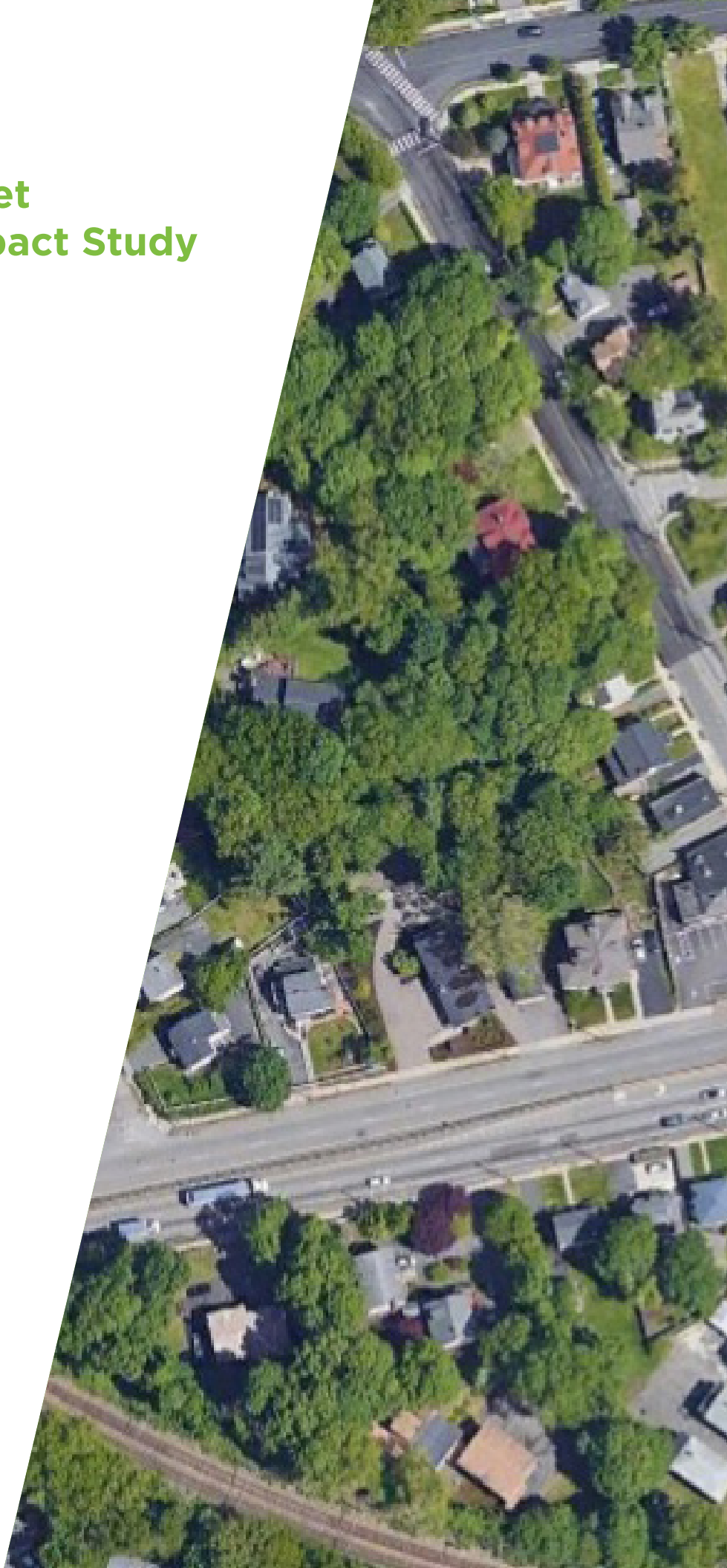
NEWTON, MASSACHUSETTS

1021 Boylston Street Transportation Impact Study

Technical Memorandum

May 2021



HOWARD STEIN HUDSON

Engineers + Planners

TO:	Ted Fire, Jennifer Schultz	DATE:	May 11, 2021
FROM:	Brian J. Beisel Michael White	HSH PROJECT NO.:	2019237.00
SUBJECT:	1021 Boylston Street, Newton Transportation Impact Study		

Introduction

Howard Stein Hudson (HSH) has prepared this Transportation Impact Assessment in order to evaluate the traffic impacts associated with the development of a proposed Starbucks drive-through coffee shop location at 1021 Boylston Street (Route 9) in Newton, Massachusetts.

The Project site is located on an approximately 16,550 square foot parcel on the north side of Route 9 westbound, to the west of the intersection of Route 9/Woodward Street/Elliot Street. Abutting the Project site is a single-family residence to the west, a two-family residence to the north, and a single-story commercial structure to the east. Route 9 abuts the southern edge of the Project site. There is an existing single story commercial structure that currently exists on the site, the footprint of which is approximately 1,536 sf, which will be remodeled for the proposed Starbucks drive-through coffee shop. The site will provide approximately 12 parking spaces, 3 of which will be enclosed by the drive-through lane and reserved for employees.

Study Methodology

This transportation study and its supporting analyses were conducted in accordance with the Massachusetts Department of Transportation (MassDOT) Guidelines for a Transportation Impact Assessment (TIA). The Existing Condition analysis includes an inventory of the existing transportation conditions such as site conditions, traffic characteristics, pedestrian and bicycle facilities and roadway safety conditions. The traffic data forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts with and without the Project. The long-term transportation impacts are evaluated for the year 2027, based on a seven-year horizon from the year of filing of this traffic study. The No-build (2027) 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 (2027) 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 (2027) Condition analysis. The final part of the transportation study identifies

measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction-related issues that are necessary to accommodate the Project.

Study Area

The study area consists of the intersections of Route 9 (Boylston Street)/Eliot Street/Woodward Street, and Route 9/Enter Site Driveway, and Route 9 Exit Site Driveway. Figure 1 shows the study area intersections.

Existing Condition

A comprehensive field inventory of existing conditions within the study area was conducted in September of 2020. The field investigation consisted of an inventory of existing roadway geometries, pedestrian facilities, and operating characteristics; as well as posted speed limits and roadway characteristics for the travel paths that motorists will use to access to the Project.

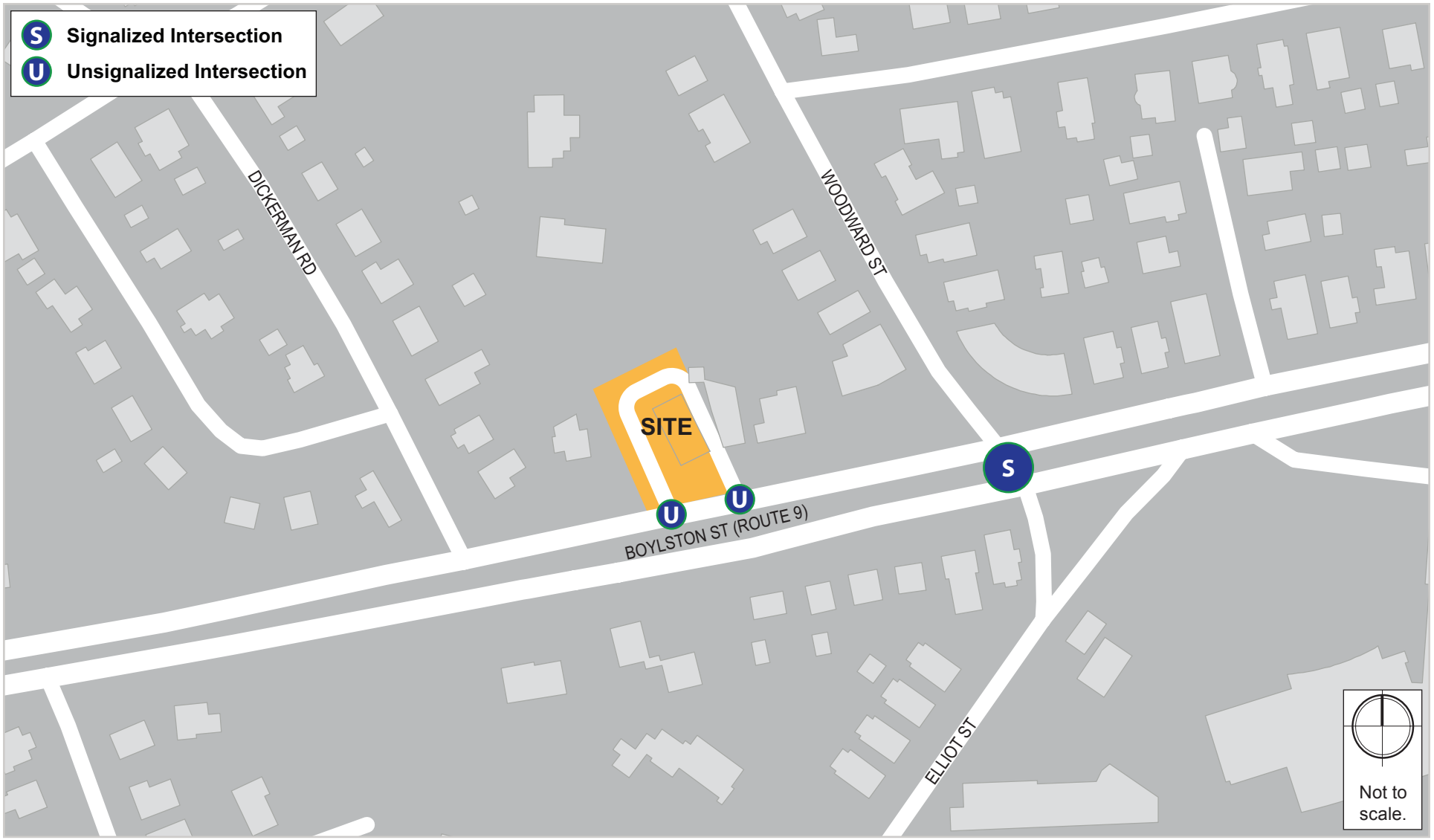
Roadway Descriptions

Elliot Street is a two-way local roadway under the jurisdiction of the City of Newton that runs in a predominantly north-south direction between Reservoir Street to the south and Route 9 to the north. Within the study area, the roadway measures approximately 26 feet wide with one travel lane in either direction. In the study area, the designated speed limit along Eliot Street is 30 mph. There is an approximately six-foot wide sidewalk with a two-foot wide planted buffer and granite curb along the west side of the roadway and an approximately eight-foot wide concrete sidewalk with granite curb along the east side of the roadway. On-street parking is not permitted along either side of the roadway.

Woodward Street is a two-way local roadway under the jurisdiction of the City of Newton that runs in a predominantly north-south direction from Route 9 in the south to Beacon Street in the north. Within the study area, the roadway measures approximately 30 feet wide with one travel lane in each direction. In the study area, the designated speed limit along Woodward Street is 25 mph. There is an approximately five-foot wide asphalt sidewalk with a three-foot planted buffer and granite curb along the east side of the roadway and an approximately five-foot wide concrete sidewalk with a three-foot planted buffer and granite curb along the west side of the roadway. On-street parking is not permitted along either side of the roadway.

Route 9 is a two-way urban principal arterial under MassDOT jurisdiction that runs in a predominantly east-west direction from its intersection with Park Avenue in Worcester to the west to its intersection with Dartmouth Street to the east. Within the study area, each direction of travel

Figure 1. ***Study Area***



is separated by a raised median that ranges in width between approximately 12 feet near the Site's western driveway and four feet at the intersection of Route 9/Eliot Street/Woodward Street. Directly in front of the Project site, the eastbound roadway measures approximately 40 feet wide and the westbound portion of the roadway measures approximately 30 feet wide. The designated speed limit in the eastbound direction is 40 miles per hour (mph). The designated speed limit in the westbound direction is 40 mph east of Woodward Street and 45 mph west of Woodward Street. A six-foot-wide concrete sidewalk with granite curb is provided along both sides of the roadway. On-street parking is restricted along state highways.

Intersection Conditions

The existing conditions at the study area intersection are described below.

Route 9/Eliot Street/Woodward Street is a four-legged signalized intersection, with four approaches. The Route 9 westbound approach consists of three approximately 11-foot-wide lanes, an exclusive left-turn lane, an exclusive through lane and a shared through/right-turn lane, as well as a 5-foot-wide shoulder. The Route 9 eastbound approach consists of three approximately 11-foot-wide lanes, an exclusive left-turn lane, an exclusive through lane and a shared through/right turn lane, as well as an approximately 5-foot shoulder with bicyclist markings within. The Eliot Street northbound approach consists of an approximately 12-foot wide exclusive left-turn lane, an approximately 12-foot wide shared left-turn/through lane, and an approximately 16-foot wide channelized right-turn lane. The Woodward Street southbound approach consists of two approximately 11-foot wide lanes, an exclusive left-turn lane and a shared through/right-turn lane. Concrete sidewalks, that are approximately 6-feet in width exist along both sides of the north- and south-bound intersection approaches as well as along both sides of Route 9. Crosswalks and pedestrian signal equipment exist across the Eliot Street northbound approach, the Woodward Street southbound approach, and the Route 9 westbound approach. Pedestrian amenities at the intersection were observed to be in fair condition.

Route 9/Enter Site Driveway is a three legged, unsignalized intersection with one approach. The Route 9 westbound approach consists of two approximately 11-foot-wide lanes, an exclusive through lane and a shared through/right-turn lane, as well as an 8-foot-wide shoulder. While there is an eastbound Route 9 leg associated with the intersection, it is not considered an approach due to the raised median separating traffic flow. The eastbound Route 9 leg consists of an approximately 11-foot-wide exclusive through lane, an approximately 12-foot wide exclusive through lane and approximately 60-feet of lane divergence that creates an exclusive left-turn lane at the intersection to the east. The eastern Site driveway is accessible through a 40-foot wide curb-cut that is shared with the commercial structure located at 1015 Boylston Street. Approximately 12-feet of the shared curb-cut width exists on the Project site. Concrete sidewalks, that are approximately six-feet in

width, with a three-foot wide planted buffer exist along Route 9 westbound. The driveway is raised to match the sidewalk elevation.

Route 9/Exit Site Driveway is a three legged, unsignalized intersection with two approaches. The Route 9 westbound approach consists of two approximately 11-foot-wide lanes, an exclusive through lane and a shared through/right-turn lane, as well as an 8-foot-wide shoulder. While there is an eastbound Route 9 leg associated with the intersection, it is not considered an approach due to the raised median separating traffic flow. The eastbound Route 9 leg consists of an approximately 11-foot-wide exclusive through lane and an approximately 12-foot wide exclusive through lane. The western Site driveway consists of an approximately 40-foot wide curb-cut, however on-stie landscaping reduces the driveway width to approximately 25-feet. Concrete sidewalks, that are approximately six-feet in width, with a three-foot wide planted buffer exist along Route 9 westbound. The driveway is raised to match the sidewalk elevation.

Existing Pedestrian and Bicycle Conditions

There is typical pedestrian infrastructure available throughout the study area. The sidewalks, crosswalks and pedestrian signal equipment provided at the study area intersection were documented to be in fair condition with minor cracking along the sidewalks and faded thermoplastic crosswalk markings. Pedestrian and bicycle volumes were collected concurrently with the vehicular TMCs. Pedestrian and bicycle activity observations in the study area confirmed the pedestrian and bicycle activity to be minimal.

Existing Traffic Data

TRAFFIC DATA COLLECTION

Turning Movement Counts (TMCs) and vehicle classifications were recorded during the weekday morning (7:00 – 9:00 a.m.) and evening (4:00 – 6:00 p.m.) peak traffic periods at the intersection of Route 9/Eliot Street/Woodward Street. The TMCs included vehicle, pedestrian, and bicycle movements. The traffic volume data for the study area intersection were collected on Thursday, December 3, 2020. The December 2020 TMCs along Route 9 indicate the morning peak hour for vehicles occurs from approximately 7:15 – 8:15 a.m., and the evening peak hour for vehicles occurs from approximately 5:00 – 6:00 p.m.

SEASONAL ADJUSTMENT

It is standard practice to adjust traffic count data by a seasonal factor to obtain average annual volumes. To account for seasonal variation in Newton traffic, the study team reviewed MassDOT's weekday seasonal adjustment factors for Group U3 (Other Urban Principal Arterials) and Group U4-7 (Urban Minor Arterials, Major and Minor Collectors, and Local Roads and Streets). The seasonal

adjustment factors for Group U3 roadways in December is 1.00. This indicates that average month traffic volumes are approximately equivalent to volumes that were collected. The seasonal adjustment factors for Group U4-7 roadways in December is 1.04. This indicates that average month traffic volumes are approximately 4% higher than the volumes that were collected. Therefore, the volume counts along Route 9, a group U3 roadway, were not adjusted and the volume counts along both Eliot and Woodward Streets were increased by approximately 4% to reflect average month conditions and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2019 Weekday Seasonal Adjustment table is provided in the Appendix.

EXISTING VEHICULAR TRAFFIC VOLUMES

Due to the on-going COVID-19 pandemic, HSH reviewed traffic count data from a MassDOT count station approximately one-half mile east of the project site, at the intersection of Route 9 and Aberdeen Street, to determine whether any adjustments were needed to account for pandemic conditions. The most recent volume count data from MassDOT occurred over a 48-hour period between 11:00 a.m. on Wednesday December 2, 2013 and 11:00 a.m. on Friday December 4, 2013. Adjusting the 2013 volumes for annual growth per MassDOT Guidelines and comparing the volumes to the seasonally adjusted counts collected in 2020 showed that the December 2020 peak hour volumes are an accurate representation of typical peak hour conditions. The 2020 weekday morning volumes were within 1% and the evening peak hour volumes were within 4%. The detailed traffic volume data collected in December 2020 at the study area intersection is provided in the Appendix. The resulting Existing Condition, Weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 2.

Safety Analysis

Crash data was collected at the study area intersections in order to understand the existing safety conditions. Crash reports for the study area intersection between January 1, 2013, and December 31, 2017, were pulled from MassDOT's Crash Impact Portal.

In MassDOT District 6, where the Project site is located, the average number of crashes is 0.71 per Million Entering Vehicles (MEVs) at signalized intersections, and 0.52 per Million Entering Vehicles (MEVs) at unsignalized intersections. Table 1 provides a summary of the 58 crashes that occurred in the vicinity of the study area intersections over the five-year period. The 39 crashes reported at the intersection of Route 9/Eliot Street/Woodward Street result in a crash rate of 0.46 per MEV. The four crashes reported in the vicinity of the Project driveways occurred along the eastbound side of Route 9 and not on the westbound side are the driveways. Since there were no reported crashes along the westbound side of Route 9 near the Project driveways, the crash rate at both intersections is zero.

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

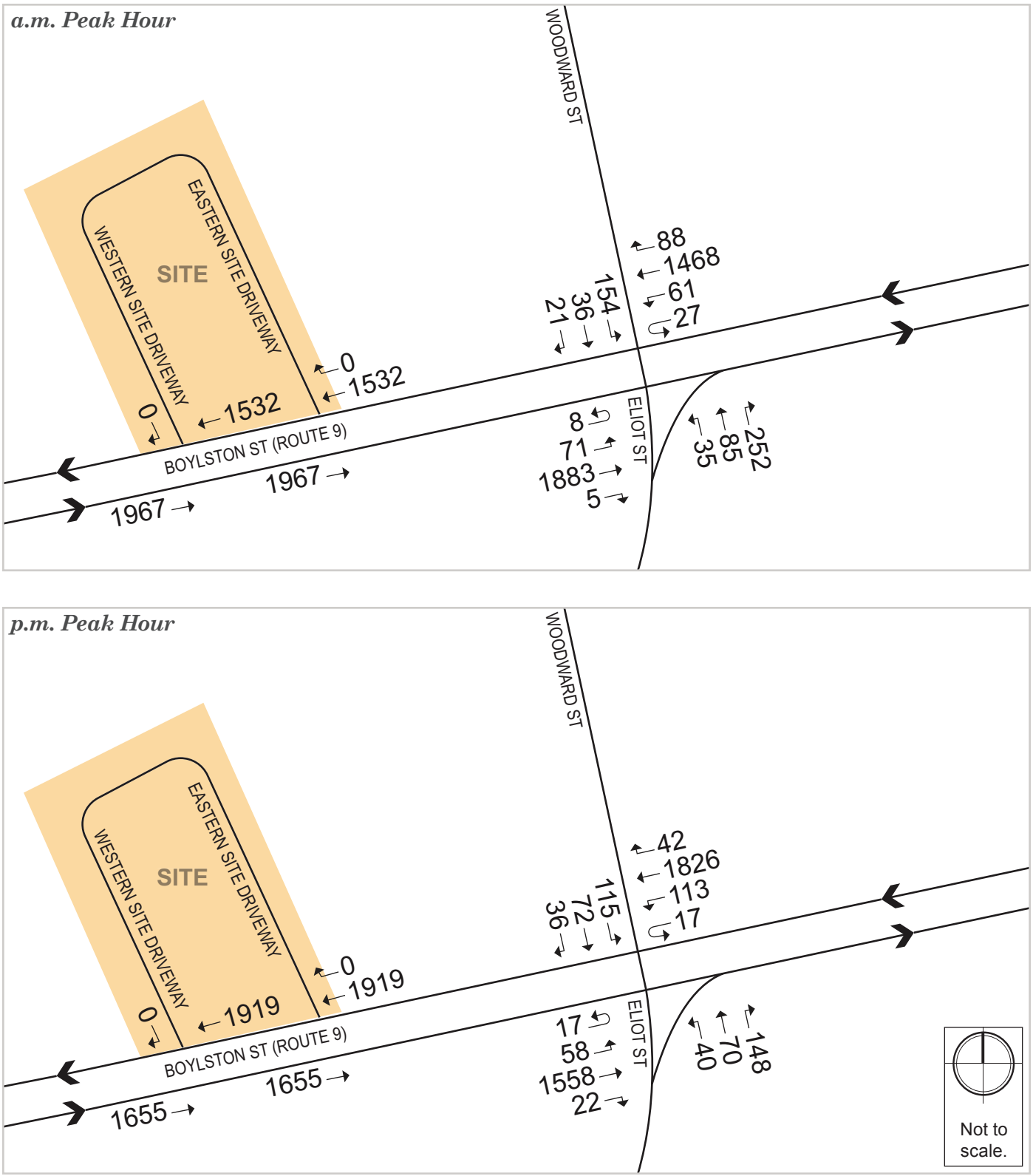


Table 1. Crash Summary at the Study Area Intersections, 2013-2017

Characteristic	Boylston Street/Eliot Street/Woodward Street	Boylston Street Eastbound Opposite Driveways
Year		
2013	9	0
2014	5	0
2015	7	0
2016	4	3
2017	14	1
Crash Severity		
Property Damage Only	23	2
Injury	15	2
Fatality	0	0
Other/Not Reported	1	0
Crash Type		
Single vehicle	5	0
Angle	5	4
Rear-end	21	0
Sideswipe, same direction	6	0
Sideswipe, opposite direction	2	0
Pedestrian/Cyclist	0	0
Pavement Condition		
Dry	30	3
Wet	7	1
Snow/Ice	2	0
Other/Not Reported	0	0
Total Crashes	39	4
Crash Rate	0.46	N/A
District Average	0.71	0.52

The calculated crash rate of 0.46 at the intersection of Boylston Street at Eliot Street and Woodward Street is well below the District 6 average at signalized intersections. Of the 39 crashes reported between 2013 and 2017, 25 occurred during daylight hours, 12 occurred at night on the lighted roadway, one occurred at dawn, and one occurred at dusk. Driver contributing factors vary considerably at the intersection, however five separate factors were reported more often than the rest. Seven crashes were reported to have resulted for an unknown reason; five crashes were reported to have resulted from a motorist following too closely; four crashes were reported to have

resulted from a motorist disregarding traffic signs, signals, and road markings; four crashes were reported to have resulted from the inattention of a motorist; and four crashes were reported to have resulted from no improper driving of a motorist. 23 of the 39 crashes were reported to have resulted in property damage only and the remaining 15 crashes resulted in non-fatal injuries.

Sight Distance Evaluation

Sight distance measurements were performed at the study area intersection locations along Route 9 in accordance with MassDOT and the American Association of State Highway and Transportation Officials (AASHTO) standards.

Stopping Sight Distance (SSD) is the distance needed for an approaching motorist to perceive an obstruction ahead and be able to stop prior to reaching the obstruction. The minimum SSD at an intersection is a requirement necessary to determine the safety of an intersection as outlined in A Policy on Geometric Design of Highways and Streets, 6th Edition which states, "The provision of stopping sight distance at all locations along each highway or street, including intersection approaches, is fundamental to intersection operation." The minimum distance necessary for SSD along a level roadway with a posted speed limit of 45 mph is 359 feet.

Intersection Sight Distance (ISD) is the distance necessary for a vehicle on a minor approach to pull out into the traffic without impacting the travel speed of a vehicle on the major roadway. ISD guidelines are different depending on whether the motorists pulling out from the stop-controlled approach in front of an oncoming vehicle is turning left or turning right (ISD guidelines are longer for left turning vehicles since it takes additional time to cross the opposite direction lane of travel). ISD is not a safety requirement and relates only to the comfort of motorists traveling through an intersection. Although SSD is the critical measurement in regards to safety, ISD is also important as it is a measurement of driver convenience and maintaining travel speeds along the major roadway. The minimum recommended ISD along a major roadway with a posted speed limit of 45 mph is 430 feet for right turns from a stop. Because of the raised median restricting exiting vehicles to right turns only, the ISD for left turning vehicles was not calculated.

SSD calculations also take into consideration for grade changes within the approaching roadway. The SSD increases on a downgrade and decreases for an upgrade. Route 9 downgrades from east to west. Assuming a 7.6 percent downgrade from east to west, the steepest grade measured with an Auto-level during a site visit in September 2019, can add as much as 55 additional feet to the SSD at 45 mph.

The SSD observations were taken from approximately 5 feet off of the edge of the westbound travel way along Route 9 and it was determined that a vehicle exiting the Project site would be visible to an

approaching motorist from approximately 480-feet to the east, beyond the stop line at the intersection of Eliot and Woodward Streets and Route 9. It was assumed that a vehicle would be traveling at speed through a green light at the intersection. At this speed, the observed SSD is greater than the minimum SSD requirement (414 feet).

The ISD sight distance measurements were taken from 10 feet off the edge of the travel way to the approaching westbound lanes. There was found to be approximately 480 feet of available sight distance to the east (right turn out to westbound travel). The available sight distance to the west is greater than the minimum recommended ISD, 430 feet, for right turning movements.

No-build (2028) Condition

For transportation impact analyses, it is standard practice to evaluate two future conditions: a No-build Condition (without the proposed project) and a Build Condition (if the project is built). Typically, these conditions are projected to a future date seven years from the expected date of filing, which is known as the Existing Condition year. For this study, the year 2028 has been designated as the future year. Traffic volumes under the No-build Condition are independent of the proposed Project and include existing traffic plus new traffic resulting from general background growth and any new projects in the area that have been identified through the City of Newtons Planning Board webpage. The following section describes the anticipated growth that will impact the study area.

Background Traffic Growth and Other Developments

A general background growth rate accounts for changes in demographics, auto usage, auto ownership, and non-specific, minor changes in land use within the study area. A 0.58% annual growth rate, consistent with population growth data provided by the US Census and previously submitted traffic studies in the vicinity of the Project site, was applied to the existing intersection volumes over seven years to account for background growth by 2028.

Additionally, traffic volumes associated with known nearby development projects can affect traffic patterns throughout the study area within the future analysis time horizon. According to the City of Newton's Planning Department Development Projects webpage, two key background development projects that are anticipated to add traffic volume through the study area were identified and directly included in the No-Build volumes. The two projects are described below.

- **24-26 Elliot Street** – The proposed development, located approximately one tenth of a mile southeast of the Project site, will consist of the redevelopment of the existing structure to include an approximately 4,000 sf recreational/medical marijuana dispensary as well as

approximately 3,400 sf of accessory retail space. Access to the 27 on-site parking spaces will be provided via the existing curb cut on site.

- **The Northland** – The proposed development, located approximately two miles south of the Project site, will consist of approximately 1.9 million gsf of development, including residential units, community space, office space, personal service space, restaurant space, retail space, and over 1,000 on-site parking spaces,

Roadway Improvements

A review of on-going studies and planned improvements to roadway, bicycle, and pedestrian facilities was conducted to understand future transportation changes in the study area. Based on this review there is one infrastructure improvement project that may affect traffic volumes within the seven-year horizon, however this improvement is indirectly related to the study area network and is not reflected in the No-Build and Build conditions traffic analysis. The proposed and recent completed improvement project is described below.

- **Winchester Street Redesign:** The redesign of Winchester Street, as a part of MassDOT Project No. 606635, involves the reconstruction of portions of three different segments along Highland Avenue, and Needham Street in an effort to improve traffic operations, safety, and multimodal accommodations. The project will involve the installation of new traffic signals at the intersection of Winchester Street at the Route 9 eastbound and westbound Service Roads, among other improvements. Construction was anticipated to begin in the summer of 2020.

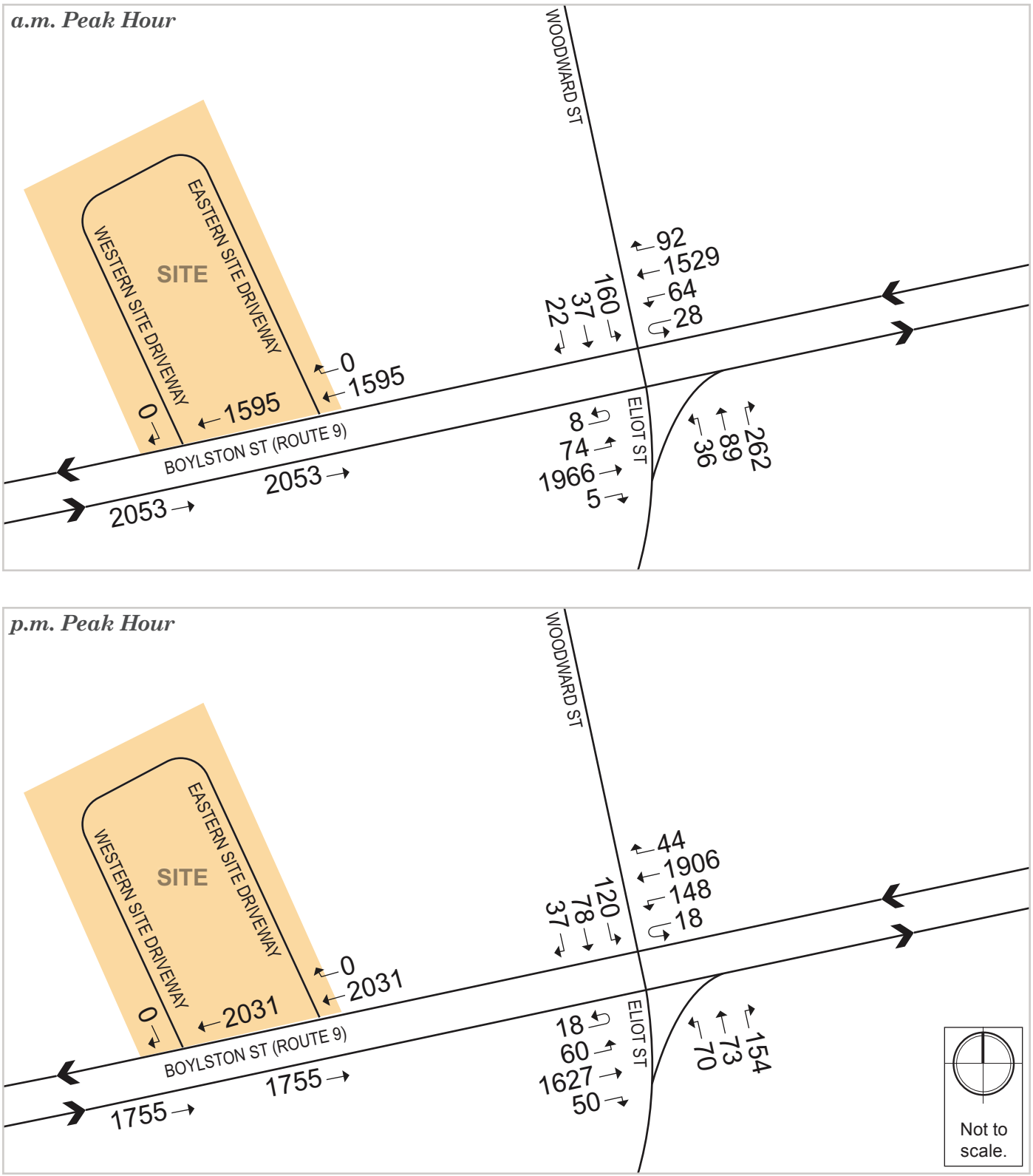
No-build Traffic Volumes

The annual growth rate of 0.58% per year, compounded annually, was applied to the Existing Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the No-build (2028) Condition traffic volumes. The No-build (2028) Weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 3.

Build (2028) Condition

As previously mentioned, the Project will consist of the renovation of the existing commercial structure into a Starbucks drive-through coffee shop. The site will provide approximately 12 parking spaces, 3 of which will be enclosed by the drive-through lane and reserved for employees.

Figure 3. ***No-build (2028) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours***



Site Access and Circulation

The vehicular access to the Site is to occur through the eastern Project site driveway, where motorists will continue along the edge of the building and into the drive-through aisle. Continuing in the drive-through aisle in a counter clockwise rotation will bring motorists around the rear of the structure and back up the western side. Exiting vehicles will be limited to turning right out of the western Project site driveway. The project does not propose to alter the existing curb-cuts; therefore, the existing sight distance evaluation shows that the site driveways will continue to meet the AASHTO criteria. The proposed site plan is shown in Figure 4.

Trip Generation Methodology

Trip generation is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location and proximity to different travel modes determines how people will travel to and from a Project site.

ITE TRIP GENERATION MANUAL

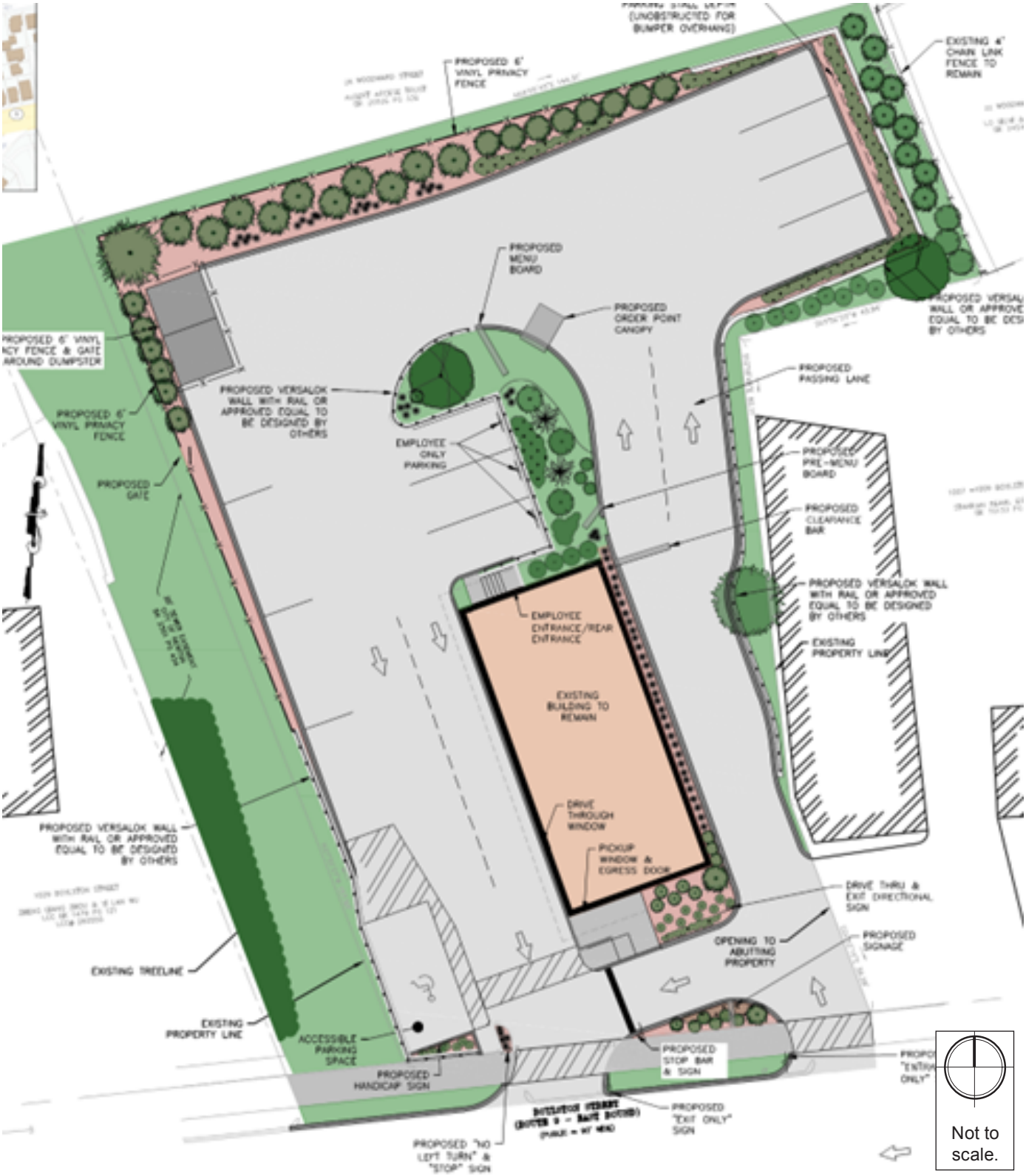
Typically, in order to estimate the number of trips expected to be generated by a development, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual* would be used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. To estimate the unadjusted number of vehicular trips for the Project, the ITE land use code (LUC) 937, Coffee/Donut Shop with Drive-Through Window was used. Calculations of the number of trips are based on ITE's average rate per volume of traffic on the adjacent street during each peak hour. Based on the ITE data, the Project is expected to generate 230 vehicle trips (117 vehicles entering, and 113 exiting) during the a.m. peak hour and 96 vehicle trips (49 entering and 47 exiting) during the p.m. peak hour.

LOCALLY COLLECTED DATA

In addition to the ITE data, traffic volume data was collected at the 333 Worcester Street (Route 9) Starbucks coffee-shop, located approximately seven miles west of the Project site in Natick. The data collected shows the Natick location generated a 129 vehicle trips (66 entering and 63 exiting) during the a.m. peak hour and 54 vehicle trips (22 entering and 32 exiting) during the p.m. peak hour.

Therefore, since the comparison of the ITE estimates resulted in a conservatively higher impact during the peak hours than the locally collected data, the ITE trip estimates were used in the Build (2028) Condition analysis. It should be noted, however, that it is expected that this site will operate similarly to the Natick location due to it having the same roadway characteristics (4 lane divided roadway and similar peak hour traffic volumes).

Figure 4. ***Site Plan***



TRIP ADJUSTMENTS

In an urban setting well-served by transit, adjustments are necessary to account for other travel modes such as walking, bicycling, and transit. However, due to the nature of the area around the development, and to be conservatively high in the analysis, it was anticipated that every trip to and from the Project site would be made by vehicles.

Based on procedures in the ITE Trip Generation Handbook, not all trips associated with a project will be entirely new trips. Existing land uses may already have trips within the roadway network associated with them, which a redevelopment project could credit toward the proposed Project as being removed from the roadway network and some trips generated by the proposed Project will be pass-by trips.

EXISTING SITE-GENERATED TRAFFIC

When assessing a site with existing, active land uses, it is standard practice to estimate existing trips and subtract those trips from the projected new future trips. The result of this process yields "net new" trips that become the basis for traffic analysis. Although the existing commercial structure at the Project site is currently active and generating vehicle trip activity, no credit (reduction) for existing trips has been taken in the calculations relating to the Build Condition, resulting in a conservative (higher impact) analysis.

PASS-BY TRIPS

Pass-by trips are a portion of the trip generation that typically applies to commercial or retail developments, consisting of users that are already in the roadway network and use the new commercial or retail on their current route. Land uses such as gas stations and drive-through coffee shops similar to the proposed Project, typically have the highest pass-by rates. The *ITE Trip Generation Handbook* estimates that on average, pass-by trips for a drive-through coffee shop can account for approximately 89% of the peak hour trip generation.

PROJECT TRIP GENERATION

The trip generation for the Project, including estimated pass-by trips, during the a.m. and p.m. peak hours are shown in Table 2. The detail trip generation information is provided in the Appendix.

Table 2. Vehicle Trip Generation Summary[1]

	Primary Trips	Pass-By Trips	Total
Weekday a.m. Peak Hour			
In	13	104	117
Out	12	101	113
Total	25	205	230
Weekday p.m. Peak Hour			
In	5	44	49
Out	5	42	47
Total	10	86	96

1. *Trip Generation Manual, 10th Edition; Institute of Transportation Engineers; Washington, D.C.; 2017.*

Vehicle Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on the TMCs collected during the morning (7:00 – 9:00 a.m.) and evening (4:00 – 6:00 p.m.) peak traffic periods on Thursday, December 3, 2020. The trip distribution patterns for the Project are illustrated in Figure 5.

Build Traffic Volumes

The distribution pattern was applied to the vehicle trips generated by the Project during both the a.m. and p.m. peak hour to develop the Project generated vehicle trips shown in Figure 6. Then the Project generated vehicle trips were added to the No-build traffic volumes to develop the Build (2028) Condition traffic volumes, shown in Figure 7 for the a.m. and p.m. peak hours.

Figure 5. ***Trip Distribution***

Figure 6. ***Project-generated Vehicle Trips, Weekday a.m. and p.m. Peak Hours***

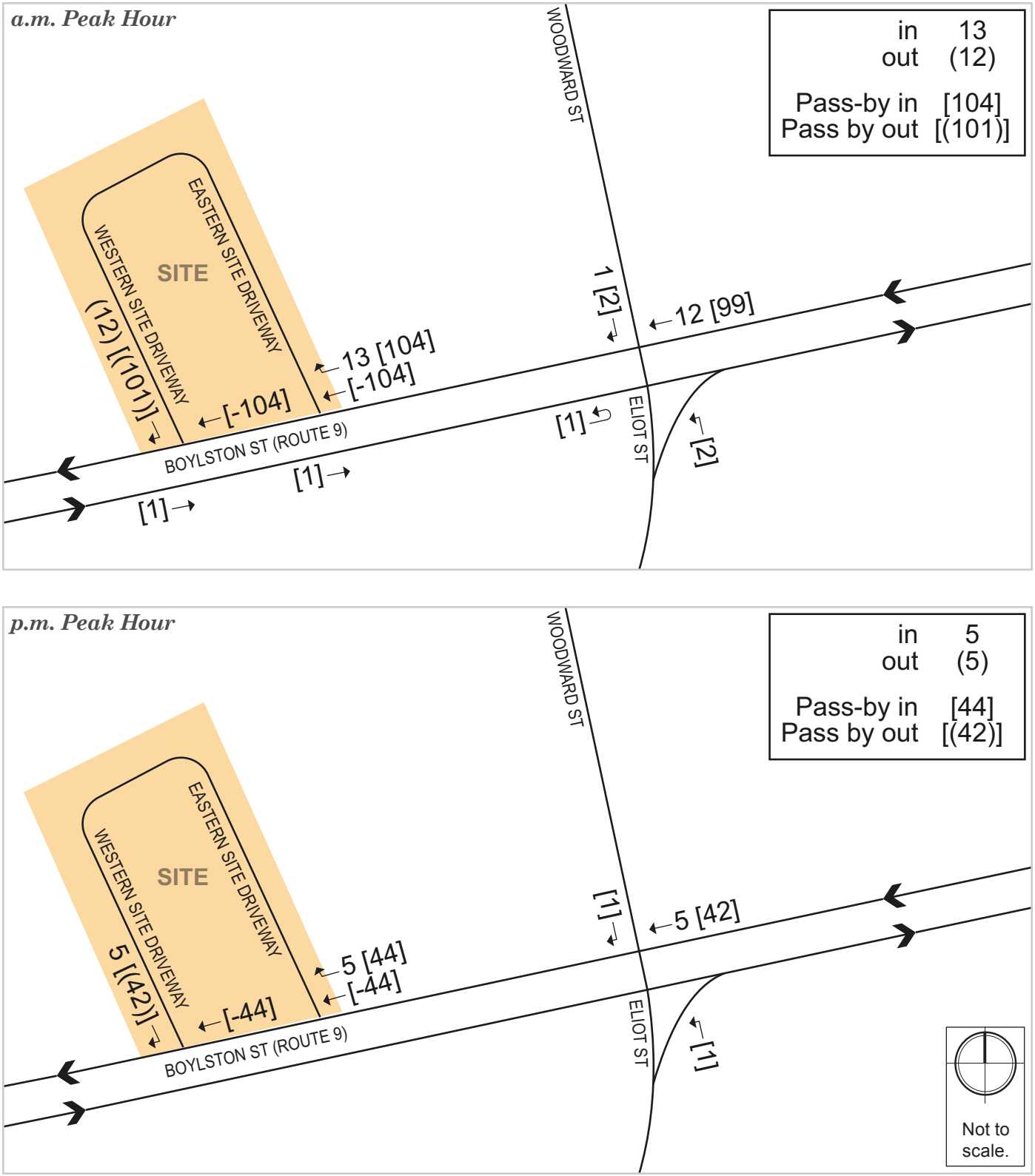
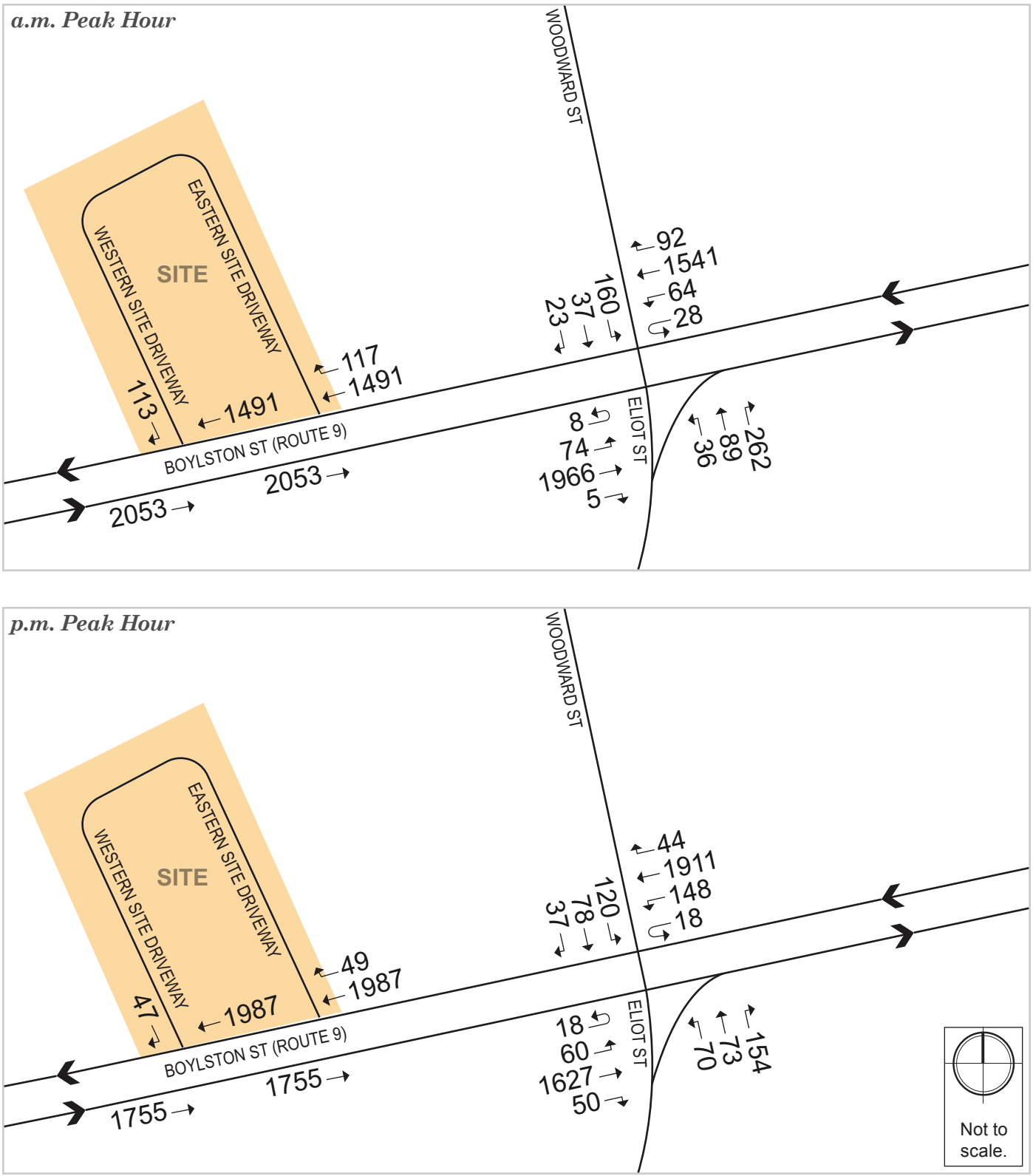


Figure 7. ***Build (2028) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours***



Queue Observations

In addition to the traffic volume data that was collected at the Natick Starbuck's, field observations were also completed concurrently. Vehicular queues observed at the location ranged in length from 0-feet to 300-feet. The longest observed queue was contained within the driveway loop, however there was not enough room for an additional vehicle to enter the queue without spillback onto Route9. When this occurred, vehicles traveling westbound along Route 9 were observed reducing speeds approaching the Starbucks driveway entrance before then reaccelerating passed the coffee-shop.

Vehicle Operations Analysis

Traffic operations are determined through an analysis of intersection Level of Service (LOS) calculations. LOS at the intersection was calculated using Synchro 11.0, which is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM). The LOS and delay (in seconds) are based on intersection geometry and traffic volumes. Table 3 is an excerpt from the HCM that provides LOS criteria for unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition, with significant traffic delay. However, LOS E or F is often typical for a stop controlled minor street approach that intersects a major roadway.

Table 3. Level of Service Criteria

Level of Service	Average Stopped Delay (sec/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤10	0.0-10.0
B	>10 and ≤20	10.1-15.0
C	>20 and ≤35	15.1-25.0
D	>35 and ≤55	25.1-35.0
E	>55 and ≤80	35.1-50.0
F	>80	>50

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. The percentage of heavy vehicles was noted for each approach as well. All capacity analyses were checked against actual conditions in the field.

Table 4 and Table 5 summarizes the existing LOS, delay, volume to capacity ratio, and queue analysis for each intersection during the morning and evening peak hours. The detailed Synchro outputs are provided in the Appendix.

Table 4. Summary of Vehicle Operations, a.m. Peak Hour

Intersection/Movement	Existing Condition					No-build (2028) Condition					Build (2028) Condition				
	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)
Signalized															
Route 9/Eliot Street/Woodward Street	**E**	**67.0**	**-**	**-**	**-**	**E**	**78.6**	**-**	**-**	**-**	**E**	**78.7**	**-**	**-**	**-**
Route 9 EB left	F	82.2	0.62	76	160	F	83.0	0.63	79	165	F	83.0	0.63	79	165
Route 9 EB thru | thru/right	F	94.7	1.13	~1097	#1774	F	116.3	1.18	~1191	#1884	F	116.3	1.18	~1191	#1884
Route 9 WB left	F	80.6	0.61	79	166	F	81.1	0.62	82	172	F	81.1	0.62	82	172
Route 9 WB thru | thru/right	C	33.4	0.87	582	#1217	D	36.3	0.91	636	#1300	D	36.3	0.91	645	#1315
Eliot Street NB left	D	50.3	0.22	34	62	D	50.6	0.22	35	64	D	50.6	0.22	35	64
Eliot Street NB thru	D	51.3	0.31	82	128	D	51.8	0.33	87	133	D	51.8	0.33	87	133
Eliot Street NB right	D	35.5	0.72	130	199	D	39.1	0.76	146	217	D	39.1	0.76	146	217
Woodward Street SB left	F	108.0	0.93	151	#390	F	118.2	0.97	158	#410	F	118.2	0.97	158	#410
Woodward Street SB thru/right	D	48.2	0.26	38	104	D	48.6	0.27	41	108	D	48.6	0.28	41	108
Unsignalized															
Route 9/Enter Site Driveway	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Route 9 EB thru	A	0.0	0.42	-	0	A	0.0	0.44	-	0	A	0.0	0.44	-	0
Route 9 WB thru	A	0.0	0.65	-	0	A	0.0	0.68	-	0	A	0.0	0.64	-	0
Route 9 WB thru/right	A	0.0	0.33	-	0	A	0.2	0.34	-	0	A	0.0	0.39	-	0
Route 9/**Exit Site Driveway**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Route 9 EB thru	A	0.0	0.63	-	0	A	0.0	0.66	-	0	A	0.0	0.66	-	0
Route 9 WB thru	A	0.0	0.49	-	0	A	0.0	0.51	-	0	A	0.0	0.48	-	0
Western Site Driveway SB right	A	0.0	0.00	-	0	A	0.0	0.00	-	0	B	13.3	0.22	-	21

Gray shading indicates LOS E or F under the Existing Condition, or deterioration into LOS E or F from the previous condition.

Table 5. Summary of Vehicle Operations, p.m. Peak Hour

Intersection/Movement	Existing Condition					No-build (2028) Condition					Build (2028) Condition				
	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)	LOS	Delay (Sec)	V/C Ratio	50th %-ile Queue (feet)	95th %-ile Queue (feet)
Signalized															
Route 9/Eliot Street/Woodward Street	**D**	**38.3**	**-**	**-**	**-**	**D**	**54.3**	**-**	**-**	**-**	**D**	**54.6**	**-**	**-**	**-**
Route 9 EB left	F	82.3	0.54	69	147	F	84.4	0.57	75	152	F	84.4	0.57	75	152
Route 9 EB thru | thru/right	D	37.3	0.88	598	#1227	D	47.6	0.96	752	#1357	D	47.6	0.96	752	#1357
Route 9 WB left	F	88.7	0.72	115	229	F	92.9	0.81	153	#336	F	92.9	0.81	153	#336
Route 9 WB thru | thru/right	D	46.1	0.97	735	#1516	E	56.2	1.02	850	#1624	E	56.9	1.02	855	#1634
Eliot Street NB left	D	48.5	0.21	36	70	D	54.1	0.38	70	110	D	54.1	0.38	70	110
Eliot Street NB thru	D	48.5	0.22	64	110	D	49.2	0.22	69	113	D	49.2	0.22	69	113
Eliot Street NB right	A	8.1	0.38	0	54	A	8.0	0.38	0	55	A	8.0	0.38	0	55
Woodward Street SB left	F	97.6	0.79	104	#250	F	99.8	0.81	113	#267	F	99.8	0.81	113	#267
Woodward Street SB thru/right	E	65.5	0.52	84	184	E	67.4	0.53	94	196	E	67.4	0.53	94	196
Unsignalized															
Route 9/Enter Site Driveway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Route 9 EB thru	A	0.0	0.35	-	0	A	0.0	0.37	-	0	A	0.0	0.37	-	0
Route 9 WB thru	A	0.0	0.82	-	0	A	0.0	0.87	-	0	A	0.0	0.85	-	0
Route 9 WB thru/right	A	0.0	0.41	-	0	A	0.2	0.43	-	0	A	0.0	0.45	-	0
Route 9/**Exit Site Driveway**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Route 9 EB thru	A	0.0	0.53	-	0	A	0.0	0.56	-	0	A	0.0	0.56	-	0
Route 9 WB thru	A	0.0	0.61	-	0	A	0.0	0.65	-	0	A	0.0	0.64	-	0
Western Site Driveway SB right	A	0.0	0.00	-	0	A	0.0	0.00	-	0	B	13.4	0.11	-	9

Gray shading indicates LOS E or F under the Existing Condition, or deterioration into LOS E or F from the previous condition.

As shown in Table 4 and Table 5, Under the Existing Condition, the signalized intersection of Route 9 at Eliot Street and Woodward Street operates at an overall LOS E during the a.m. peak hour and LOS D during the p.m. peak hour. The Route 9 eastbound and westbound left-turn movements operate at LOS F during both the a.m. and p.m. peak hours. The Route 9 eastbound through and through/right-turn movement operates at LOS F during the a.m. peak hour and LOS D during the p.m. peak hour. The Woodward Street southbound left turn movement operates at LOS F during both the a.m. and p.m. peak hours. The Woodward Street southbound through/right-turn approach operates at LOS D during the a.m. peak hour and LOS E during the p.m. peak hour. Both of the Project driveways operate at an acceptable level (LOS D or better) under the Existing Condition.

Under the No-build (2028) Condition, with the exception of one movement, each of the study area intersections and approaches will continue to operate at the same LOS as under the Existing Condition with increased delay times and queue lengths. The Boylston Street westbound through and through/right movement deteriorates from LOS D to LOS E during the p.m. peak hour.

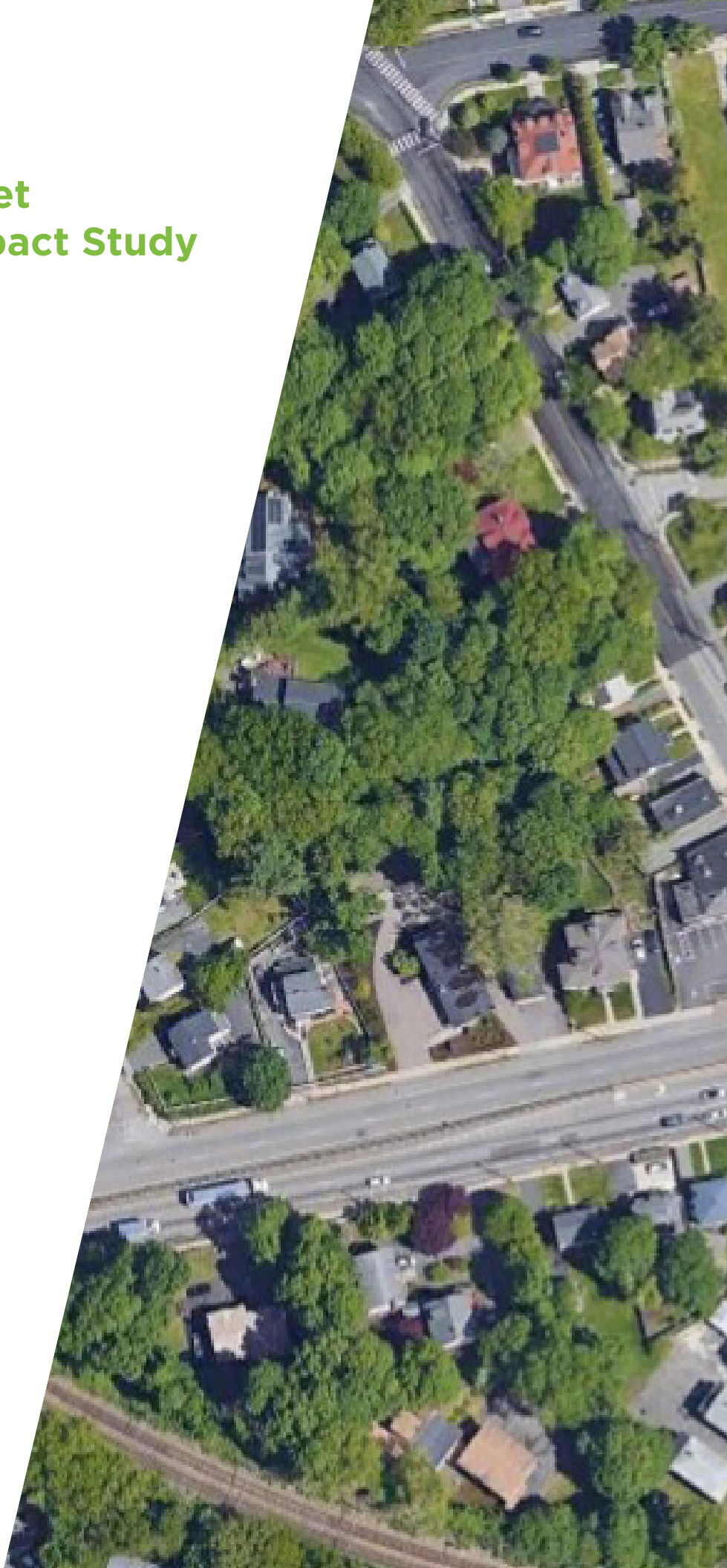
Under the Build (2028) Condition, the study area intersections and approaches will continue to operate at the same LOS as in the No-build (2028) Condition, with only minor increases in delay times and queue lengths.

NEWTON, MASSACHUSETTS

1021 Boylston Street Transportation Impact Study

Appendix

May 2021



HOWARD STEIN HUDSON

Engineers + Planners

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	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
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	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
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	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
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - 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	0.95	0.82	0.70	0.69	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

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

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

1/26/2021

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	9	8	0	17	13	291	13	4	321	48	16	8	0	72	3	458	17	2	480	890
7:15 AM	7	11	21	0	39	16	350	10	5	381	47	11	9	0	67	1	533	16	2	552	1039
7:30 AM	5	7	43	0	55	12	365	17	10	404	76	25	9	0	110	1	442	16	1	460	1029
7:45 AM	2	5	45	0	52	30	377	15	3	425	66	26	9	0	101	3	451	20	3	477	1055
Total	14	32	117	0	163	71	1383	55	22	1531	237	78	35	0	350	8	1884	69	8	1969	4013
8:00 AM	6	12	39	0	57	30	376	19	9	434	53	20	7	0	80	0	457	19	2	478	1049
8:15 AM	7	12	19	0	38	31	369	20	10	430	71	22	6	0	99	5	420	25	3	453	1020
8:30 AM	10	21	29	0	60	12	366	18	1	397	60	16	11	0	87	1	411	31	5	448	992
8:45 AM	9	17	28	0	54	18	328	26	9	381	44	24	6	0	74	1	417	20	4	442	951
Total	32	62	115	0	209	91	1439	83	29	1642	228	82	30	0	340	7	1705	95	14	1821	4012
Grand Total	46	94	232	0	372	162	2822	138	51	3173	465	160	65	0	690	15	3589	164	22	3790	8025
Approach %	12.4	25.3	62.4	0.0		5.1	88.9	4.3	1.6		67.4	23.2	9.4	0.0		0.4	94.7	4.3	0.6		
Total %	0.6	1.2	2.9	0.0	4.6	2.0	35.2	1.7	0.6	39.5	5.8	2.0	0.8	0.0	8.6	0.2	44.7	2.0	0.3	47.2	
Exiting Leg Total					486					4337					247					2955	8025
Cars	40	85	222	0	347	155	2702	131	49	3037	451	140	59	0	650	15	3381	150	21	3567	7601
% Cars	87.0	90.4	95.7	0.0	93.3	95.7	95.7	94.9	96.1	95.7	97.0	87.5	90.8	0.0	94.2	100.0	94.2	91.5	95.5	94.1	94.7
Exiting Leg Total					445					4103					231					2822	7601
Heavy Vehicles	6	9	10	0	25	7	120	7	2	136	14	20	6	0	40	0	208	14	1	223	424
% Heavy Vehicles	13.0	9.6	4.3	0.0	6.7	4.3	4.3	5.1	3.9	4.3	3.0	12.5	9.2	0.0	5.8	0.0	5.8	8.5	4.5	5.9	5.3
Exiting Leg Total					41					234					16					133	424

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	7	11	21	0	39	16	350	10	5	381	47	11	9	0	67	1	533	16	2	552	1039
7:30 AM	5	7	43	0	55	12	365	17	10	404	76	25	9	0	110	1	442	16	1	460	1029
7:45 AM	2	5	45	0	52	30	377	15	3	425	66	26	9	0	101	3	451	20	3	477	1055
8:00 AM	6	12	39	0	57	30	376	19	9	434	53	20	7	0	80	0	457	19	2	478	1049
Total Volume	20	35	148	0	203	88	1468	61	27	1644	242	82	34	0	358	5	1883	71	8	1967	4172
% Approach Total	9.9	17.2	72.9	0.0		5.4	89.3	3.7	1.6		67.6	22.9	9.5	0.0		0.3	95.7	3.6	0.4		
PHF	0.714	0.729	0.822	0.000	0.890	0.733	0.973	0.803	0.675	0.947	0.796	0.788	0.944	0.000	0.814	0.417	0.883	0.888	0.667	0.891	0.989
Cars	17	29	141	0	187	85	1399	57	25	1566	234	74	30	0	338	5	1777	61	7	1850	3941
Cars %	85.0	82.9	95.3	0.0	92.1	96.6	95.3	93.4	92.6	95.3	96.7	90.2	88.2	0.0	94.4	100.0	94.4	85.9	87.5	94.1	94.5
Heavy Vehicles	3	6	7	0	16	3	69	4	2	78	8	8	4	0	20	0	106	10	1	117	231
Heavy Vehicles %	15.0	17.1	4.7	0.0	7.9	3.4	4.7	6.6	7.4	4.7	3.3	9.8	11.8	0.0	5.6	0.0	5.6	14.1	12.5	5.9	5.5
Cars Enter Leg	17	29	141	0	187	85	1399	57	25	1566	234	74	30	0	338	5	1777	61	7	1850	3941
Heavy Enter Leg	3	6	7	0	16	3	69	4	2	78	8	8	4	0	20	0	106	10	1	117	231
Total Entering Leg	20	35	148	0	203	88	1468	61	27	1644	242	82	34	0	358	5	1883	71	8	1967	4172
Cars Exiting Leg					220					2177					91					1453	3941
Heavy Exiting Leg					21					123					10					77	231
Total Exiting Leg					241					2300					101					1530	4172

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	9	8	0	17	12	284	12	4	312	47	10	7	0	64	3	437	16	2	458	851
7:15 AM	5	8	20	0	33	16	337	9	3	365	47	10	9	0	66	1	511	12	2	526	990
7:30 AM	4	6	41	0	51	12	351	17	10	390	70	19	8	0	97	1	416	14	1	432	970
7:45 AM	2	5	41	0	48	29	356	13	3	401	64	25	7	0	96	3	424	18	3	448	993
Total	11	28	110	0	149	69	1328	51	20	1468	228	64	31	0	323	8	1788	60	8	1864	3804
8:00 AM	6	10	39	0	55	28	355	18	9	410	53	20	6	0	79	0	426	17	1	444	988
8:15 AM	7	11	18	0	36	29	354	19	10	412	69	19	6	0	94	5	397	25	3	430	972
8:30 AM	8	20	29	0	57	11	352	18	1	382	59	15	11	0	85	1	384	31	5	421	945
8:45 AM	8	16	26	0	50	18	313	25	9	365	42	22	5	0	69	1	386	17	4	408	892
Total	29	57	112	0	198	86	1374	80	29	1569	223	76	28	0	327	7	1593	90	13	1703	3797
Grand Total	40	85	222	0	347	155	2702	131	49	3037	451	140	59	0	650	15	3381	150	21	3567	7601
Approach %	11.5	24.5	64.0	0.0		5.1	89.0	4.3	1.6		69.4	21.5	9.1	0.0		0.4	94.8	4.2	0.6		
Total %	0.5	1.1	2.9	0.0	4.6	2.0	35.5	1.7	0.6	40.0	5.9	1.8	0.8	0.0	8.6	0.2	44.5	2.0	0.3	46.9	
Exiting Leg Total					445					4103					231					2822	7601

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	5	8	20	0	33	16	337	9	3	365	47	10	9	0	66	1	511	12	2	526	990
7:30 AM	4	6	41	0	51	12	351	17	10	390	70	19	8	0	97	1	416	14	1	432	970
7:45 AM	2	5	41	0	48	29	356	13	3	401	64	25	7	0	96	3	424	18	3	448	993
8:00 AM	6	10	39	0	55	28	355	18	9	410	53	20	6	0	79	0	426	17	1	444	988
Total Volume	17	29	141	0	187	85	1399	57	25	1566	234	74	30	0	338	5	1777	61	7	1850	3941
% Approach Total	9.1	15.5	75.4	0.0		5.4	89.3	3.6	1.6		69.2	21.9	8.9	0.0		0.3	96.1	3.3	0.4		
PHF	0.708	0.725	0.860	0.000	0.850	0.733	0.982	0.792	0.625	0.955	0.836	0.740	0.833	0.000	0.871	0.417	0.869	0.847	0.583	0.879	0.992
Entering Leg	17	29	141	0	187	85	1399	57	25	1566	234	74	30	0	338	5	1777	61	7	1850	3941
Exiting Leg					220					2177					91					1453	3941
Total					407					3743					429					3303	7882

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	7	1	0	9	1	6	1	0	8	0	21	1	0	22	39
7:15 AM	2	3	1	0	6	0	13	1	2	16	0	1	0	0	1	0	22	4	0	26	49
7:30 AM	1	1	2	0	4	0	14	0	0	14	6	6	1	0	13	0	26	2	0	28	59
7:45 AM	0	0	4	0	4	1	21	2	0	24	2	1	2	0	5	0	27	2	0	29	62
Total	3	4	7	0	14	2	55	4	2	63	9	14	4	0	27	0	96	9	0	105	209
8:00 AM	0	2	0	0	2	2	21	1	0	24	0	0	1	0	1	0	31	2	1	34	61
8:15 AM	0	1	1	0	2	2	15	1	0	18	2	3	0	0	5	0	23	0	0	23	48
8:30 AM	2	1	0	0	3	1	14	0	0	15	1	1	0	0	2	0	27	0	0	27	47
8:45 AM	1	1	2	0	4	0	15	1	0	16	2	2	1	0	5	0	31	3	0	34	59
Total	3	5	3	0	11	5	65	3	0	73	5	6	2	0	13	0	112	5	1	118	215
Grand Total	6	9	10	0	25	7	120	7	2	136	14	20	6	0	40	0	208	14	1	223	424
Approach %	24.0	36.0	40.0	0.0		5.1	88.2	5.1	1.5		35.0	50.0	15.0	0.0		0.0	93.3	6.3	0.4		
Total %	1.4	2.1	2.4	0.0	5.9	1.7	28.3	1.7	0.5	32.1	3.3	4.7	1.4	0.0	9.4	0.0	49.1	3.3	0.2	52.6	
Exiting Leg Total					41					234					16					133	424
Buses	3	5	6	0	14	3	21	1	0	25	2	3	0	0	5	0	8	2	0	10	54
% Buses	50.0	55.6	60.0	0.0	56.0	42.9	17.5	14.3	0.0	18.4	14.3	15.0	0.0	0.0	12.5	0.0	3.8	14.3	0.0	4.5	12.7
Exiting Leg Total					8					16					6					24	54
Single-Unit Trucks	2	4	4	0	10	4	74	6	2	86	12	14	5	0	31	0	168	10	1	179	306
% Single-Unit	33.3	44.4	40.0	0.0	40.0	57.1	61.7	85.7	100.0	63.2	85.7	70.0	83.3	0.0	77.5	0.0	80.8	71.4	100.0	80.3	72.2
Exiting Leg Total					28					186					10					82	306
Articulated Trucks	1	0	0	0	1	0	25	0	0	25	0	3	1	0	4	0	32	2	0	34	64
% Articulated	16.7	0.0	0.0	0.0	4.0	0.0	20.8	0.0	0.0	18.4	0.0	15.0	16.7	0.0	10.0	0.0	15.4	14.3	0.0	15.2	15.1
Exiting Leg Total					5					32					0					27	64

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	2	3	1	0	6	0	13	1	2	16	0	1	0	0	1	0	22	4	0	26	49
7:30 AM	1	1	2	0	4	0	14	0	0	14	6	6	1	0	13	0	26	2	0	28	59
7:45 AM	0	0	4	0	4	1	21	2	0	24	2	1	2	0	5	0	27	2	0	29	62
8:00 AM	0	2	0	0	2	2	21	1	0	24	0	0	1	0	1	0	31	2	1	34	61
Total Volume	3	6	7	0	16	3	69	4	2	78	8	8	4	0	20	0	106	10	1	117	231
% Approach Total	18.8	37.5	43.8	0.0		3.8	88.5	5.1	2.6		40.0	40.0	20.0	0.0		0.0	90.6	8.5	0.9		
PHF	0.375	0.500	0.438	0.000	0.667	0.375	0.821	0.500	0.250	0.813	0.333	0.333	0.500	0.000	0.385	0.000	0.855	0.625	0.250	0.860	0.931
Buses	2	3	4	0	9	2	15	1	0	18	1	1	0	0	2	0	5	1	0	6	35
Buses %	66.7	50.0	57.1	0.0	56.3	66.7	21.7	25.0	0.0	23.1	12.5	12.5	0.0	0.0	10.0	0.0	4.7	10.0	0.0	5.1	15.2
Single-Unit Trucks	1	3	3	0	7	1	36	3	2	42	7	7	3	0	17	0	86	7	1	94	160
Single-Unit %	33.3	50.0	42.9	0.0	43.8	33.3	52.2	75.0	100.0	53.8	87.5	87.5	75.0	0.0	85.0	0.0	81.1	70.0	100.0	80.3	69.3
Articulated Trucks	0	0	0	0	0	0	18	0	0	18	0	0	1	0	1	0	15	2	0	17	36
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	26.1	0.0	0.0	23.1	0.0	0.0	25.0	0.0	5.0	0.0	14.2	20.0	0.0	14.5	15.6
Buses	2	3	4	0	9	2	15	1	0	18	1	1	0	0	2	0	5	1	0	6	35
Single-Unit Trucks	1	3	3	0	7	1	36	3	2	42	7	7	3	0	17	0	86	7	1	94	160
Articulated Trucks	0	0	0	0	0	0	18	0	0	18	0	0	1	0	1	0	15	2	0	17	36
Total Entering Leg	3	6	7	0	16	3	69	4	2	78	8	8	4	0	20	0	106	10	1	117	231
Buses					4					10					4					17	35
Single-Unit Trucks					15					98					6					41	160
Articulated Trucks					2					15					0					19	36
Total Exiting Leg					21					123					10					77	231

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Buses

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
7:15 AM	2	2	1	0	5	0	6	0	0	6	0	0	0	0	0	0	2	1	0	3	14
7:30 AM	0	1	1	0	2	0	4	0	0	4	1	1	0	0	2	0	2	0	0	2	10
7:45 AM	0	0	2	0	2	1	4	1	0	6	0	0	0	0	0	0	1	0	0	1	9
Total	2	3	4	0	9	1	15	1	0	17	1	1	0	0	2	0	5	2	0	7	35
8:00 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	4
8:30 AM	1	1	0	0	2	1	4	0	0	5	0	1	0	0	1	0	2	0	0	2	10
8:45 AM	0	1	1	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
Total	1	2	2	0	5	2	6	0	0	8	1	2	0	0	3	0	3	0	0	3	19
Grand Total	3	5	6	0	14	3	21	1	0	25	2	3	0	0	5	0	8	2	0	10	54
Approach %	21.4	35.7	42.9	0.0		12.0	84.0	4.0	0.0		40.0	60.0	0.0	0.0		0.0	80.0	20.0	0.0		
Total %	5.6	9.3	11.1	0.0	25.9	5.6	38.9	1.9	0.0	46.3	3.7	5.6	0.0	0.0	9.3	0.0	14.8	3.7	0.0	18.5	
Exiting Leg Total					8					16					6					24	54

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
7:15 AM	2	2	1	0	5	0	6	0	0	6	0	0	0	0	0	0	2	1	0	3	14
7:30 AM	0	1	1	0	2	0	4	0	0	4	1	1	0	0	2	0	2	0	0	2	10
7:45 AM	0	0	2	0	2	1	4	1	0	6	0	0	0	0	0	0	1	0	0	1	9
Total Volume	2	3	4	0	9	1	15	1	0	17	1	1	0	0	2	0	5	2	0	7	35
% Approach Total	22.2	33.3	44.4	0.0		5.9	88.2	5.9	0.0		50.0	50.0	0.0	0.0		0.0	71.4	28.6	0.0		
PHF	0.250	0.375	0.500	0.000	0.450	0.250	0.625	0.250	0.000	0.708	0.250	0.250	0.000	0.000	0.250	0.000	0.625	0.500	0.000	0.583	0.625
Entering Leg	2	3	4	0	9	1	15	1	0	17	1	1	0	0	2	0	5	2	0	7	35
Exiting Leg					4					10					4					17	35
Total					13					27					6					24	70

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	6	1	0	8	1	4	1	0	6	0	17	0	0	17	31
7:15 AM	0	1	0	0	1	0	6	1	2	9	0	1	0	0	1	0	13	3	0	16	27
7:30 AM	1	0	1	0	2	0	4	0	0	4	5	5	1	0	11	0	18	2	0	20	37
7:45 AM	0	0	2	0	2	0	14	1	0	15	2	1	1	0	4	0	25	1	0	26	47
Total	1	1	3	0	5	1	30	3	2	36	8	11	3	0	22	0	73	6	0	79	142
8:00 AM	0	2	0	0	2	1	12	1	0	14	0	0	1	0	1	0	30	1	1	32	49
8:15 AM	0	1	0	0	1	2	10	1	0	13	2	1	0	0	3	0	19	0	0	19	36
8:30 AM	0	0	0	0	0	0	9	0	0	9	1	0	0	0	1	0	19	0	0	19	29
8:45 AM	1	0	1	0	2	0	13	1	0	14	1	2	1	0	4	0	27	3	0	30	50
Total	1	3	1	0	5	3	44	3	0	50	4	3	2	0	9	0	95	4	1	100	164
Grand Total	2	4	4	0	10	4	74	6	2	86	12	14	5	0	31	0	168	10	1	179	306
Approach %	20.0	40.0	40.0	0.0		4.7	86.0	7.0	2.3		38.7	45.2	16.1	0.0		0.0	93.9	5.6	0.6		
Total %	0.7	1.3	1.3	0.0	3.3	1.3	24.2	2.0	0.7	28.1	3.9	4.6	1.6	0.0	10.1	0.0	54.9	3.3	0.3	58.5	
Exiting Leg Total					28					186					10					82	306

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	1	0	1	0	2	0	4	0	0	4	5	5	1	0	11	0	18	2	0	20	37
7:45 AM	0	0	2	0	2	0	14	1	0	15	2	1	1	0	4	0	25	1	0	26	47
8:00 AM	0	2	0	0	2	1	12	1	0	14	0	0	1	0	1	0	30	1	1	32	49
8:15 AM	0	1	0	0	1	2	10	1	0	13	2	1	0	0	3	0	19	0	0	19	36
Total Volume	1	3	3	0	7	3	40	3	0	46	9	7	3	0	19	0	92	4	1	97	169
% Approach Total	14.3	42.9	42.9	0.0		6.5	87.0	6.5	0.0		47.4	36.8	15.8	0.0		0.0	94.8	4.1	1.0		
PHF	0.250	0.375	0.375	0.000	0.875	0.375	0.714	0.750	0.000	0.767	0.450	0.350	0.750	0.000	0.432	0.000	0.767	0.500	0.250	0.758	0.862
Entering Leg	1	3	3	0	7	3	40	3	0	46	9	7	3	0	19	0	92	4	1	97	169
Exiting Leg					14					104					6					45	169
Total					21					150					25					142	338

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION D A T A INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	4	0	0	4	6
7:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	7	0	0	7	8
7:30 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	6	0	0	6	12
7:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	1	1	0	2	6
Total	0	0	0	0	0	0	10	0	0	10	0	2	1	0	3	0	18	1	0	19	32
8:00 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	1	1	0	2	10
8:15 AM	0	0	0	0	0	0	4	0	0	4	0	1	0	0	1	0	3	0	0	3	8
8:30 AM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	8
8:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
Total	1	0	0	0	1	0	15	0	0	15	0	1	0	0	1	0	14	1	0	15	32
Grand Total	1	0	0	0	1	0	25	0	0	25	0	3	1	0	4	0	32	2	0	34	64
Approach %	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	75.0	25.0	0.0		0.0	94.1	5.9	0.0		
Total %	1.6	0.0	0.0	0.0	1.6	0.0	39.1	0.0	0.0	39.1	0.0	4.7	1.6	0.0	6.3	0.0	50.0	3.1	0.0	53.1	
Exiting Leg Total					5					32					0					27	64

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	7	0	0	7	8
7:30 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	6	0	0	6	12
7:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	1	1	0	2	6
8:00 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	1	1	0	2	10
Total Volume	0	0	0	0	0	0	18	0	0	18	0	0	1	0	1	0	15	2	0	17	36
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	88.2	11.8	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.563	0.000	0.000	0.563	0.000	0.000	0.250	0.000	0.250	0.000	0.536	0.500	0.000	0.607	0.750
Entering Leg	0	0	0	0	0	0	18	0	0	18	0	0	1	0	1	0	15	2	0	17	36
Exiting Leg					2					15					0					19	36
Total					2					33					1					36	72

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Approach %	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							2							0							0							0	2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Exiting Leg							2							0							0							0	2
Total							3							0							1							0	4

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Woodward Street (from North)							Boylston Street (Route 9) (from East)							Elliot Street (from South)							Boylston Street (Route 9) (from West)							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	4	2	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	7
Grand Total	0	0	0	0	0	0	0	0	0	0	0	6	3	9	0	0	0	0	0	1	1	0	0	0	0	0	0	0	10
Approach %	0	0	0	0	0	0		0	0	0	0	66.7	33.3		0	0	0	0	0	100		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	60	30	90	0	0	0	0	0	10	10	0	0	0	0	0	0	0	
Exiting Leg Total							0							9							1							0	10

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Woodward Street (from North)							Boylston Street (Route 9) (from East)							Elliot Street (from South)							Boylston Street (Route 9) (from West)							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	4	2	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	7
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.750	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	4	2	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	7
Exiting Leg							0							6							1							0	7
Total							0							12							2							0	14

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	11	17	33	0	61	4	435	32	8	479	33	18	11	0	62	7	353	20	1	381	983
4:15 PM	18	25	27	0	70	6	482	33	3	524	36	20	11	0	67	1	367	10	1	379	1040
4:30 PM	11	20	14	0	45	11	449	21	4	485	32	18	10	0	60	4	350	13	6	373	963
4:45 PM	8	21	26	0	55	13	466	29	5	513	40	15	15	0	70	8	345	14	3	370	1008
Total	48	83	100	0	231	34	1832	115	20	2001	141	71	47	0	259	20	1415	57	11	1503	3994
5:00 PM	13	15	29	0	57	5	470	19	3	497	43	18	9	0	70	8	406	10	3	427	1051
5:15 PM	5	18	32	0	55	10	449	36	7	502	33	22	7	0	62	3	409	19	8	439	1058
5:30 PM	9	15	24	0	48	14	441	29	2	486	26	12	7	0	45	3	398	15	3	419	998
5:45 PM	7	15	15	0	37	21	418	31	2	472	38	16	6	0	60	4	382	21	4	411	980
Total	34	63	100	0	197	50	1778	115	14	1957	140	68	29	0	237	18	1595	65	18	1696	4087
Grand Total	82	146	200	0	428	84	3610	230	34	3958	281	139	76	0	496	38	3010	122	29	3199	8081
Approach %	19.2	34.1	46.7	0.0		2.1	91.2	5.8	0.9		56.7	28.0	15.3	0.0		1.2	94.1	3.8	0.9		
Total %	1.0	1.8	2.5	0.0	5.3	1.0	44.7	2.8	0.4	49.0	3.5	1.7	0.9	0.0	6.1	0.5	37.2	1.5	0.4	39.6	
Exiting Leg Total					345					3525					414					3797	8081
Cars	80	142	196	0	418	82	3533	227	34	3876	281	138	75	0	494	37	2986	122	29	3174	7962
% Cars	97.6	97.3	98.0	0.0	97.7	97.6	97.9	98.7	100.0	97.9	100.0	99.3	98.7	0.0	99.6	97.4	99.2	100.0	100.0	99.2	98.5
Exiting Leg Total					342					3497					406					3717	7962
Heavy Vehicles	2	4	4	0	10	2	77	3	0	82	0	1	1	0	2	1	24	0	0	25	119
% Heavy Vehicles	2.4	2.7	2.0	0.0	2.3	2.4	2.1	1.3	0.0	2.1	0.0	0.7	1.3	0.0	0.4	2.6	0.8	0.0	0.0	0.8	1.5
Exiting Leg Total					3					28					8					80	119

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	8	21	26	0	55	13	466	29	5	513	40	15	15	0	70	8	345	14	3	370	1008
5:00 PM	13	15	29	0	57	5	470	19	3	497	43	18	9	0	70	8	406	10	3	427	1051
5:15 PM	5	18	32	0	55	10	449	36	7	502	33	22	7	0	62	3	409	19	8	439	1058
5:30 PM	9	15	24	0	48	14	441	29	2	486	26	12	7	0	45	3	398	15	3	419	998
Total Volume	35	69	111	0	215	42	1826	113	17	1998	142	67	38	0	247	22	1558	58	17	1655	4115
% Approach Total	16.3	32.1	51.6	0.0		2.1	91.4	5.7	0.9		57.5	27.1	15.4	0.0		1.3	94.1	3.5	1.0		
PHF	0.673	0.821	0.867	0.000	0.943	0.750	0.971	0.785	0.607	0.974	0.826	0.761	0.633	0.000	0.882	0.688	0.952	0.763	0.531	0.942	0.972
Cars	34	67	109	0	210	41	1793	112	17	1963	142	66	37	0	245	21	1546	58	17	1642	4060
Cars %	97.1	97.1	98.2	0.0	97.7	97.6	98.2	99.1	100.0	98.2	100.0	98.5	97.4	0.0	99.2	95.5	99.2	100.0	100.0	99.2	98.7
Heavy Vehicles	1	2	2	0	5	1	33	1	0	35	0	1	1	0	2	1	12	0	0	13	55
Heavy Vehicles %	2.9	2.9	1.8	0.0	2.3	2.4	1.8	0.9	0.0	1.8	0.0	1.5	2.6	0.0	0.8	4.5	0.8	0.0	0.0	0.8	1.3
Cars Enter Leg	34	67	109	0	210	41	1793	112	17	1963	142	66	37	0	245	21	1546	58	17	1642	4060
Heavy Enter Leg	1	2	2	0	5	1	33	1	0	35	0	1	1	0	2	1	12	0	0	13	55
Total Entering Leg	35	69	111	0	215	42	1826	113	17	1998	142	67	38	0	247	22	1558	58	17	1655	4115
Cars Exiting Leg					165					1814					200					1881	4060
Heavy Exiting Leg					2					14					4					35	55
Total Exiting Leg					167					1828					204					1916	4115

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Cars**

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	11	17	32	0	60	4	419	32	8	463	33	18	11	0	62	7	349	20	1	377	962
4:15 PM	17	23	27	0	67	5	468	31	3	507	36	20	11	0	67	1	363	10	1	375	1016
4:30 PM	11	20	13	0	44	11	442	21	4	478	32	18	10	0	60	4	347	13	6	370	952
4:45 PM	8	20	25	0	53	12	457	29	5	503	40	15	14	0	69	8	342	14	3	367	992
Total	47	80	97	0	224	32	1786	113	20	1951	141	71	46	0	258	20	1401	57	11	1489	3922
5:00 PM	13	14	28	0	55	5	461	19	3	488	43	17	9	0	69	7	405	10	3	425	1037
5:15 PM	4	18	32	0	54	10	442	35	7	494	33	22	7	0	62	3	406	19	8	436	1046
5:30 PM	9	15	24	0	48	14	433	29	2	478	26	12	7	0	45	3	393	15	3	414	985
5:45 PM	7	15	15	0	37	21	411	31	2	465	38	16	6	0	60	4	381	21	4	410	972
Total	33	62	99	0	194	50	1747	114	14	1925	140	67	29	0	236	17	1585	65	18	1685	4040
Grand Total	80	142	196	0	418	82	3533	227	34	3876	281	138	75	0	494	37	2986	122	29	3174	7962
Approach %	19.1	34.0	46.9	0.0		2.1	91.2	5.9	0.9		56.9	27.9	15.2	0.0		1.2	94.1	3.8	0.9		
Total %	1.0	1.8	2.5	0.0	5.2	1.0	44.4	2.9	0.4	48.7	3.5	1.7	0.9	0.0	6.2	0.5	37.5	1.5	0.4	39.9	
Exiting Leg Total					342					3497					406					3717	7962

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:45 PM	8	20	25	0	53	12	457	29	5	503	40	15	14	0	69	8	342	14	3	367	992
5:00 PM	13	14	28	0	55	5	461	19	3	488	43	17	9	0	69	7	405	10	3	425	1037
5:15 PM	4	18	32	0	54	10	442	35	7	494	33	22	7	0	62	3	406	19	8	436	1046
5:30 PM	9	15	24	0	48	14	433	29	2	478	26	12	7	0	45	3	393	15	3	414	985
Total Volume	34	67	109	0	210	41	1793	112	17	1963	142	66	37	0	245	21	1546	58	17	1642	4060
% Approach Total	16.2	31.9	51.9	0.0		2.1	91.3	5.7	0.9		58.0	26.9	15.1	0.0		1.3	94.2	3.5	1.0		
PHF	0.654	0.838	0.852	0.000	0.955	0.732	0.972	0.800	0.607	0.976	0.826	0.750	0.661	0.000	0.888	0.656	0.952	0.763	0.531	0.942	0.970
Entering Leg	34	67	109	0	210	41	1793	112	17	1963	142	66	37	0	245	21	1546	58	17	1642	4060
Exiting Leg					165					1814					200					1881	4060
Total					375					3777					445					3523	8120

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	1	0	1	0	16	0	0	16	0	0	0	0	0	0	4	0	0	4	21
4:15 PM	1	2	0	0	3	1	14	2	0	17	0	0	0	0	0	0	4	0	0	4	24
4:30 PM	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	11
4:45 PM	0	1	1	0	2	1	9	0	0	10	0	0	1	0	1	0	3	0	0	3	16
Total	1	3	3	0	7	2	46	2	0	50	0	0	1	0	1	0	14	0	0	14	72
5:00 PM	0	1	1	0	2	0	9	0	0	9	0	1	0	0	1	1	1	0	0	2	14
5:15 PM	1	0	0	0	1	0	7	1	0	8	0	0	0	0	0	0	3	0	0	3	12
5:30 PM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	5	0	0	5	13
5:45 PM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	1	0	0	1	8
Total	1	1	1	0	3	0	31	1	0	32	0	1	0	0	1	1	10	0	0	11	47
Grand Total	2	4	4	0	10	2	77	3	0	82	0	1	1	0	2	1	24	0	0	25	119
Approach %	20.0	40.0	40.0	0.0		2.4	93.9	3.7	0.0		0.0	50.0	50.0	0.0		4.0	96.0	0.0	0.0		
Total %	1.7	3.4	3.4	0.0	8.4	1.7	64.7	2.5	0.0	68.9	0.0	0.8	0.8	0.0	1.7	0.8	20.2	0.0	0.0	21.0	
Exiting Leg Total					3					28					8					80	119
Buses	1	1	2	0	4	0	12	0	0	12	0	0	0	0	0	0	5	0	0	5	21
% Buses	50.0	25.0	50.0	0.0	40.0	0.0	15.6	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.0	20.0	17.6
Exiting Leg Total					0					7					1					13	21
Single-Unit Trucks	1	3	2	0	6	2	57	3	0	62	0	1	1	0	2	1	14	0	0	15	85
% Single-Unit	50.0	75.0	50.0	0.0	60.0	100.0	74.0	100.0	0.0	75.6	0.0	100.0	100.0	0.0	100.0	100.0	58.3	0.0	0.0	60.0	71.4
Exiting Leg Total					3					16					7					59	85
Articulated Trucks	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	5	0	0	5	13
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.0	20.0	10.9
Exiting Leg Total					0					5					0					8	13

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Woodward Street from North					Boylston Street (Route 9) from East					Elliot Street from South					Boylston Street (Route 9) from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	1	0	1	0	16	0	0	16	0	0	0	0	0	0	4	0	0	4	21
4:15 PM	1	2	0	0	3	1	14	2	0	17	0	0	0	0	0	0	4	0	0	4	24
4:30 PM	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	11
4:45 PM	0	1	1	0	2	1	9	0	0	10	0	0	1	0	1	0	3	0	0	3	16
Total Volume	1	3	3	0	7	2	46	2	0	50	0	0	1	0	1	0	14	0	0	14	72
% Approach Total	14.3	42.9	42.9	0.0		4.0	92.0	4.0	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.250	0.375	0.750	0.000	0.583	0.500	0.719	0.250	0.000	0.735	0.000	0.000	0.250	0.000	0.250	0.000	0.875	0.000	0.000	0.875	0.750
Buses	0	1	2	0	3	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	14
Buses %	0.0	33.3	66.7	0.0	42.9	0.0	13.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	35.7	0.0	0.0	35.7	19.4
Single-Unit Trucks	1	2	1	0	4	2	35	2	0	39	0	0	1	0	1	0	6	0	0	6	50
Single-Unit %	100.0	66.7	33.3	0.0	57.1	100.0	76.1	100.0	0.0	78.0	0.0	0.0	100.0	0.0	100.0	0.0	42.9	0.0	0.0	42.9	69.4
Articulated Trucks	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	21.4	0.0	0.0	21.4	11.1
Buses	0	1	2	0	3	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	14
Single-Unit Trucks	1	2	1	0	4	2	35	2	0	39	0	0	1	0	1	0	6	0	0	6	50
Articulated Trucks	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
Total Entering Leg	1	3	3	0	7	2	46	2	0	50	0	0	1	0	1	0	14	0	0	14	72
Buses					0					7					1					6	14
Single-Unit Trucks					2					7					4					37	50
Articulated Trucks					0					3					0					5	8
Total Exiting Leg					2					17					5					48	72

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Buses**

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	5
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	4
Total	0	1	2	0	3	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	14
5:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	7
Grand Total	1	1	2	0	4	0	12	0	0	12	0	0	0	0	0	0	5	0	0	5	21
Approach %	25.0	25.0	50.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	4.8	4.8	9.5	0.0	19.0	0.0	57.1	0.0	0.0	57.1	0.0	0.0	0.0	0.0	0.0	0.0	23.8	0.0	0.0	23.8	
Exiting Leg Total					0					7					1					13	21

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	5
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	1	2	0	3	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	14
% Approach Total	0.0	33.3	66.7	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.250	0.500	0.000	0.375	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.700
Entering Leg	0	1	2	0	3	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	14
Exiting Leg					0					7					1					6	14
Total					3					13					1					11	28

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Single-Unit Trucks**

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	2	0	0	2	15
4:15 PM	1	2	0	0	3	1	10	2	0	13	0	0	0	0	0	0	1	0	0	1	17
4:30 PM	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	8
4:45 PM	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	0	2	0	0	2	10
Total	1	2	1	0	4	2	35	2	0	39	0	0	1	0	1	0	6	0	0	6	50
5:00 PM	0	1	1	0	2	0	5	0	0	5	0	1	0	0	1	1	1	0	0	2	10
5:15 PM	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	0	2	0	0	2	9
5:30 PM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
5:45 PM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	7
Total	0	1	1	0	2	0	22	1	0	23	0	1	0	0	1	1	8	0	0	9	35
Grand Total	1	3	2	0	6	2	57	3	0	62	0	1	1	0	2	1	14	0	0	15	85
Approach %	16.7	50.0	33.3	0.0		3.2	91.9	4.8	0.0		0.0	50.0	50.0	0.0		6.7	93.3	0.0	0.0		
Total %	1.2	3.5	2.4	0.0	7.1	2.4	67.1	3.5	0.0	72.9	0.0	1.2	1.2	0.0	2.4	1.2	16.5	0.0	0.0	17.6	
Exiting Leg Total					3					16					7					59	85

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	2	0	0	2	15
4:15 PM	1	2	0	0	3	1	10	2	0	13	0	0	0	0	0	0	1	0	0	1	17
4:30 PM	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	8
4:45 PM	0	0	0	0	0	1	6	0	0	7	0	0	1	0	1	0	2	0	0	2	10
Total Volume	1	2	1	0	4	2	35	2	0	39	0	0	1	0	1	0	6	0	0	6	50
% Approach Total	25.0	50.0	25.0	0.0		5.1	89.7	5.1	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.250	0.250	0.250	0.000	0.333	0.500	0.673	0.250	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.000	0.750	0.000	0.000	0.750	0.735
Entering Leg	1	2	1	0	4	2	35	2	0	39	0	0	1	0	1	0	6	0	0	6	50
Exiting Leg					2					7					4					37	50
Total					6					46					5					43	100

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Articulated Trucks**

	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Grand Total	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	5	0	0	5	13
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	61.5	0.0	0.0	61.5	0.0	0.0	0.0	0.0	0.0	0.0	38.5	0.0	0.0	38.5	
Exiting Leg Total					0					5					0					8	13

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Woodward Street					Boylston Street (Route 9)					Elliot Street					Boylston Street (Route 9)					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.375	0.667
Entering Leg	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
Exiting Leg					0					3					0					5	8
Total					0					8					0					8	16

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class: **Bicycles (on Roadway and Crosswalks)**

	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	3
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		50.0	0.0	0.0	0.0	0.0	50.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	33.3	66.7	0.0	33.3	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							2							1							0							0	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Exiting Leg							2							0							1							0	2
Total							2							1							1							0	4

PDI File #: **207727 A**
Location: **N: Woodward Street S: Elliot Street**
Location: **E: Boylston Street (Route 9) W: Boylston Street (Route 9)**
City, State: **Newton, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	0	0	8	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Grand Total	0	0	0	0	0	0	0	0	0	0	0	11	7	18	0	0	0	0	0	0	0	0	0	0	0	1	0	1	19
Approach %	0	0	0	0	0	0		0	0	0	0	61.1	38.9		0	0	0	0	0	0		0	0	0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	57.9	36.8	94.7	0	0	0	0	0	0	0	0	0	0	0	5.26	0	5.26	
Exiting Leg Total							0							18							0							1	19

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Woodward Street							Boylston Street (Route 9)							Elliot Street							Boylston Street (Route 9)							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	0	0	0	0	0	0	0	8	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	61.5	38.5		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.625	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	8	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Exiting Leg							0							13							0							0	13
Total							0							26							0							0	26

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Cars and Heavy Vehicles (Combined)**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	15	0	0	15	12	195	0	207	393	0	0	393	615
7:15 AM	7	0	0	7	6	245	0	251	474	0	0	474	732
7:30 AM	9	0	0	9	17	297	0	314	414	0	0	414	737
7:45 AM	16	0	0	16	17	293	0	310	449	0	0	449	775
Total	47	0	0	47	52	1030	0	1082	1730	0	0	1730	2859
8:00 AM	17	0	0	17	16	295	0	311	389	0	0	389	717
8:15 AM	15	0	0	15	12	288	0	300	439	0	0	439	754
8:30 AM	17	0	0	17	23	341	0	364	429	0	0	429	810
8:45 AM	14	0	0	14	15	350	0	365	401	0	0	401	780
Total	63	0	0	63	66	1274	0	1340	1658	0	0	1658	3061
Grand Total	110	0	0	110	118	2304	0	2422	3388	0	0	3388	5920
Approach %	100.0	0.0	0.0		4.9	95.1	0.0		100.0	0.0	0.0		
Total %	1.9	0.0	0.0	1.9	2.0	38.9	0.0	40.9	57.2	0.0	0.0	57.2	
Exiting Leg Total				118				3388				2414	5920
Cars	110	0	0	110	118	2212	0	2330	3266	0	0	3266	5706
% Cars	100.0	0.0	0.0	100.0	100.0	96.0	0.0	96.2	96.4	0.0	0.0	96.4	96.4
Exiting Leg Total				118				3266				2322	5706
Heavy Vehicles	0	0	0	0	0	92	0	92	122	0	0	122	214
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	4.0	0.0	3.8	3.6	0.0	0.0	3.6	3.6
Exiting Leg Total				0				122				92	214

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
8:00 AM	17	0	0	17	16	295	0	311	389	0	0	389	717
8:15 AM	15	0	0	15	12	288	0	300	439	0	0	439	754
8:30 AM	17	0	0	17	23	341	0	364	429	0	0	429	810
8:45 AM	14	0	0	14	15	350	0	365	401	0	0	401	780
Total Volume	63	0	0	63	66	1274	0	1340	1658	0	0	1658	3061
% Approach Total	100.0	0.0	0.0		4.9	95.1	0.0		100.0	0.0	0.0		
PHF	0.926	0.000	0.000	0.926	0.717	0.910	0.000	0.918	0.944	0.000	0.000	0.944	0.945
Cars	63	0	0	63	66	1222	0	1288	1598	0	0	1598	2949
Cars %	100.0	0.0	0.0	100.0	100.0	95.9	0.0	96.1	96.4	0.0	0.0	96.4	96.3
Heavy Vehicles	0	0	0	0	0	52	0	52	60	0	0	60	112
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	4.1	0.0	3.9	3.6	0.0	0.0	3.6	3.7
Cars Enter Leg	63	0	0	63	66	1222	0	1288	1598	0	0	1598	2949
Heavy Enter Leg	0	0	0	0	0	52	0	52	60	0	0	60	112
Total Entering Leg	63	0	0	63	66	1274	0	1340	1658	0	0	1658	3061
Cars Exiting Leg				66				1598				1285	2949
Heavy Exiting Leg				0				60				52	112
Total Exiting Leg				66				1658				1337	3061

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Cars**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	15	0	0	15	12	187	0	199	383	0	0	383	597
7:15 AM	7	0	0	7	6	234	0	240	453	0	0	453	700
7:30 AM	9	0	0	9	17	282	0	299	401	0	0	401	709
7:45 AM	16	0	0	16	17	287	0	304	431	0	0	431	751
Total	47	0	0	47	52	990	0	1042	1668	0	0	1668	2757
8:00 AM	17	0	0	17	16	280	0	296	371	0	0	371	684
8:15 AM	15	0	0	15	12	273	0	285	427	0	0	427	727
8:30 AM	17	0	0	17	23	328	0	351	413	0	0	413	781
8:45 AM	14	0	0	14	15	341	0	356	387	0	0	387	757
Total	63	0	0	63	66	1222	0	1288	1598	0	0	1598	2949
Grand Total	110	0	0	110	118	2212	0	2330	3266	0	0	3266	5706
Approach %	100.0	0.0	0.0		5.1	94.9	0.0		100.0	0.0	0.0		
Total %	1.9	0.0	0.0	1.9	2.1	38.8	0.0	40.8	57.2	0.0	0.0	57.2	
Exiting Leg Total				118				3266				2322	5706

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
8:00 AM	17	0	0	17	16	280	0	296	371	0	0	371	684
8:15 AM	15	0	0	15	12	273	0	285	427	0	0	427	727
8:30 AM	17	0	0	17	23	328	0	351	413	0	0	413	781
8:45 AM	14	0	0	14	15	341	0	356	387	0	0	387	757
Total Volume	63	0	0	63	66	1222	0	1288	1598	0	0	1598	2949
% Approach Total	100.0	0.0	0.0		5.1	94.9	0.0		100.0	0.0	0.0		
PHF	0.926	0.000	0.000	0.926	0.717	0.896	0.000	0.904	0.936	0.000	0.000	0.936	0.944
Entering Leg	63	0	0	63	66	1222	0	1288	1598	0	0	1598	2949
Exiting Leg				66				1598				1285	2949
Total				129				2886				2883	5898

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	8	0	8	10	0	0	10	18
7:15 AM	0	0	0	0	0	11	0	11	21	0	0	21	32
7:30 AM	0	0	0	0	0	15	0	15	13	0	0	13	28
7:45 AM	0	0	0	0	0	6	0	6	18	0	0	18	24
Total	0	0	0	0	0	40	0	40	62	0	0	62	102
8:00 AM	0	0	0	0	0	15	0	15	18	0	0	18	33
8:15 AM	0	0	0	0	0	15	0	15	12	0	0	12	27
8:30 AM	0	0	0	0	0	13	0	13	16	0	0	16	29
8:45 AM	0	0	0	0	0	9	0	9	14	0	0	14	23
Total	0	0	0	0	0	52	0	52	60	0	0	60	112
Grand Total	0	0	0	0	0	92	0	92	122	0	0	122	214
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	43.0	0.0	43.0	57.0	0.0	0.0	57.0	
Exiting Leg Total				0				122				92	214
Buses	0	0	0	0	0	16	0	16	11	0	0	11	27
% Buses	0.0	0.0	0.0	0.0	0.0	17.4	0.0	17.4	9.0	0.0	0.0	9.0	12.6
Exiting Leg Total				0				11				16	27
Single-Unit Trucks	0	0	0	0	0	60	0	60	82	0	0	82	142
% Single-Unit	0.0	0.0	0.0	0.0	0.0	65.2	0.0	65.2	67.2	0.0	0.0	67.2	66.4
Exiting Leg Total				0				82				60	142
Articulated Trucks	0	0	0	0	0	16	0	16	29	0	0	29	45
% Articulated	0.0	0.0	0.0	0.0	0.0	17.4	0.0	17.4	23.8	0.0	0.0	23.8	21.0
Exiting Leg Total				0				29				16	45

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	11	0	11	21	0	0	21	32
7:30 AM	0	0	0	0	0	15	0	15	13	0	0	13	28
7:45 AM	0	0	0	0	0	6	0	6	18	0	0	18	24
8:00 AM	0	0	0	0	0	15	0	15	18	0	0	18	33
Total Volume	0	0	0	0	0	47	0	47	70	0	0	70	117
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.783	0.000	0.783	0.833	0.000	0.000	0.833	0.886
Buses	0	0	0	0	0	11	0	11	7	0	0	7	18
Buses %	0.0	0.0	0.0	0.0	0.0	23.4	0.0	23.4	10.0	0.0	0.0	10.0	15.4
Single-Unit Trucks	0	0	0	0	0	31	0	31	45	0	0	45	76
Single-Unit %	0.0	0.0	0.0	0.0	0.0	66.0	0.0	66.0	64.3	0.0	0.0	64.3	65.0
Articulated Trucks	0	0	0	0	0	5	0	5	18	0	0	18	23
Articulated %	0.0	0.0	0.0	0.0	0.0	10.6	0.0	10.6	25.7	0.0	0.0	25.7	19.7
Buses	0	0	0	0	0	11	0	11	7	0	0	7	18
Single-Unit Trucks	0	0	0	0	0	31	0	31	45	0	0	45	76
Articulated Trucks	0	0	0	0	0	5	0	5	18	0	0	18	23
Total Entering Leg	0	0	0	0	0	47	0	47	70	0	0	70	117
Buses				0				7				11	18
Single-Unit Trucks				0				45				31	76
Articulated Trucks				0				18				5	23
Total Exiting Leg				0				70				47	117

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Buses**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
7:15 AM	0	0	0	0	0	4	0	4	1	0	0	1	5
7:30 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
7:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	7	0	7	3	0	0	3	10
8:00 AM	0	0	0	0	0	5	0	5	5	0	0	5	10
8:15 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
8:30 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
8:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	9	0	9	8	0	0	8	17
Grand Total	0	0	0	0	0	16	0	16	11	0	0	11	27
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	59.3	0.0	59.3	40.7	0.0	0.0	40.7	
Exiting Leg Total				0				11				16	27

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	4	0	4	1	0	0	1	5
7:30 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
7:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	5	0	5	5	0	0	5	10
Total Volume	0	0	0	0	0	11	0	11	7	0	0	7	18
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.550	0.000	0.550	0.350	0.000	0.000	0.350	0.450
Entering Leg	0	0	0	0	0	11	0	11	7	0	0	7	18
Exiting Leg				0				7				11	18
Total				0				18				18	36

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Single-Unit Trucks**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	7	0	7	4	0	0	4	11
7:15 AM	0	0	0	0	0	7	0	7	11	0	0	11	18
7:30 AM	0	0	0	0	0	12	0	12	8	0	0	8	20
7:45 AM	0	0	0	0	0	3	0	3	16	0	0	16	19
Total	0	0	0	0	0	29	0	29	39	0	0	39	68
8:00 AM	0	0	0	0	0	9	0	9	10	0	0	10	19
8:15 AM	0	0	0	0	0	8	0	8	9	0	0	9	17
8:30 AM	0	0	0	0	0	7	0	7	13	0	0	13	20
8:45 AM	0	0	0	0	0	7	0	7	11	0	0	11	18
Total	0	0	0	0	0	31	0	31	43	0	0	43	74
Grand Total	0	0	0	0	0	60	0	60	82	0	0	82	142
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	42.3	0.0	42.3	57.7	0.0	0.0	57.7	
Exiting Leg Total				0				82				60	142

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:15 AM	0	0	0	0	0	7	0	7	11	0	0	11	18
7:30 AM	0	0	0	0	0	12	0	12	8	0	0	8	20
7:45 AM	0	0	0	0	0	3	0	3	16	0	0	16	19
8:00 AM	0	0	0	0	0	9	0	9	10	0	0	10	19
Total Volume	0	0	0	0	0	31	0	31	45	0	0	45	76
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.646	0.000	0.646	0.703	0.000	0.000	0.703	0.950
Entering Leg	0	0	0	0	0	31	0	31	45	0	0	45	76
Exiting Leg				0				45				31	76
Total				0				76				76	152

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Articulated Trucks**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	5	0	0	5	5
7:15 AM	0	0	0	0	0	0	0	0	9	0	0	9	9
7:30 AM	0	0	0	0	0	2	0	2	4	0	0	4	6
7:45 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
Total	0	0	0	0	0	4	0	4	20	0	0	20	24
8:00 AM	0	0	0	0	0	1	0	1	3	0	0	3	4
8:15 AM	0	0	0	0	0	5	0	5	1	0	0	1	6
8:30 AM	0	0	0	0	0	5	0	5	2	0	0	2	7
8:45 AM	0	0	0	0	0	1	0	1	3	0	0	3	4
Total	0	0	0	0	0	12	0	12	9	0	0	9	21
Grand Total	0	0	0	0	0	16	0	16	29	0	0	29	45
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	35.6	0.0	35.6	64.4	0.0	0.0	64.4	
Exiting Leg Total				0				29				16	45

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	5	0	0	5	5
7:15 AM	0	0	0	0	0	0	0	0	9	0	0	9	9
7:30 AM	0	0	0	0	0	2	0	2	4	0	0	4	6
7:45 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
Total Volume	0	0	0	0	0	4	0	4	20	0	0	20	24
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.556	0.000	0.000	0.556	0.667
Entering Leg	0	0	0	0	0	4	0	4	20	0	0	20	24
Exiting Leg				0				20				4	24
Total				0				24				24	48

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

Bicycles (on Roadway and Crosswalks)

	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class: **Pedestrians**

	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0	0	0	100	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						1						0						0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg						1						0						0	1
Total						2						0						0	2

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class: **Cars and Heavy Vehicles (Combined)**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	8	0	0	8	8	450	0	458	382	0	0	382	848
4:15 PM	12	0	0	12	9	443	0	452	385	0	0	385	849
4:30 PM	17	0	0	17	10	469	0	479	403	0	0	403	899
4:45 PM	6	0	0	6	2	477	0	479	413	0	0	413	898
Total	43	0	0	43	29	1839	0	1868	1583	0	0	1583	3494
5:00 PM	5	0	0	5	6	436	0	442	395	0	0	395	842
5:15 PM	4	0	0	4	4	462	0	466	416	0	0	416	886
5:30 PM	5	0	0	5	5	456	0	461	367	0	0	367	833
5:45 PM	5	0	0	5	6	427	0	433	374	0	0	374	812
Total	19	0	0	19	21	1781	0	1802	1552	0	0	1552	3373
Grand Total	62	0	0	62	50	3620	0	3670	3135	0	0	3135	6867
Approach %	100.0	0.0	0.0		1.4	98.6	0.0		100.0	0.0	0.0		
Total %	0.9	0.0	0.0	0.9	0.7	52.7	0.0	53.4	45.7	0.0	0.0	45.7	
Exiting Leg Total				50				3135				3682	6867
Cars	62	0	0	62	50	3545	0	3595	3102	0	0	3102	6759
% Cars	100.0	0.0	0.0	100.0	100.0	97.9	0.0	98.0	98.9	0.0	0.0	98.9	98.4
Exiting Leg Total				50				3102				3607	6759
Heavy Vehicles	0	0	0	0	0	75	0	75	33	0	0	33	108
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.0	1.1	0.0	0.0	1.1	1.6
Exiting Leg Total				0				33				75	108

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:30 PM	17	0	0	17	10	469	0	479	403	0	0	403	899
4:45 PM	6	0	0	6	2	477	0	479	413	0	0	413	898
5:00 PM	5	0	0	5	6	436	0	442	395	0	0	395	842
5:15 PM	4	0	0	4	4	462	0	466	416	0	0	416	886
Total Volume	32	0	0	32	22	1844	0	1866	1627	0	0	1627	3525
% Approach Total	100.0	0.0	0.0		1.2	98.8	0.0		100.0	0.0	0.0		
PHF	0.471	0.000	0.000	0.471	0.550	0.966	0.000	0.974	0.978	0.000	0.000	0.978	0.980
Cars	32	0	0	32	22	1805	0	1827	1609	0	0	1609	3468
Cars %	100.0	0.0	0.0	100.0	100.0	97.9	0.0	97.9	98.9	0.0	0.0	98.9	98.4
Heavy Vehicles	0	0	0	0	0	39	0	39	18	0	0	18	57
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1	1.1	0.0	0.0	1.1	1.6
Cars Enter Leg	32	0	0	32	22	1805	0	1827	1609	0	0	1609	3468
Heavy Enter Leg	0	0	0	0	0	39	0	39	18	0	0	18	57
Total Entering Leg	32	0	0	32	22	1844	0	1866	1627	0	0	1627	3525
Cars Exiting Leg				22				1609				1837	3468
Heavy Exiting Leg				0				18				39	57
Total Exiting Leg				22				1627				1876	3525

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class: **Cars**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	8	0	0	8	8	436	0	444	375	0	0	375	827
4:15 PM	12	0	0	12	9	436	0	445	379	0	0	379	836
4:30 PM	17	0	0	17	10	460	0	470	400	0	0	400	887
4:45 PM	6	0	0	6	2	468	0	470	406	0	0	406	882
Total	43	0	0	43	29	1800	0	1829	1560	0	0	1560	3432
5:00 PM	5	0	0	5	6	425	0	431	391	0	0	391	827
5:15 PM	4	0	0	4	4	452	0	456	412	0	0	412	872
5:30 PM	5	0	0	5	5	445	0	450	366	0	0	366	821
5:45 PM	5	0	0	5	6	423	0	429	373	0	0	373	807
Total	19	0	0	19	21	1745	0	1766	1542	0	0	1542	3327
Grand Total	62	0	0	62	50	3545	0	3595	3102	0	0	3102	6759
Approach %	100.0	0.0	0.0		1.4	98.6	0.0		100.0	0.0	0.0		
Total %	0.9	0.0	0.0	0.9	0.7	52.4	0.0	53.2	45.9	0.0	0.0	45.9	
Exiting Leg Total				50				3102				3607	6759

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:30 PM	17	0	0	17	10	460	0	470	400	0	0	400	887
4:45 PM	6	0	0	6	2	468	0	470	406	0	0	406	882
5:00 PM	5	0	0	5	6	425	0	431	391	0	0	391	827
5:15 PM	4	0	0	4	4	452	0	456	412	0	0	412	872
Total Volume	32	0	0	32	22	1805	0	1827	1609	0	0	1609	3468
% Approach Total	100.0	0.0	0.0		1.2	98.8	0.0		100.0	0.0	0.0		
PHF	0.471	0.000	0.000	0.471	0.550	0.964	0.000	0.972	0.976	0.000	0.000	0.976	0.977
Entering Leg	32	0	0	32	22	1805	0	1827	1609	0	0	1609	3468
Exiting Leg				22				1609				1837	3468
Total				54				3436				3446	6936

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	14	0	14	7	0	0	7	21
4:15 PM	0	0	0	0	0	7	0	7	6	0	0	6	13
4:30 PM	0	0	0	0	0	9	0	9	3	0	0	3	12
4:45 PM	0	0	0	0	0	9	0	9	7	0	0	7	16
Total	0	0	0	0	0	39	0	39	23	0	0	23	62
5:00 PM	0	0	0	0	0	11	0	11	4	0	0	4	15
5:15 PM	0	0	0	0	0	10	0	10	4	0	0	4	14
5:30 PM	0	0	0	0	0	11	0	11	1	0	0	1	12
5:45 PM	0	0	0	0	0	4	0	4	1	0	0	1	5
Total	0	0	0	0	0	36	0	36	10	0	0	10	46
Grand Total	0	0	0	0	0	75	0	75	33	0	0	33	108
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	69.4	0.0	69.4	30.6	0.0	0.0	30.6	
Exiting Leg Total				0				33				75	108
Buses	0	0	0	0	0	2	0	2	3	0	0	3	5
% Buses	0.0	0.0	0.0	0.0	0.0	2.7	0.0	2.7	9.1	0.0	0.0	9.1	4.6
Exiting Leg Total				0				3				2	5
Single-Unit Trucks	0	0	0	0	0	63	0	63	28	0	0	28	91
% Single-Unit	0.0	0.0	0.0	0.0	0.0	84.0	0.0	84.0	84.8	0.0	0.0	84.8	84.3
Exiting Leg Total				0				28				63	91
Articulated Trucks	0	0	0	0	0	10	0	10	2	0	0	2	12
% Articulated	0.0	0.0	0.0	0.0	0.0	13.3	0.0	13.3	6.1	0.0	0.0	6.1	11.1
Exiting Leg Total				0				2				10	12

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	14	0	14	7	0	0	7	21
4:15 PM	0	0	0	0	0	7	0	7	6	0	0	6	13
4:30 PM	0	0	0	0	0	9	0	9	3	0	0	3	12
4:45 PM	0	0	0	0	0	9	0	9	7	0	0	7	16
Total Volume	0	0	0	0	0	39	0	39	23	0	0	23	62
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.696	0.000	0.696	0.821	0.000	0.000	0.821	0.738
Buses	0	0	0	0	0	2	0	2	2	0	0	2	4
Buses %	0.0	0.0	0.0	0.0	0.0	5.1	0.0	5.1	8.7	0.0	0.0	8.7	6.5
Single-Unit Trucks	0	0	0	0	0	32	0	32	19	0	0	19	51
Single-Unit %	0.0	0.0	0.0	0.0	0.0	82.1	0.0	82.1	82.6	0.0	0.0	82.6	82.3
Articulated Trucks	0	0	0	0	0	5	0	5	2	0	0	2	7
Articulated %	0.0	0.0	0.0	0.0	0.0	12.8	0.0	12.8	8.7	0.0	0.0	8.7	11.3
Buses	0	0	0	0	0	2	0	2	2	0	0	2	4
Single-Unit Trucks	0	0	0	0	0	32	0	32	19	0	0	19	51
Articulated Trucks	0	0	0	0	0	5	0	5	2	0	0	2	7
Total Entering Leg	0	0	0	0	0	39	0	39	23	0	0	23	62
Buses				0				2				2	4
Single-Unit Trucks				0				19				32	51
Articulated Trucks				0				2				5	7
Total Exiting Leg				0				23				39	62

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class: **Buses**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	2	0	0	2	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	0	0	1	0	0	1	1
Grand Total	0	0	0	0	0	2	0	2	3	0	0	3	5
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0	60.0	0.0	0.0	60.0	
Exiting Leg Total				0				3				2	5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	2	0	0	2	4
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.500	0.000	0.000	0.500	0.500
Entering Leg	0	0	0	0	0	2	0	2	2	0	0	2	4
Exiting Leg				0				2				2	4
Total				0				4				4	8

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**

Class: **Single-Unit Trucks**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	13	0	13	7	0	0	7	20
4:15 PM	0	0	0	0	0	4	0	4	4	0	0	4	8
4:30 PM	0	0	0	0	0	7	0	7	2	0	0	2	9
4:45 PM	0	0	0	0	0	8	0	8	6	0	0	6	14
Total	0	0	0	0	0	32	0	32	19	0	0	19	51
5:00 PM	0	0	0	0	0	9	0	9	4	0	0	4	13
5:15 PM	0	0	0	0	0	8	0	8	4	0	0	4	12
5:30 PM	0	0	0	0	0	10	0	10	1	0	0	1	11
5:45 PM	0	0	0	0	0	4	0	4	0	0	0	0	4
Total	0	0	0	0	0	31	0	31	9	0	0	9	40
Grand Total	0	0	0	0	0	63	0	63	28	0	0	28	91
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	69.2	0.0	69.2	30.8	0.0	0.0	30.8	
Exiting Leg Total				0				28				63	91

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	13	0	13	7	0	0	7	20
4:15 PM	0	0	0	0	0	4	0	4	4	0	0	4	8
4:30 PM	0	0	0	0	0	7	0	7	2	0	0	2	9
4:45 PM	0	0	0	0	0	8	0	8	6	0	0	6	14
Total Volume	0	0	0	0	0	32	0	32	19	0	0	19	51
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.615	0.000	0.615	0.679	0.000	0.000	0.679	0.638
Entering Leg	0	0	0	0	0	32	0	32	19	0	0	19	51
Exiting Leg				0				19				32	51
Total				0				51				51	102

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class: **Articulated Trucks**

	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	0	0	0	0	5	0	5	2	0	0	2	7
5:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
5:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
5:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	5	0	5	0	0	0	0	5
Grand Total	0	0	0	0	0	10	0	10	2	0	0	2	12
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	83.3	0.0	83.3	16.7	0.0	0.0	16.7	
Exiting Leg Total				0				2				10	12

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Starbucks Exit				Worcester Street (Route 9)				Worcester Street (Route 9)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:15 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
5:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
Total Volume	0	0	0	0	0	7	0	7	2	0	0	2	9
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.875	0.500	0.000	0.000	0.500	0.750
Entering Leg	0	0	0	0	0	7	0	7	2	0	0	2	9
Exiting Leg				0				2				7	9
Total				0				9				9	18

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

Bicycles (on Roadway and Crosswalks)

	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **207727 C**
Location: **N: Starbucks Exit**
Location: **E: Worcester Street (Route 9) W: Worcester Street (Route 9)**
City, State: **Natick, MA**
Client: **HSH/ M. White**
Site Code: **TBA**
Count Date: **Thursday, December 3, 2020**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class: **Pedestrians**

	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	0	0	0	100	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						2						0						0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Starbucks Exit						Worcester Street (Route 9)						Worcester Street (Route 9)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg						2						0						0	2
Total						4						0						0	4

1021 Boylston Street - Coffee Shop

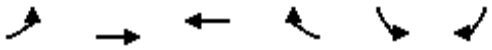
Trip Generation Assessment

HOWARD STEIN HUDSON

13-May-2021

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Pass-By Vehicle-Trips Share	Pass-By Vehicle Trips	Non-Primary Vehicle Trips	Primary Vehicle-Trips	Total Trips
Daily Peak Hour										
Coffee/Donut Shop with Drive Through Window[1]	1.536	Total		820.380	1,260	89%	1,122	1,122	**138**	**1,260**
		In	50%	410.190	630	89%	561	561	**69**	**630**
	SF	Out	50%	410.190	630	89%	561	561	**69**	**630**
Total		Total			**1,260**		**1,122**	**1,122**	**138**	**1,260**
		In			**630**		**561**	**561**	**69**	**630**
		Out			**630**		**561**	**561**	**69**	**630**
AM Peak Hour										
Coffee/Donut Shop with Drive Through Window[1]	1532	Total		0.15	230	89%	205	205	**25**	**230**
	adj. st	In	51%	0.077	117	89%	104	104	**13**	**117**
	traffic	Out	49%	0.074	113	89%	101	101	**12**	**113**
Total		Total			**230**		**205**	**205**	**25**	**230**
		In			**117**		**104**	**104**	**13**	**117**
		Out			**113**		**101**	**101**	**12**	**113**
PM Peak Hour										
Coffee/Donut Shop with Drive Through Window[1]	1919	Total		0.05	96	89%	86	86	**10**	**96**
	adj. st	In	51%	0.026	49	89%	44	44	**5**	**49**
	traffic	Out	49%	0.025	47	89%	42	42	**5**	**47**
Total		Total			**96**		**86**	**86**	**10**	**96**
		In			**49**		**44**	**44**	**5**	**49**
		Out			**47**		**42**	**42**	**5**	**47**

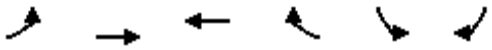
1. ITE Trip Generation Manual, 10th Edition, LUC 937 (Coffee/Donut Shop with Drive-Through Window), average rate



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1917	1955	0	0	0
Future Volume (Veh/h)	0	1917	1955	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2084	2125	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2125				2820	1062
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2125				2820	1062
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	253				14	219

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	695	695	695	1417	708
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.41	0.83	0.42
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

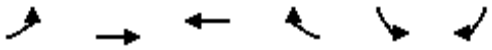
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	1917	1955	0	0	0
Future Volume (Veh/h)	0	1917	1955	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2084	2125	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2125				3167	1062
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2125				3167	1062
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	253				8	219

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1042	1042	1062	1062	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.61	0.63	0.63	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

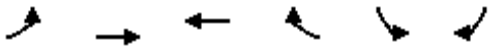
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1941	2002	0	0	0
Future Volume (Veh/h)	0	1941	2002	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2110	2176	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2176				2879	1088
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2176				2879	1088
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	241				13	211

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	703	703	703	1451	725
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.41	0.85	0.43
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

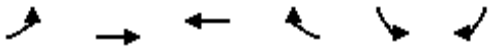
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	1941	2002	0	0	0
Future Volume (Veh/h)	0	1941	2002	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2110	2176	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2176				3231	1088
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2176				3231	1088
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	241				7	211

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1055	1055	1088	1088	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.62	0.62	0.64	0.64	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

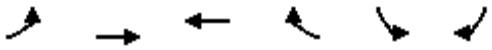
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2001	2036	0	0	0
Future Volume (Veh/h)	0	2001	2036	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2175	2213	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2213				2938	1106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2213				2938	1106
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	233				12	205

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	725	725	725	1475	738
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.43	0.43	0.87	0.43
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

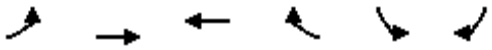
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	2001	2036	0	0	0
Future Volume (Veh/h)	0	2001	2036	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2175	2213	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2213				3300	1106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2213				3300	1106
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	233				6	205

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1088	1088	1106	1106	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.64	0.64	0.65	0.65	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

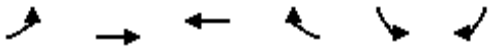
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2051	2120	0	0	0
Future Volume (Veh/h)	0	2051	2120	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2229	2304	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2304				3047	1152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2304				3047	1152
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	215				10	191

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	743	743	743	1536	768
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.44	0.44	0.44	0.90	0.45
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

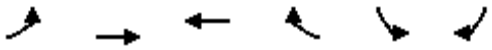
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	2051	2120	0	0	0
Future Volume (Veh/h)	0	2051	2120	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2229	2304	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2304				3418	1152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2304				3418	1152
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	215				5	191

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1114	1114	1152	1152	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.66	0.66	0.68	0.68	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

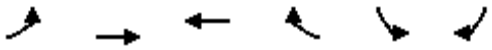
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2001	1902	150	0	0
Future Volume (Veh/h)	0	2001	1902	150	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2175	2067	163	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2230				2874	1115
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2230				2874	1115
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	230				13	202

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	725	725	725	1378	852
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	163
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.43	0.43	0.81	0.50
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

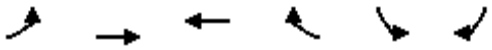
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	2001	1902	0	0	144
Future Volume (Veh/h)	0	2001	1902	0	0	144
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2175	2067	0	0	157
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2067				3154	1034
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2067				3154	1034
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	32
cM capacity (veh/h)	266				8	229

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1088	1088	1034	1034	157
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	157
cSH	1700	1700	1700	1700	229
Volume to Capacity	0.64	0.64	0.61	0.61	0.68
Queue Length 95th (ft)	0	0	0	0	110
Control Delay (s)	0.0	0.0	0.0	0.0	49.1
Lane LOS					E
Approach Delay (s)	0.0		0.0		49.1
Approach LOS					E

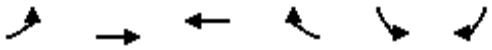
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2051	2075	51	0	0
Future Volume (Veh/h)	0	2051	2075	51	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2229	2255	55	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2310				3026	1155
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2310				3026	1155
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	214				10	190

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	743	743	743	1503	807
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	55
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.44	0.44	0.44	0.88	0.47
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (veh/h)	0	2051	2075	0	0	49
Future Volume (Veh/h)	0	2051	2075	0	0	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2229	2255	0	0	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2255				3370	1128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2255				3370	1128
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	73
cM capacity (veh/h)	225				6	198

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1114	1114	1128	1128	53
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	53
cSH	1700	1700	1700	1700	198
Volume to Capacity	0.66	0.66	0.66	0.66	0.27
Queue Length 95th (ft)	0	0	0	0	26
Control Delay (s)	0.0	0.0	0.0	0.0	29.6
Lane LOS					D
Approach Delay (s)	0.0		0.0		29.6
Approach LOS					D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

HOWARD STEIN HUDSON

11 Beacon Street, Suite 1010
Boston, Massachusetts 02108
617.482.7080

www.hshassoc.com