The 95<sup>th</sup> percentile queue is only expected to occur 5% of the time; therefore, even in the worst case with traffic returning to pre-pandemic levels, queues on average are not expected to be longer than seven vehicles. Additionally, as it was previously noted, the Build Condition provides a conservative analysis as it consists of the counts collected in October 2020, which includes part of the existing ABC facility vehicle activity, and the future Site projections which includes the existing ABC facility and the proposed expansion. The full Synchro reports for all scenarios are provided in **Appendix D**.

#### Conclusion

Based on forecasted business operations logistics, the Project is expected to generate 188 daily trips to occur during business operating hours between 6 a.m. and 7 p.m. on a weekday. Typical morning and evening peak hours are expected generate 12 and 44 new peak hour trips per hour which, on average, is one vehicle every one to five minutes. Any new truck activity will be focused through the existing Lowland Industrial Park area and is not expected to impact the nearby neighborhood streets. The Project is expected to have a minimal impact on traffic operations in the study area.



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#### Appendix A

Traffic Count Data

Vannesa Methoxha

621\_C81\_HSH Holliston, MA Location 1 Project #: Location: BTD#:

Washington Street (Route 16)

Street 1:

Street 2:

Whitney Street 10/8/2020

Count Date:

Thursday Day of Week:

Clouds & Sun, 60°F

Weather:

## TRAFFIC DATA

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

# PASSENGER CARS & HEAVY VEHICLES COMBINED

16)	Right	0	0	0	-	0	0	0	0	
Washington Street (Route 16)	Thru	46	44	47	64	65	58	55	22	
hington Street (F	Left	12	1	4	10	œ	4	4	11	
Was	U-Tum	0	0	0	0	0	0	0	0	
16)	Right	8	4	9	9	10	2	8	00	
eet (Route	Thru	150	148	170	144	124	133	124	104	
Washington Street (Route 16)	Left	0	0	0	0	0	0	0	0	
Was	U-Turn	0	0	0	0	0	0	0	0	
	Right	0	0	0	0	0	0	0	0	
Driveway	Thru	0	0	0	0	0	0	1	0	
Parking Lot Driveway	Left	0	0	0	0	0	0	0	0	
	U-Tum	0	0	0	0	0	0	0	0	
	Right	23	14	18	17	12	10	6	2	
Whitney Street	Thru	0	0	0	0	0	0	0	0	
Whitney Stree	Left	2	8	10	S	4	2	0	2	
	U-Turn	0	0	0	0	0	0	0	0	
	Start Time	7:00 AM	7:15 AM	7:30 AM	7:45 AM	8:00 AM	8:15 AM	8:30 AM	8:45 AM	

		Right						~	~	_
ute 16)			١		• "			. 4	. 4	
reet (Rou	Westbound	Thru	136	150	125	134	112	147	127	97
Washington Street (Route 16)	West	Left	21	11	19	39	56	24	19	13
Was		U-Tum	0	0	0	0	0	0	0	0
16)		Right	2	4	6	8	14	11	9	13
Washington Street (Route 16)	puno	Thru	54	78	82	68	79	74	78	81
hington Str	Eastbound	Left	-	-	,	0	0	1	1	0
Was		U-Turn	0	0	0	0	0	0	0	0
		Right	2	-	0	1	0	0	2	0
Driveway	puno	Thru	0	0	1	-	0	-	1	-
Parking Lot Driveway	Southbound	Left	-	-	0	0	0	0	0	0
		U-Tum	0	0	0	0	0	0	0	0
		Right	14	6	11	9	12	10	8	6
, Street	punoc	Thru	0	0	0	0	0	0	0	0
Whitney Street	Northbound	Left	1	6	4	7	10.	ω	2	8
		U-Turn	0	0	0	0	0	0	0	0
		Start Time	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM

(Route 16)	pl	Thru Right	201 1	1,00	2.0% 0.0%	(Route 16)	pu	The Birt
Washington Street (Route 16)	Westbound	Left	27	0.76	7.4%	Washington Street (Route 16)	Westbound	ILTurn Loft Thus
Was		U-Turn	0		0.0%	Was		I L'Tirrn
16)		Right	24		5.7% 4.2%	16)		Diah
Washington Street (Route 16)	puno	Thru	612	06.0	2.1%	Washington Street (Route 16)	puno	Thrii
shington Str	Eastbound	Left	0	0.0	%0.0	shington Str	Eastbound	Ho.
Was		Right U-Turn	0		%0.0	Was		Diaht II Turn
		Right	0		%0.0			Diah
t Driveway	punoo	Thru	0	00	%0.0	Parking Lot Driveway	punoq	Thrit
Parking Lot Driveway	Southbound	Left	0	00.00	%0.0	Parking Lo	Southbound	40
		U-Turn	0		%0.0			LI Trans
		Right	99		18.2%			T 11
Whitney Street	Northbound	Thru	0	0.77	%0.0	Whitney Street	Northbound	Thur.
Whitney	North	Left	20	0	25.0%	Whitney	North	-
		U-Turn	0		%0.0			T. T.
AM PEAK HOUR	7:00 AM	2	8:00 AM	PHF	W/W	PM PEAK HOUR	4:30 PM	

PM PEAK HOUR		Whitney	Whitney Street			Parking Lot Driveway	t Driveway		Was	Nashington Street (Route 16)	eet (Route	16)	Was	Washington Street (Route 16)	eet (Route	16)
4:30 PM		North	lorthbound			Southbound	punoc			Eastbound	pund			Westbound	puno	
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
5:30 PM	0	26	0	39	0	0	က	,	0	7	303	42	0	108	518	ıO
PHF		0	0.74			0.0	0.50			0.93	13			0.91	14	
% AH	%0.0	11.5%	%0.0	%0.0	%0.0	%0.0	%0.0	%0.0	0.0%	%0.0	2.6%	11.9%	%0.0	4.6%	3.3%	0.0%

Vannesa Methoxha 621\_C81\_HSH Project #:

Holliston, MA Location 1 Location: BTD#: Street 1:

Washington Street (Route 16)

Street 2:

Whitney Street 10/8/2020 Thursday Day of Week: Count Date:

Clouds & Sun, 60°F

Weather:

TRAFFIC DATA Office: 978-746-1259
DataRequestej BostonTrafficData.com
www.BostonTrafficData.com

## HEAVY VEHICLES

16)	Disha	III G	0	c	c	,	0	c	0		
Washington Street (Route 16)	Thurst		0	m	c		4	9	0	1 4	0
shington Str	100	יבוו	9	0	c	,	7	c	0	0	7
Was	LTim	5	0	0	c		0	0		0	0
16)	Richt	,	0	0	c	,	-	7	-		,
Washington Street (Route 16) Eastbound	Thrii	2	2	12	00		n	9	80	13	2
shington Street ( Eastboung	₩ He		,	0	0		>	0	0	c	
Was	U-Turn	c	,	0	0		•	0	0	c	
	Right		,	Ð	0	-	,	0	0	0	c
Driveway	Thru	c		Đ	0	c	,	0	0	0	
Parking Lot Driveway Southbound	Left	c		o	0	c		0	0	0	c
	U-Turn	0		9	0	c	,	0	0	0	c
	Right	7	,	-	-	cr.	,	7	က	_	c
Street	Thru	0			0	c	,	5	0	0	c
Whitney Street Northbound	Left	0	-		3				0	0	-
	U-Turn	0	c		0	0		0	0	0	0
	Start Time	7:00 AM	7-15 AM	W. LO.	7:30 AM	7:45 AM	240 00.0	o.co Aivi	8:15 AM	8:30 AM	8:45 AM

(9)	Diaht	The contract of						0	0	
Washington Street (Route 16)	The	3 6	9	۳ ۳	ם ע		ru	000	4	
shington St	t off	į	0	-	- -	- 0	0 0		10	
Wa	I L-Tirm		0	0	0		0	0	0	
16)	Right			m	0	-	-	-	0	
Washington Street (Route 16) Eastbound	Thru	2	ı m	4	-	-	^	1 0	, m	
shington St Eastl	Leff	6	0			0	0	0	0	
Wa	U-Turn	0	0	0	c	0	0	0	0	
	Right	0	0	0	0	0	0	0	0	
t Driveway bound	Thru	0	0	0	0	0	0	0	0	
Parking Lot Driveway Southbound	Left	0	0	0	0	0	0	0	0	
	U-Turn	0	0	0	0	0	0	0	0	
	Right	0	٥	0	0	0	0	0	0	
Whitney Street Northbound	Thru	0	0	0	0	0	0	0	0	
Whitney Northt	Left	ဗ	0	က	0	0	0	0	-	
	U-Turn	0	0	0	0	0	0	0	0	
	Start Time	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	

16)	Dioht	TI BIN	_	>
Washington Street (Route 16)	Thru	3	<del>2</del>	
shington Street (F	l off	101	7	0.69
Was	11-Tuen	5	0	
16)	Right	D	4	
Washington Street (Route 16) Eastbound	Thru		32	69.0
shington St Eastb	Leff		0	0.
Wa	U-Turn		0	
	Right		0	
arking Lot Driveway Southbound	Thr		0	0.00
Parking Lot Drive Southbound	Left		0	0.0
	U-Tum	•	0	
	Right		D	
Whitney Street Northbound	Thru		•	63
Whitne	Left	¥	-	0
	U-Tum	•	0	
AM PEAK HOUR 7:45 AM	to	0.15 ANG	0.42 AIM	PHF

16)	Diahe	III III	_	>	
on Street (Route	The	7	17		σ
Washington Street (Route 16)	#a!	101	LC;		0 79
Was	I.F.Tum	2	0		100
16)	Right	2	2		
eet (Route	Thru		<b>∞</b>		စ္
Washington Street (Route 16) Eastbound	Left		0		0.46
Was	U-Tum		0		
	Right		9		
Driveway	Thru	•	2		<b>-</b>
Parking Lot Drive Southbound	Left	•	0	00	0.00
	U-Turn	<	0		
	Right	c	>		
/hitney Street Northbound	Thru	c	•	u	0.7
Whitney North	Left		,		2.0
	U-Turn	_	>		
PM PEAK HOUR 4:30 PM	đ	5-30 DM	141100.0	DITE	1777



FRAFFIC DATA
PO BOX 1723, Fewningham, MA 01763
OABOW 1723, Fewningham, MA 01763
DATARCHURAN FOR THE FILEDAL COM
www.BostonTrafficipate.com

Washington Street (Route 16) PEDESTRIANS & BICYCLES Parking Lot Driveway

Whitney Street

Holliston, MA Washington Street (Route 16) Whitney Street 10/8/2020

Thursday Clouds & Sun, 60°F

Day of Week: Weather: Street 2: Count Date:

Vannesa Methoxha 621\_C81\_HSH

Project #: Location: Street 1: BTD #:

Location 1

Washington Street (Route 16)

											I	
	PED	0	0	0	0	0	0	0	0	ute 16)		PED
Vestbound	Right	0	0	0	0	0	0	0	0	Washington Street (Route 16)	Westbound	Right
>	Thru	0	0	0	0	0	0	0	0	Washingto	S	Thui
	Left	0	0	0	0	0	0	0	0			Pla
			1210101									
	PED	0	0	0	0	0	0	0	0	Soute 16)		DED
Eastbound	Right	0	0	0	0	0	0	0	0	Washington Street (Route 16)	Eastbound	Pinht
	Thru	0	0	0	0	0	0	0	0	Washing	1	Thri
	Left	0	0	0	0	0	0	0	0			Ha
p	DED	0	0	0	0	0	0	0	0	veway	p	מבט
Southbound	Right	0	0	0	0	0	0	0	0	Parking Lot Driveway	Southbound	Dinhe
	Thru	0	٥	0	0	0	0	0	0	Par		The
	Left	0	0	0	0	0	0	0	0			190
P	DED	0	0	0	0	0	0	0	0	reet	pu	CUC
Northbound	Right	0	0	0	0	0	0	0	0	Whitney Street	Northbound	Disable
	Thru	0	0	0	0	0	0	0	0			Then
	Left	0	0	0	0	0	0	0	0			100
	Start Time	7:00 AM	7:15 AM	7:30 AM	7:45 AM	8:00 AM	8:15 AM	8:30 AM	8:45 AM			T Time

6	PED	0	0	0	_	0	0	0	0	9 16)		PED	0
Westbound	Right P	0	0	0	0	0	0	0	0	Washington Street (Route 16)	Westbound	Right P	0
West	Thru Ri									shington St	West	Thru	0
										Wa			_
	Left	0	0	0	0	0	0	0	0			Left	0
for sino	PED	0	0	0	2	0	0	0	0	3 (91 a)		PED	0
Eastbound	Right	0	0	0	0	0	1	0	0	Washington Street (Route 16)	Eastbound	Right	0
Avasimigu	Thru	0	0	0	0	0	0	0	0	Washingt		Thu	0
	Left	0	0	0	0	0	0	0	0			Left	0
lay	PED	0	0	0	0	0	0	0	0	ray		PED	0
Fairling Lot Driveway Southbound	Right	0	0	0	0	0	0	0	0	Parking Lot Driveway	Southbound	Right	0
Scaling	Thru	0	0	0	0	0	0	0	0	Parkin	ŏ	Thru	0
	Left	0	0	0	0	0	0	0	0			Left	0
	PED	0	0	0	0	0	0	0	0			PED	0
Northbound	Right	0	0	0	0	0	0	0	0	Whitney Street	Northbound	Right	0
NA NA	Thru	0	0	0	0	0	0	0	0	Whi	ž	Thru	0
	Left	0	0	0	0	0	0	0	0			Left	0
	Start Time	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	AM PEAK HOUR <sup>1</sup>	7:00 AM	2	8:00 AW

oute 16)	PED	-
on Street (Re Westbound	Right	0
Washingt	Thru	0
	Left	0
Route 16)	PED	2
ton Street (F Eastbound	Right	-
Washing	Thru	0
	Left	0
eway	PED	0
ing Lot Drivi	Right	0
Park	Thru	0
	Left	0
_ et	PED	0
Whitney Stre	Right	0
S	Thru	0
	Left	0
PM PEAK HOUR <sup>1</sup> 4:30 PM	to	5:30 PM

<sup>1</sup>NOTE. Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.



Engineers + Planaurs

#### Appendix B

Adjustment Factors

### Massachusetts Highway Department Statewide Traffic Data Collection 2019 Weekday Seasonal Factors

1.22 1.14 1.12 1.1  0.95 0.96 0.98 0.1  1.15 1.06 1.07 1.1  ston 1.09 1.09 1.11 1.1  ston 1.09 1.09 1.11 1.1  ston 1.09 1.01 0.98 0.  ex 1.09 1.06 1.03 0.98  st 1.19 1.14 1.09 0.  srester 1.02 1.04 0.97 0.  1.06 1.03 0.98 0.	Factor Group	JAN	FEB	MAR	APR	MAY	NOC	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
-R7 1.09 0.96 0.98  -R7 1.09 1.09 1.07  -Boston 1.03 1.01 0.98  -Essex 1.09 1.06 1.03  -Southeast 1.06 1.05 1.01  -Worcester 1.02 1.04 0.97  -1.01 1.00 0.94  -1.06 1.03 0.98		1.22	1,14	1,12	1.06	1.00	96.0	0.87	0.85	96.0	66'0	1.04	1.12	0.85
R7         1.15         1.06         1.07           Boston         1.09         1.09         1.11           Boston         1.03         1.01         0.98           -Essex         1.09         1.06         1.03           -Southeast         1.06         1.05         1.01           -West         1.19         1.14         1.09           -Worcester         1.02         1.04         0.97           1.01         1.06         1.03         0.98           1.06         1.03         0.98		0.95	96.0	0.98	76.0	0.97	0.93	0.97	0.94	0.96	06:0	0.92	0.93	96.0
ston         1.09         1.09         1.11           sex         1.03         1.01         0.98           sex         1.09         1.06         1.03           utheast         1.06         1.05         1.01           est         1.19         1.14         1.09           orcester         1.02         1.04         0.97           1.01         1.01         0.94           1.06         1.06         1.03         0.98		1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
1.03 1.01 0.98 1.09 1.06 1.03 1.06 1.05 1.01 ter 1.02 1.04 0.97 1.01 1.00 0.94 1.06 1.03 0.98		1.09	1.09	1.11	1.02	96'0	0.92	0.89	68'0	0.99	0.98	1.09	1.13	0.98
1.09     1.06     1.03       1.06     1.05     1.01       1.19     1.14     1.09       1.01     1.01     0.97       1.06     1.03     0.98	ston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
1.06     1.05     1.01       1.19     1.14     1.09       1.02     1.04     0.97       1.01     1.00     0.94       1.06     1.03     0.98	sex	1.09	1.06	1.03	0.99	0.94	06'0	0.88	98.0	0.93	0.94	0.99	1,06	0.93
1.19     1.14     1.09       1.02     1.04     0.97       1.01     1.00     0.94       1.06     1.03     0.98	nutheast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	06.0	0.94	0.94	0.98	1.04	0.98
1.02     1.04     0.97       1.01     1.00     0.94       1.06     1.03     0.98	est	1.19	1.14	1.09	0.95	0.92	68'0	0.89	98.0	0.91	0.95	0.97	1.07	0.84
1.01 1.00 0.94 1.06 1.03 0.98	orcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
0.98 0.98 0.		1.01	1.00	0.94	0.93	0.91	0.89	0.93	06.0	06.0	0.91	0.94	1.02	0.99
		1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
1.00 0.95 0.	7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.39
Rec-East 1.04 1.16 1.12 0.98	East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West 1.30 1.23 1.32 1.18	West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	69.0	0.97	0.96	1.16	1.15	0.98

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket. Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations

Recreational - West Group - Continuous Stations 2 and 189 including stations

1066, 1067, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1113, 1113, 1113, 1113, 1113, 11104, 11107, 11108, 1113, 1

1114,1116,2196,2197 and 2198.



Engineers + Planners

#### Appendix C

Crash Rate Worksheet



#### INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN:	Holliston, MA			COUNT DA	TE:	10/8/2020
DISTRICT: 3	UNSIGN	ALIZED :	Yes	SIGNA	LIZED:	
	Marie (1971)	~ IN7	TERSECTION	I DATA ~		
MAJOR STREET :		Washington	Street			
MINOR STREET(S):		Whitney Stre	et			
INTERSECTION DIAGRAM (Label Approaches)	<b>↑</b> North	Ashires Rail Trail (Holliston)	Auction M. Auction hous	(B)	ashington St. WP	
			PEAK HOUR	VOLUMES		Total Peak
APPROACH:	1	2	3	4	5	Hourly
DIRECTION:	ЕВ	WB	NB			Approach Volume
PEAK HOURLY VOLUMES (AM/ <b>PM</b> ) :	347	631	65			1,043
"K" FACTOR:	0.090	INTERSI	ECTION ADT APPROACH		AL DAILY	11,589
TOTAL # OF CRASHES	6	# OF YEARS :	3	CRASHES	GE#OF PERYEAR(	2.00
CRASH RATE CALCU	JLATION :	0.47	RATE =	( A * 1,0	000,000 ) * 365 )	
Comments :						
Project Title & Date:	157-165 Low	land Street				



Engineers + Planners

#### Appendix D

Synchro Reports

Intersection	No.	AT B	50		251			10 8 10	No ii	155	-All	121.3	10 -		331
Int Delay, s/veh	4.2														
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	eigh.		
Lane Configurations		4			4			4			4				
Traffic Vol, veh/h	0	0	0	20	0	66	0	918	24	27	302	1			
Future Vol, veh/h	0	0	0	20	0	66	0	918	24	27	302	1			
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	In the same		
Storage Length	-	-	-	-	-	-	-	-	-	-	_	-			
Veh in Median Storage,	# -	0		-	0	-	-	0			0				
Grade, %	-	0	-	-	0	-	_	0	-	-	0	-			
Peak Hour Factor	92	92	92	77	77	77	90	90	90	76	76	76			
Heavy Vehicles, %	0	0	0	25	0	18	0	6	4	7	5	0			
Mvmt Flow	0	0	0	26	0	86	0	1020	27	36	397	1			
Major/Minor N	linor2	11100		Minort	C.TILL		Vajor1			Major2	100		STEP	37/15	S TO
Conflicting Flow All	1547	1517	398	1504	1504	1034	398	0	0	1047	0	0			
	470	470	390	1034	1034	1034	330	-	0	1047	-	0			
Stage 1	1077	1047	-	470	470		-		_						
Stage 2 Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.38	4.1		_	4.17	7-7	-			
Critical Hdwy Stg 1	6.1	5.5	0.2	6.35	5.5	0.00	7.1	-	-	1117	-	_			
Critical Hdwy Stg 2	6.1	5.5		6.35	5.5		-		- 6		721	191			711111
Follow-up Hdwy	3.5	3.5	3.3	3.725	4	3.462	2.2			2.263		-			
Pot Cap-1 Maneuver	94	120	656	88	123	263	1172			646	W				
Stage 1	578	563	000	254	312	200	1112			OTO .	_	- 11 - 200			
Stage 2	268	308	-	533	563						191				
Platoon blocked, %	200	000		000	200						_	_			
Mov Cap-1 Maneuver	60	111	656	83	114	263	1172			646		(41)			
Mov Cap-1 Maneuver	60	111	-	83	114	2.00	- 111	_		-		_			
Stage 1	578	522		254	312					1 2	//23	1/4/			
Stage 2	181	308	-	495	522		5					-			
Stage 2	101	300		+33	JEZ					JR I					
Approach	SE		.637	NW	1113	7. 158	NE			SW	[290]		Wint 2	ž sle	
HCM Control Delay, s	0			56.1			0			0.9					
HCM LOS	Α			F											
Minor Lane/Major Mvm	2	NEL	NET	NEDA	WLn1	SFI n1	SWL	SWT	SWR	0.000	HOS				
		1172	NEI			OLLIII -		-	OVVIX					100	TE 70
Capacity (veh/h) HCM Lane V/C Ratio					0.638		0.055	-	-						
		0	-		56.1	0	10.9	0	-						
HCM Control Delay (s) HCM Lane LOS		A	157	175	50.1 F	A	10.9 B	A	-						
		0			3.6	Α	0.2	A -							
HCM 95th %tile Q(veh)		U	-		0.0		0.2		- 5						

												_
Intersection	921851-8	N. 19.	9	100			. 100		100			= 10
Int Delay, s/veh	5											
Movement	SEL	SET	SER	NWL	. NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		4		1.07.4	4		/ 1 ten to	4		OTT	4	OWNE
Traffic Vol, veh/h	0		1	26			2			108	777	5
Future Vol, veh/h	0		1	26							777	5
Conflicting Peds, #/hr	1		2		-				0	0	0	0
Sign Control	Stop		Stop	Stop				Free	Free	Free	Free	Free
RT Channelized			None	U.0p				1100	A 4 m	1100	1100	None
Storage Length	_	-	-			-	_	_	- 110110	_		140/16
Veh in Median Storage	e.# -	0	-	-	0			0		-	0	2
Grade, %		0	_				_	0		_	0	
Peak Hour Factor	50	50	50	74			93	93	93	91	91	91
Heavy Vehicles, %	0		0	12			0	3	12	5	3	0
Mymt Flow	0		2	35			_	489	45	119	854	5
		NV 0		10.50			_					
Major/Minor	Minor2	-30		Minor1			Major1	E . 1623		Major2	NI SO	
Conflicting Flow All	1638	1633	859	1617	1613	513	859	0	0	534	0	0
Stage 1	1095	1035	009	516	516	515						
Stage 2	543	538	-	1101	1097	-	CHICA		-	= #		
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.2	4.1	-	-	4.15	-	
Critical Hdwy Stg 1	6.1	5.5	0.4	6.22	5.5	0.2	۳.۱			4.10		
Critical Hdwy Stg 2	6.1	5.5		6.22	5.5	_		-	-		725	0.00
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.3	2.2	-		2.245	-	
Pot Cap-1 Maneuver	81	102	359	79	105	565	791					
Stage 1	261	292	303	524	538	200	171	10 5	1 2	1013	954	•
Stage 2	528	526		246	291	-	W ( M	_	-		-	(*)
Platoon blocked, %	020	ULU		ATU.	231			-			-	
Mov Cap-1 Maneuver	61	79	358	61	81	564	791	e le	500	1019	-	346
Mov Cap-2 Maneuver	61	79	550	61	81	504	131	_	_	-	-	
Stage 1	260	227	_	522	536	1 10 8	-	100	34		741	
Stage 2	476	524	_	184	226			_		11, 55	172	-
		ULT		104	220							
Approach	SE		985 H.	NW			NE	10.00	171-191	SW		KT
HCM Control Delay, s	45			75.8			0			1.1	-	44-11-
HCM LOS	E			F			U			334		
Minor Lane/Major Mvm	t	NEL	NET	NERN	WLn1	SFI n1	SWL	SWT	SWR		F 100	T COLUMN
Capacity (veh/h)		791	-	1,1111,000	131	98	1019		OTTIN			
HCM Lane V/C Ratio		0.003	-			0.082		_	-			
HCM Control Delay (s)		9.6	0		75.8	45	9	0	-			
HCM Lane LOS		Α.	A		73.0 F	E	A	A	-			
HCM 95th %tile Q(veh)		0		100	3.6	0.3	0.4	A				
/0000 00(1001)		V			0.0	U.U	V.T					

Intersection			1.50	JUNE .	THE STATE OF	Tour St.	Link	A PAR	Nº W	No. of	44	Diei		300
Int Delay, s/veh	7.8													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR		SIMI
Lane Configurations		4			4			4			4			
Fraffic Vol, veh/h	0	0	0	26	0	82	0	1021	30	31	360	1		
Future Vol, veh/h	0	0	0	26	0	82	0	1021	30	31	360	1		
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	-	-	-	-	-	-	-	-				-		
/eh in Median Storage	,# -	0	140		0			0	( <del>+</del> )		0	(=)		
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-		
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88		
leavy Vehicles, %	0	0	0	25	0	18	0	6	4	7	5	0		
Vivmt Flow	0	0	0	30	0	93	0	1160	34	35	409	1		
				41			Antinud			Jain 10		1 6 3 1 5	Alone Delivery	
	Minor2	107		Minor1	4055		Najor1			Major2	^	^	THE REAL PROPERTY.	
Conflicting Flow All	1704	1674	410	1657	1657	1177	410	0	0	1194	0	0		
Stage 1	480	480		1177	1177		*	-	-		150	183		
Stage 2	1224	1194	-	480	480	-	-		-	4 2 ***	-	-		
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.38	4.1		-	4.17		(4)		
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-		-	-		
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-	<u> </u>	-	Ť	-	-	-		
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.462	2.2	-	-	2.263	-	-		
ot Cap-1 Maneuver	73	97	646	69	99	216	1160		- 5	567				
Stage 1	571	558		210	267	-	-	-	-	-		-		
Stage 2	221	262		526	558									
Platoon blocked, %								-			-	-		
Mov Cap-1 Maneuver	39	89	646	65	91	216	1160	-	14,15	567		(*)		
Mov Cap-2 Maneuver	39	89	-	65	91	-	-	-	-		-	-		
Stage 1	571	513		210	267			- 4	-	-				
Stage 2	126	262	-	484	513	-	-	-	-	-	-	-		
Anneach	SE		nusur.	NW		-	NE			SW	-	-		-1831
Approach	0			109.4			0			0.9				0.11
HCM Control Delay, s	-			109.4 F			U			0.0				
HCM LOS	Α													100
Minor Lane/Major Mvm	it	NEL	NET	NERN	WLn1	SELn1	SWL	SWT	SWR	Hall.	j - 5 -	SESTA		9
Capacity (veh/h)		1160		-	139		567							yd g
HCM Lane V/C Ratio		- 119900	-	-	0.883		0.062	-						
HCM Control Delay (s)	er T	0	100		109.4	0	11.8	0						
HCM Lane LOS		A	-	-	F	A	В	Α						
		0			5.8		0.2							

Intersection			10.3	eskil.		maria.	1211111	31/-	5 - 1				8 21 18 2	1 5 0	
Int Delay, s/veh	15.3	}													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR		. 133	1200
Lane Configurations		4			4			4			4				
Traffic Vol, veh/h	C		1	34	0	51	2	530	48	121	867	5			
Future Vol, veh/h	0		1	34	0	51	2	530	48	121	867	5			
Conflicting Peds, #/hr	1	0	2	2	0	- 1	0	0	0	0	0	0			
Sign Control	Stop		Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free			
RT Channelized			None	(4)		None		-	None	-		None			
Storage Length			_		-	-	-	-	Moreotte	-		-			
Veh in Median Storage	,# -	0	~	-	0	121	2721	0		2	0	21			
Grade, %	-	0	-	-	0	-		0	-	-	0	-			
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88			
Heavy Vehicles, %	0	0	0	12	0	0	0	3	12	5	3	0			
Mvmt Flow	0	3	1	39	0	58	2	602	55	138	985	6			
Major/Minor I	Vinor2		17.15	Minor1	101 000	1	Vajor1	ByTto	A	/lajor2	1515	Marie Co.	- 300	(SC )	-515
Conflicting Flow All	1928		990	1902	1901	631	991	0	0	657	0	0	-		
Stage 1	1264			634	634	-		1		-					
Stage 2	664		-	1268	1267	-	-	_	_	-	_	-			
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.2	4.1			4.15					
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5				_	-					
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5		1								
Follow-up Hdwy	3.5		3.3	3.608	4	3.3	2.2	-	_	2.245	-	_			
Pot Cap-1 Maneuver	51	68	302	49	70	485	706	-		916	100	100			
Stage 1	210	243	-	451	476	-	-	-	-	-	-	_			
Stage 2	453	463		197	242		-	- 2	9	- 10	(4)				
Platoon blocked, %								-	-		-	_			
Mov Cap-1 Maneuver	33	45	301	~ 34	46	485	706	-		916					
Mov Cap-2 Maneuver	33	45	-	~ 34	46	-	-	-	_	_		-			
Stage 1	209	161		449	474				1 .2						
Stage 2	396	461		127	161	_	_	_	_	-	-	_			
Approach	SE	75.0	1 30	NW		142 - 1	NE	10130	10019	SW				UUIUF	15 2
HCM Control Delay, s	73.6			281.2			0			1.2					
HCM LOS	F			F				,							
Minor Lane/Major Mvm		NEL	NET	NERN	WLn1	SELn1	SWL	SWT	SWR	Section 1	1 = 25 1		.ib:	12 12 11 11	£ 100
Capacity (veh/h)		706	-		77	57	916	-	2		D III				
ICM Lane V/C Ratio		0.003	-		1.254	0.08	0.15	-							
ICM Control Delay (s)		10.1	0		281.2	73.6	9.6	0	-						
ICM Lane LOS		В	A	_	F	F	A	A	-						
ICM 95th %tile Q(veh)		0			7.4	0.2	0.5	4							
lotes		8 1 1 1 1	0 / 30			91, 119	1000	-	0 00	1000	111 500				1300
: Volume exceeds cap	acitu	\$: D^	lau ava	aarle 20	Me	L. Come	udation	Alat Da	finad	*. AH	main	aluma i	platean		
. Acimina ayosana cab	aulty	a. ne	ery exc	eeds 30	W2	+: Comp	utation	NOT DE	Dernie	All	major v	viume in	platoon		

Tolelay, s/veh   Tole														
Overnment	Intersection		6377	77.11				1051	8193		UDLO	183	La E	0 8
## Configurations	nt Delay, s/veh	10.3												
## Configurations	lavoment	CEI	CET	CED	NA/I	MIAIT	NMP	NEI	NET	NER	SWI	SWT	SWR	200
raffic Vol, vehr/h	NAME OF TAXABLE PARTY.	OLL		OLIV	INVIL	Married World Street, or other Persons.	THEFT	1 April	THE RESERVE OF THE PERSON NAMED IN	INCIN	OTIL		Oilit	
uture Vol, veh/h		0		٥	20		95	0		22	3/		1	
conflicting Peds, #hr Ogen Control         Ogen Control         Stop Stop Stop Stop Stop Stop Stop Stop														
Stop														
T Channelized - None - None - None - None torage Length - O - O - O - O - O - O - O - O - O -														
torage Length														
eh in Median Storage, # - 0				ivone	× 17.1	-	MOLIG							
rade, % - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -			^	-	_	0	-		0			0		
eak Hour Factor 88 88 88 88 88 88 88 88 88 88 88 88 88														
eary Vehicles, % 0 0 0 0 25 0 18 0 6 4 7 5 0 0 vmt Flow 0 0 0 0 33 0 97 0 1160 38 39 409 1														
Image: Conflicting Flow All			-											
Onflicting Flow All   1716   1686   410   1667   1677   1179   410   0   0   1198   0   0	Mymt Flow	0	0	U	33	U	97	U	1100	30	39	409	- 1	
Onflicting Flow All   1716   1686   410   1667   1677   1179   410   0   0   1198   0   0														
Onflicting Flow All   1716   1686   410   1667   1667   1179   410   0   0   1198   0   0	Major/Minor M	finor2	To la	i i	Minor1		1	Major1		-11	Major2		BIE	
Stage 1	Conflicting Flow All	1716	1686	410	1667	1667			0	0	1198	0	0	
Stage 2	-						-	4			-	7.0	7.00	
ritical Hdwy							-	-	-	-	-	-		
ritical Hdwy Stg 1 6.1 5.5 - 6.35 5.5				6.2			6.38	4.1		T.	4.17	1/2	-	
rifical Howy Stg 2 6.1 5.5 - 6.35 5.5								-		-	-	-	-	
follow-up Hdwy         3.5         4         3.3         3.725         4         3.462         2.2         -         -         2.263         -         -         -         2.263         -         -         2.265         -	, ,							-						
ot Cap-1 Maneuver         72         95         646         67         97         215         1160         -         565         - <th< td=""><td></td><td></td><td></td><td>3.3</td><td></td><td></td><td>3,462</td><td>2.2</td><td></td><td>-</td><td>2.263</td><td></td><td>-</td><td></td></th<>				3.3			3,462	2.2		-	2.263		-	
Stage 1   565   553   - 209   267			•											
Stage 2   220   261   -   520   553   -   -   -   -   -   -   -   -   -							-	-				-	-	
latoon blocked, %								-	-			2#3	(*)	
Iov Cap-1 Maneuver         37         87         646         62         88         215         1160         -         565         -         -           Iov Cap-2 Maneuver         37         87         -         62         88         -		Sandar V	da V s			550							-	
Stage 1   565   504   - 209   267		37	87	646	62	88	215	1160	- 2	5	565			
Stage 1         565         504         - 209         267							t.V			-	_			
Stage 2							1	-						
Description   SE								-						
CM Control Delay, s	Stage 2	121	201		717	004								
CM Control Delay, s														
CM LOS	Approach												N	
Inor Lane/Major Mvmt   NEL   NET   NERNWLn1 SELn1   SWL   SWT   SWR	HCM Control Delay, s				137.9			0			1			
Sapacity (veh/h)       1160       -       -       132       -       565       -       -         ICM Lane V/C Ratio       -       -       -       0.981       -       0.068       -       -         ICM Control Delay (s)       0       -       -       137.9       0       11.8       0       -         ICM Lane LOS       A       -       -       F       A       B       A       -	HCM LOS	Α			F									
Sapacity (veh/h)       1160       -       -       132       -       565       -       -         ICM Lane V/C Ratio       -       -       -       0.981       -       0.068       -       -         ICM Control Delay (s)       0       -       -       137.9       0       11.8       0       -         ICM Lane LOS       A       -       -       F       A       B       A       -														
Sapacity (veh/h)       1160       -       -       132       -       565       -       -         ICM Lane V/C Ratio       -       -       -       0.981       -       0.068       -       -         ICM Control Delay (s)       0       -       -       137.9       0       11.8       0       -         ICM Lane LOS       A       -       -       F       A       B       A       -	Minor Lane/Major Mym		NEI	NET	NERN	JWI n1	SFI n1	SWI	SWT	SWR	1179	9171	-	i
CM Lane V/C Ratio 0.981 - 0.068    CM Control Delay (s)		-	1100011001											
CM Control Delay (s)         0         -         -         137.9         0         11.8         0         -           ICM Lane LOS         A         -         -         F         A         B         A         -														
ICM Lane LOS A F A B A -														
UM YOUT WINE U(VEN)					_									
	HOW ADM WING MINA		U	-	•	0.0		0.2						

Intersection			5.75				T y W	22 50		Same.	S. 52	4 Eur	w 5	1737	375
Int Delay, s/veh	32.8	}													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	37 3.	_20	1111
Lane Configurations		4			4			4			4				
Traffic Vol, veh/h	0		1	45	0	62	2	530	59	132	867	5			
Future Vol, veh/h	0		1	45	0	62		530	59	132	867	5			
Conflicting Peds, #/hr	- 1	0	2	2	0	1	0	0	0	0	0	0			
Sign Control	Stop		Stop		Stop	Stop		Free	Free	Free	Free	Free			
RT Channelized			None	-					None	1100	-				
Storage Length	-	_	-	-	-	-	-		-	-		-			
Veh in Median Storage	.# -	0	2	-	0			0			0				
Grade, %	-	_	-	-	0	_	-	0	-	_	0	_			
Peak Hour Factor	88		88	88	88	88	88	88	88	88	88	88			
Heavy Vehicles, %	0		0	12	0	0	0	3	12	5	3	0			
Mymt Flow	0		1	51	0	70	2	602	67	150	985	6			
mriik i low		J		U I	U	10		002	U	130	303	U			
Major/Minor I	Minor2		43- 13	Minor1	2 2 6	. 0.17	Major1			Major2			EVS. E	SUBO	10000
Conflicting Flow All	1964	1961	990	1932	1931	637	991	0		669	0			157.7	
Stage 1	1288	1288	990	640	640			0	0		0	0			
Stage 2	676	673							*	11117	1.5				
	7.1	6.5	60	1292	1291	-	4.4		-	4.45	-	-			
Critical Howy			6.2	7.22	6.5	6.2	4.1		= =	4.15					
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5		_				-	-			
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5	-	-			0.045					
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.3	2.2	-	_	2.245	-	-			
Pot Cap-1 Maneuver	48	64	302	~ 47	67	481	706		-	907	-	(2)			
Stage 1	203	237		447	473	_	-		-	-	-	-			
Stage 2	446	457	- 1	191	236	*		31/11			*	ं			
Platoon blocked, %								-	-		-	-			
Mov Cap-1 Maneuver	29	40	301	~ 31	42	481	706	= 5	UT.	907		(*)			
Mov Cap-2 Maneuver	29	40		~ 31	42	-	-	-		-	-	-			
Stage 1	202	150	-	445	471	#			100		*				
Stage 2	378	455	-	117	149	-	-	-		-	-	-			
					<u> </u>										
Approach	SE		Hell.	NW		Period	NE			SW		130	2 1		
HCM Control Delay, s	82.4		\$	507.4			0			1.3					
HCM LOS	F			F											
44		(Warren)	(8.20		NAW THE		200	NAVY	000000						
Minor Lane/Major Mvm		NEL	NET	NERN	WLn1 S	-	SWL	SWT	SWR	VEL B	16.80	ME Y	SETS	A XX	
Capacity (veh/h)		706	•	5	68	51	907	-	12/						
ICM Lane V/C Ratio		0.003	-		1.788		0.165	-	-						
ICM Control Delay (s)		10.1	0	-\$	507.4	82.4	9.8	0							
ICM Lane LOS		В	Α	-	F	F	Α	Α	-						
ICM 95th %tile Q(veh)		0	+	17.0	10.9	0.3	0.6								
Votes	FEE	10 d 51	B T-	STY IS	504		A STATE	150	y	1		132		Sules	314
: Volume exceeds cap	acity	\$: De	av exc	eeds 30	00s -	+: Com	putation	Not De	fined	*: All :	major v	olume in	platoon		

Intersection			1000	100	76.9 E	18:10	THE PERSON NAMED IN	(S. 18)		378	(I)	103.53			3.15
Int Delay, s/veh	2.5														
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	3-371	- 3.5%	38/1
ane Configurations		4			4			4			4				
Fraffic Vol, veh/h	0	0	0	20	0	66	0	612	24	27	201	1			
Future Vol, veh/h	0	0	0	20	0	66	0	612	24	27	201	1			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free			
RT Channelized		-	None	-		None	4 -		None	-	-	None			
Storage Length	-	-	-		-	-	-	-	-	-	-	-			
Veh in Median Storage, #	# -	0		-	0	- ×	-	0			0	(#)			
Grade, %	-	0		-	0	-	-	0	-	-	0	-			
Peak Hour Factor	92	92	92	77	77	77	90	90	90	76	76	76			
Heavy Vehicles, %	0	0	0	25	0	18	0	6	4	7	5	0			
Mvmt Flow	0	0	0	26	0	86	0	680	27	36	264	1			
			-												
	nor2	ETDI		Minor1	- 50		Najor1			Major2			Local Park		THE U.S.
0	1074	1044	265	1031	1031	694	265	0	0	707	0	0			
Stage 1	337	337	-	694	694		-	-							
Stage 2	737	707	-	337	337	-	-	-	-	4 4 700	-				
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.38	4.1	-		4.17					
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-						
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	EN	2	-							
Follow-up Hdwy	3.5	4	3.3	3.725	4	3.462	2.2	-	-	2.263	-	-			
Pot Cap-1 Maneuver	199	231	779	192	235	417	1311			869					
Stage 1	681	645		398	447	-	-	-		-					
Stage 2	413	441		632	645	-		-	*	-		150			
Platoon blocked, %								-	-		-	-			
Mov Cap-1 Maneuver	152	220	779	185	223	417	1311	*		869					
Mov Cap-2 Maneuver	152	220	-	185	223	-	-	*	-	-	-	- 1			
Stage 1	681	613	+	398	447	30		2		-	1923				
Stage 2	328	441	-	601	613	-		-		-		-	4		
	II.				TAPLE			11-	I. Eli				10" 10		
Approach	SE			NW		1 318	NE	E ma	- E	SW				III X II	100
HCM Control Delay, s	0			21.9			0			1.1					
HCM LOS	Α			С											
		3 -	UK-JIL.	JUL I			111								
Minor Lane/Major Mvmt		NEL	NET	NER	WLn1		SWL	SWT	SWR				THE HIS	22 11	71.77
Capacity (veh/h)		1311	-	-	323		869	-	-						
HCM Lane V/C Ratio		74	-	-	0.346	-	0.041	-	-						
HCM Control Delay (s)		0	. U ye	-	21.9	0	9.3	0	2						
I I DINI OUT IN OI E CICY (3)															
HCM Lane LOS		Α	-	-	C 1.5	Α	0.1	Α	-						

Intersection	41193	1 20		350	- 55	- 15				- North	1 10		A UK	CL R	VIER
Int Delay, s/veh	2.9	9								_					
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	- 0	150	DATE:
Lane Configurations		4			4			4			4				A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Traffic Vol, veh/h	(		1	26	0	39	2		42	108	518	5			
Future Vol, veh/h	C	) 3	1	26	0	39	2	303	42	108	518	5			
Conflicting Peds, #/hr	1. 1	9	2	2	0	1	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	3,# -	. 0	9.5		0			0			0				
Grade, %		0	-	-	0	-	-	0		-	0	-			
Peak Hour Factor	50	50	50	74	74	74	93	93	93	91	91	91			
Heavy Vehicles, %	0	0	0	12	0	0	0	3	12	5	3	0			
Mymt Flow	0	6	2	35	0	53	2	326	45	119	569	5			
Major/Minor	Minor2			Minor1		(i) =0	Major1		18	Vajor2	1106	- 1	7-5-		
Conflicting Flow All	1190	1185	574	1169	1165	350	574	0	0	371	0	0		120 E	2.1
Stage 1	810	810	N E	353	353	-	-	-10 1 4	-	5/1	::+:				
Stage 2	380	375	-	816	812	-	_		F	_	-	_			
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.2	4.1		-	4.15					
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	V	,		_	7.10	_	_			
Critical Howy Stg 2	6.1	5.5	-	6.22	5.5	1 2	5	2		- 2					
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.3	2.2			2.245	101				
Pot Cap-1 Maneuver	166	191	522	162	196	698	1009		91.52	1171					
Stage 1	377	396	-	644	634	-	-	- 2		-	-	356			
Stage 2	646	621	-	357	395			4	-	-					
Platoon blocked, %											_	_			
Mov Cap-1 Maneuver	135	162	521	138	166	697	1009	(e)		1171	-	-8			
Mov Cap-2 Maneuver	135	162	-	138	166	-	-	-	-	-	-	_			
Stage 1	376	337	-	642	632		~			150	-				
Stage 2	595	619	-	297	336	-	-			-	-	•			
Approach	SE	All residents		NW		200	NE		110	SW		A Service of			
HCM Control Delay, s	24.1		-	25.1								LE	-3-7		
HCM LOS	C			25.1 D			0			1.4					
Minor Lane/Major Mvm		NEL	NET	NEDMO	WLn1 S	CEI nd	SWL	CWT	CWD						ME.
Capacity (veh/h)		1009						SWT	SWR	4	77.1.1	100	-7-6-	4021	13 11 2
HCM Lane V/C Ratio		0.002	- 15		266	196	1171	•	(*)						
HCM Control Delay (s)			0	-	0.33		0.101		-						
HCM Lane LOS		8.6	0		25.1	24.1	8.4	0	12						
HCM 95th %tile Q(veh)		A 0	Α		D	C	A	Α	-						
TOWN JOHN JOHN CHIVELLY		U			1.4	0.1	0.3						- 12		

Intersection		12 12 .								100		LIVE -		
Int Delay, s/veh	3.1													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	Mary .	bè
Lane Configurations		4			4			4			4			
Traffic Vol, veh/h	0	0	0	26	0	82	0	686	30	31	250	1		
Future Vol, veh/h	0	0	0	26	0	82	0	686	30	31	250	1		
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	20		None	===	٠	None		(*)	None		
Storage Length	-	-	-	-	-	-	-	-	-	-	_	-		
Veh in Median Storage,	# -	0		-	0			0	-		0	(14)		
Grade, %	-	0		-	0	-	-	0	-	_	0	-		
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88		
Heavy Vehicles, %	0	0	0	25	0	18	0	6	4	7	5	0		
Mvmt Flow	0	0	0	30	0	93	0	780	34	35	284	1		
Mark to be because				NATION AND ADDRESS OF THE PARTY			Number of			Anic -0		2113	1000	
Children and Child	linor2	1122		Minor1	4456		Major1	_		Major2		^		
Conflicting Flow All	1199	1169	285	1152	1152	797	285	0	0	814	0	0		
Stage 1	355	355	-	797	797	-	2	4	7	-	-	-		
Stage 2	844	814	-	355	355		4.4	-	-	4 277	-	-		
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.38	4.1			4.17	-	-		
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5			-			-	-		
Critical Hdwy Stg 2	6.1	5.5	191	6.35	5.5	0.100	0.0			0.000				
Follow-up Hdwy	3.5	4	3.3	3.725	4		2.2			2.263				
Pot Cap-1 Maneuver	164	195	759	157	199	363	1289	*		792				
Stage 1	666	633	12	348	401			-			_	-		
Stage 2	361	394	-	617	633			-		-	-			
Platoon blocked, %	4.410	42.31		4 14 4	400	000	4000			792	-	-		
Mov Cap-1 Maneuver	117	185	759	151	188	363	1289	9				-		
Mov Cap-2 Maneuver	117	185	-	151	188		-	-	_	_		IVE		
Stage 1	666	599	-	348	401	(4)								
Stage 2	268	394	-	584	599						-	_		
Approach	SE	112.13		NW	Sec.	1	NE	- TIME		SW			1 E 11 E 15 VII	60
	0			28.8		E E / 1	0			1.1				
HCM Control Delay, s	1977			20.0 D			U			1.1				
HCM LOS	Α			U										
Minor Lane/Major Mvm		NEL	NET	NER	WLn1	SELn1	SWL	SWT	SWR	40 FT 3	11138		Jel Jack	T. I
Capacity (veh/h)		1289	-	I PASONO:	271		792	1	-					
HCM Lane V/C Ratio		-		-	0.453	-	0.044	-						
HCM Control Delay (s)		0			28.8	0	9.8	0						
HCM Lane LOS		A	-	-	D	A	Α	Α	-					
HCM 95th %tile Q(veh)		0			2.2		0.1	*	-					

Intersection	133	ISAS III			31	86	100		TINES.			CI PI
Int Delay, s/veh	4	4						-		-	3-45	
Movement	SEI	SET	SER	NWL	. NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	4.5	4		14111	4		1 White	4	MEN	OVAL	4	SWK
Traffic Vol., veh/h	(			34			2		48	121	584	5
Future Vol, veh/h	(			2401					48	121	584	5
Conflicting Peds, #/hr						1			0	0	0	0
Sign Control	Stop	10.00	Stop					Free	Free	Free	Free	Free
RT Channelized			None	- U.Op		None			None	1100	-	None
Storage Length			-	_				_	110110	_	_	110110
Veh in Median Storage	e,# -	- 0		-	0			0	-		0	2
Grade, %	<i>"</i>			-			_	0		-	0	
Peak Hour Factor	88	88	88	88		88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	12		0		3	12	5	3	0
Mymt Flow	0	3	1	39	0	58		413	55	138	664	6
Major/Minor	Minor2			Minort	310		Major1			Maine	1000	1000
Conflicting Flow All	1418		669	1392	1391	442	670	0		Major2	0	^
Stage 1	943		009	445	445			0	0	468	0	0
Stage 2	475			947	946			-	-			-
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.2	4.1	-	2	4.15	-	
Critical Hdwy Stg 1	6.1	5.5	0.2	6.22	5.5	0.2	4.1		To Ta	4.10	-	
Critical Hdwy Stg 2	6.1	5.5		6.22	5.5		-					_
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.3	2.2	Latys	D., \$	2.245	11.50	•
Pot Cap-1 Maneuver	116	139	461	113	143	620	930				-	_
Stage 1	318	344	701	573	578	020	300		- 188	10/0		
Stage 2	574	562		301	343		10.5	Gw.			(4)	(4)
Platoon blocked, %	~			701	0.10			-			_	
Mov Cap-1 Maneuver	88	110	460	92	114	619	930		- 119	1078	20	1 1 27
Mov Cap-2 Maneuver	88	110	-	92	114	-	-	-		-	-	
Stage 1	317	274	=	571	576	12	1 22			7 .		N .
Stage 2	518	560	-	236	273	-			-	77.5	===	-
Approach	SE	alle To-	10.20	NW	e uir	153100	NE			SW	DOMESTIC	3 3
HCM Control Delay, s	32.4			42.8			0		- 1	1.5		
HCM LOS	D			±2.0			U	77		1.0		
				_							-	
Minor Lane/Major Mvmt		NEL	NET	NERN	WLn1 S	El ní	SWL	SWT	SWR			-
Capacity (veh/h)		930	14121	IALINA	188	136	1078	2441				
HCM Lane V/C Ratio		0.002	-		0.514		0.128					
HCM Control Delay (s)		8.9	0		42.8	32.4	8.8	0	-			
HCM Lane LOS		Α	A	_	42.0 E	32.4 D	ο.ο	A	-			
HCM 95th %tile Q(veh)		0	Λ	-	2.6	0.1	0.4	A				
wan jumb ox von		U			2.0	V. I	U.**		- 5			

ersection	8 72	10 10				15 (4)		Land or Control	3050		Y S YY	n wajti		Part Co	
Int Delay, s/veh	3.5														
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR			
Lane Configurations		4			4			4			4				
Traffic Vol, veh/h	0	0	0	29	0	85	0	686	33	34	250	1			
Future Vol, veh/h	0	0	0	29	0	85	0	686	33	34	250	1			
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	1		None	-		None	1 32	-	None	-		None			
Storage Length	-	-	-		-	-	-	-	-	-	-	-			
Veh in Median Storage	# -	0			0			0	-	-	0	(12)			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88			
Heavy Vehicles, %	0	0	0	25	0	18	0	6	4	7	5	0			
Mymt Flow	0	0	0	33	0	97	0	780	38	39	284	1			
	/49			140			(I divine) where								
The second second	/linor2			Minor1	100		Major1			Major2		_			
Conflicting Flow All	1211	1181	285	1162	1162	799	285	0	0	818	0	0			
Stage 1	363	363	,	799	799	- 3	=	-	2	-		700			
Stage 2	848	818	-	363	363	-	-	-	-		-	-			
Critical Hdwy	7.1	6.5	6.2	7.35	6.5	6.38	4.1	-	-	4.17	7		5.6		
Critical Hdwy Stg 1	6.1	5.5	-	6.35	5.5	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	6.1	5.5	-	6.35	5.5	-				-	1.00	- 5			
Follow-up Hdwy	3.5	4	3.3				2.2	-	-	2.263	-	-			
Pot Cap-1 Maneuver	161	192	759	155	197	362	1289	-	11.8	789	*	i)e:			
Stage 1	660	628	-	347	401		-	-	-	-	-	-			
Stage 2	359	393	-	611	628	-		-	-	-	-	-			
Platoon blocked, %								-	-			-			
Mov Cap-1 Maneuver	113	181	759	148	185	362	1289	ê		789	1 2				
Mov Cap-2 Maneuver	113	181	-	148	185	-	-	-	-	-	-				
Stage 1	660	591	0.00	347	401	-		-				1			
Stage 2	263	393		575	591		-	-	-	-		-			
A	65		ACT ATT	ABAL	V-51		NIE			SW			OI IN NO.		
Approach	SE			NW	111		NE	-						9	
HCM Control Delay, s	0			30.9			0			1.2					
HCM LOS	Α	-		D											
Minor Lane/Major Mym	1	NEL	NET	NER	₩Ln1	SEL n1	SWL	SWT	SWR			n gara		2017	
		1289	133-1	TILIT		OHA!!	789		-						Ī
Capacity (veh/h) HCM Lane V/C Ratio					0.489	-									
HCM Control Delay (s)		0				0	9.8	0							
HCM Control Delay (S) HCM Lane LOS		A		-	30.9 D	A	Α.	A	_						
		0		14		Α.	0.2	^							
HCM 95th %tile Q(veh)		U		-	4.5	•	0.2	-							

Intersection	O. D.		erro.	C I I			-		100	. 77	a Majo	RES
Int Delay, s/veh	6.5											
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	0		1	45			2		59	132	584	5
Future Vol, veh/h	0	3	1	45	0	62	2	363	59		584	5
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized			None	10.00		4.6	-	-	None	- 2-		None
Storage Length	-	-	-	-	-	-	_	-		_	-	_
Veh in Median Storag	e,# -	0		S.	0		: ::	0			0	
Grade, %		0		-	0	-	-	0	-	-	0	
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0		0	12	0	0	0	3	12	5	3	0
Mvmt Flow	0	3	1	51	0	70	2	413	67	150	664	6
Major/Minor	Minor2			Minor1	H T		Major1			Major2	741	TF J
Conflicting Flow All	1454	1451	669	1422	1421	448	670	0	0	480	0	0
Stage 1	967	967	-	451	451					-		
Stage 2	487	484		971	970	-	-	-	-	-	-	
Critical Hdwy	7.1	6.5	6.2	7.22	6.5	6.2	4.1		*	4.15	(m)	7.
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.5	-	-	-	-	1014076	-	
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.5		2	-	-			1023
Follow-up Hdwy	3.5	4	3.3	3.608	4	3.3	2.2	-		2.245	-	
Pot Cap-1 Maneuver	109	132	461	108	138	615	930	11.2		1067	- 1	
Stage 1	308	335	-	569	574	-	-	-	-	-	-	-
Stage 2	566	555	-	292	334	-	1	The state of	-	-	: #:	
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	80	102	460	87	107	614	930			1067		
Mov Cap-2 Maneuver	80	102	-	87	107	-	-	-	-	-	-	-
Stage 1	307	260		567	572	-	12	32	-	-	-	-
Stage 2	499	553	-	223	259	-	-	-	-	-	-	-
Approach	SE		1 45	NW	1 -0-1		NE	I al	E	SW		Marie Control
HCM Control Delay, s	34.4		11	64.1	mi'iz		0			1.6	WIT	
HCM LOS	D			F								
Minor Lane/Major Mvm	nt	NEL	NET	NERN	WLn1	SELn1	SWL	SWT	SWR			
Capacity (veh/h)		930		-	173	127	1067	-				
HCM Lane V/C Ratio		0.002	-	-	0.703		0.141	-				
HCM Control Delay (s)		8.9	0	16:	64.1	34.4	8.9	0	(+)			
HCM Lane LOS		Α	Α	-	F	D	Α	Α	-			
HCM 95th %tile Q(veh)		0			4.3	0.1	0.5					



11 Beacon Street, Suite 1010 Boston, Massachusetts 02108 617.482.7080

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