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***Traffic Impact and Access Study***  
***Proposed R.J. Devereaux Development***

***Northborough, MA***

*Prepared for*  
***Paula Devereaux***  
***R.J. Devereaux Corp.***

***January 2022***

*Prepared by*



**GREEN INTERNATIONAL AFFILIATES, INC.**  
TRANSPORTATION | STRUCTURAL | WATER RESOURCES | CIVIL/SITE



## Traffic Impact & Access Study

**Proposed R.J. Devereaux Development  
200 Bartlett Street  
Northborough, MA**

Prepared for  
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R.J. Devereaux Corp.  
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Framingham, MA 01701**

**January 2022**

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## 1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This report describes the potential traffic impacts on the adjacent roadways and nearby intersections as a result of the proposed R.J. Devereaux development project located in Northborough, MA. The development involves the reuse of two buildings on a site that will house offices, repair facilities and some storage for the R.J. Devereaux company that provides construction services for the gas line utilities. The expected auto repair service on the site is expected to remain. Access to this proposed site will be provided via two site drives along Bartlett Street. The business normal operating hours are approximately 7:30 AM – 3:30 PM. Intersection capacity analyses were completed at the study intersections for the existing, future No-Build, and future Build conditions. Figure 1 illustrated the project location.

The analysis and evaluation in this report includes traffic volumes, safety data and review, and an analysis of the roadway/site access interface. The guidelines of the Massachusetts Department of Transportation (MassDOT) and the Institute of Transportation Engineers (ITE) were used for completing this traffic impact and access study. The report's content contains descriptions of existing characteristics of the abutting roadway network, current traffic conditions, estimated traffic impacts and access/egress characteristics of the proposed development.

### 1.1 Future Conditions

For this study, the future year of 2029 was chosen based on the current MassDOT analysis guidelines. The evaluation of future conditions involved comparing No-Build and Build conditions. The proposed development is expected to generate approximately 143 total daily trips along with 0 and 6 net new vehicle trips during the weekday AM and PM peak hours, respectively. The trips were distributed across the study area network based on existing traffic patterns.

### 1.2 Conclusions and Recommendations

The analysis indicated the following:

- The proposed project is a generator of 0 and 6 vehicle trips during the AM and PM peak hours, respectively, and 143 vehicle trips through the course of a weekday.
- The unsignalized intersection of Bartlett Street/Lyman Street, has a crash rate of 0.25 MEV, well below the 0.61 MEV average for District 3.
- There are no major safety issues currently exhibited at the study intersections based on review of historical crash records.
- The analysis showed that at the proposed site drives, traffic can enter and exit with acceptable level of service and low delays.
- Minimum safe stopping sight distance requirements at the proposed site drive intersections with Bartlett Street are satisfied.
- It is noted that the proposed development has little to no impact on the intersection of Lyman Street at Bartlett Street. While the intersection operates at LOS E/F, the proposed development only adds five vehicle trips and does not affect the level of service or delay between the No-Build and Build condition.

### 1.2.1 Recommendations

While the analysis shows that the proposed project can be accommodated within the study area network, several recommendations have been made to enhance the transportation system. The proposed actions are as follows:

- Any proposed landscaping should be low enough and/or set back sufficiently so as not to create any sight distance constraints at the proposed site drives.
- Roadside vegetation within the right-of-way should be selectively cleared and trimmed to improve existing sight distance at the proposed site drives.
- Provide appropriate pavement markings and associated STOP bars marked at the site access driveways.
- All regulatory and warning signs to be installed shall be consistent with current Manual on Uniform Traffic Control Devices (MUTCD) standards and guidelines.





**LEGEND:**

SCALE: 1" = 300'

● = STUDY INTERSECTION

▨ = PROJECT LOCATION

**Figure 1**  
**Project Location**  
**R.J. Devereaux Development**  
**Northborough, MA**

## 2.0 EXISTING TRAFFIC CONDITIONS

The following sections describe the existing transportation system in terms of physical and operational characteristics. The selection of the study area took into account the location and type of project and focused on the evaluation of the roadways and intersections in the vicinity of the site that are anticipated to be most impacted by the proposed development project.

### 2.1 Study Roadway Network

The study focused on the roadway network in the vicinity of the proposed project with an emphasis on the following intersection:

- Lyman Street at Bartlett Street

As part of this study, a field reconnaissance was conducted to verify the physical and geometric layout of the study intersections and roadways and to observe traffic operations in the study area. A description of the study roadways serving the project site is as follows:

#### 2.1.1 Lyman Street at Bartlett Street

Bartlett Street is functionally classified as a Major Arterial and is owned and maintained by the Town of Northborough. It is generally oriented in the east to west direction. Throughout the study area, Bartlett Street operates as a two-way roadway accommodating two lanes of traffic. The total width of the roadway is approximately 42 feet and has 15 to 17.5-foot-wide lanes with 4 to 6-foot-wide shoulders. There are no sidewalks or bicycle accommodations along Bartlett Street within the study area. The surrounding land use(s) is primary commercial with some residential areas. The speed limit for Bartlett Street is 45 miles per hour (mph) within the study area.



Lyman Street is owned and maintained by the Town of Northborough. It is functionally classified as a Major Collector and is generally oriented in a north to south direction. Lyman Street is made up of two 11-foot-wide travel lanes with 1-foot-wide shoulders. There are no sidewalks or bicycle accommodations along the entire span of Lyman Street. The surrounding land use is primarily commercial and has a speed limit of 35 mph within the study area.



Lyman Street intersects with Bartlett Street to form a traditional “T” type intersection. Bartlett Street forms the east-west leg, while Lyman Street forms the south leg of the intersection. The approaches of this intersection are approximately 90 degrees of each other and include one shared lane. Lyman Street is ‘STOP’ controlled while Bartlett Street operates freely. There are no bicycle or pedestrian accommodations at this intersection.



## 2.2 Traffic Volumes

Traffic count data were obtained from Precision Data Industries (PDI) and collected at or near the study area. The count program included one 48-hour automatic traffic recorder (ATR) counts, which was conducted along Bartlett Street east of Cedar Hill Street from Wednesday, January 5<sup>th</sup> through Thursday, January 6<sup>th</sup>, 2022. The ATR data is summarized in Table 1. The timeframe for conducting this study occurred during the ongoing coronavirus pandemic. Comparisons were done between Covid and Pre-Covid volume counts from a MassDOT Count Station on Lyman Street (ID: RPA05-215-4009) to adjust the peak hour volumes to reflect non-Covid Conditions. The Station data compares hourly volume data for a typical weekday in 2018 (pre-Covid) with counts taken from 2022 (Covid). The results show that the counts for this study was about 89% of the MassDOT Count Station volumes during the morning peak hour, and 101% of it during the afternoon peak hours. Therefore, the morning traffic counts for this study counts were adjusted to reflect the volumes from Pre-Covid Conditions. Calculations to determine the adjustment factors are included in the Appendix.

Turning movement counts (TMC) data were also collected for the intersection of Lyman Street at Bartlett Street. The data count was obtained from a previous study<sup>1</sup> and has been adjusted to represent the current year of 2022. This data was obtained during a pre-covid timeframe, therefore no covid adjustment was made. The count program included TMC data collected from 6:30-9:00 AM and 4:00-6:00PM on Wednesday, October 16<sup>th</sup>, 2019. The TMC data is illustrated in Figure 2 for the 2022 weekday AM and weekday PM peak hours.

The measured average weekday traffic volume on Bartlett Street was 3,108 vehicles per day (vpd) representing a typical weekday. On a weekday, 9.75% of the traffic occurs during the morning AM peak hour and 9.18% during the afternoon PM peak hour. The directional distribution of traffic is approximately 51% WB during the morning peak hour and 60% WB during the afternoon peak hour.

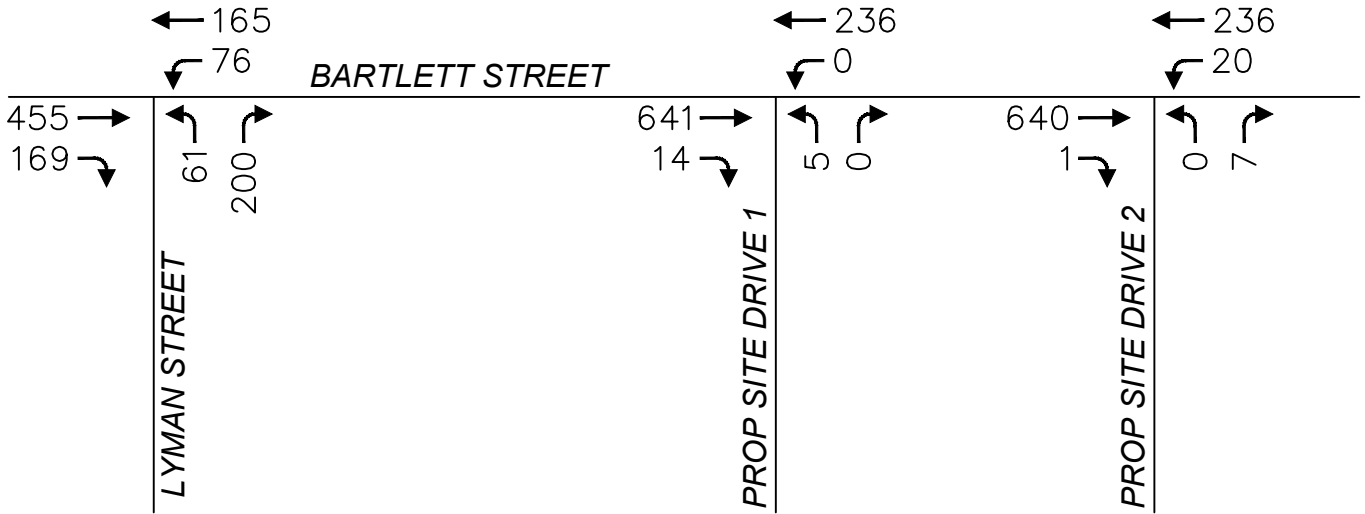
**Table 1 – Summary of Bartlett Street Traffic Volumes**

	Weekday Average	AM Peak Hour	PM Peak Hour
Time Period	Daily	7:30-8:30	4:30-5:30
Traffic Volume	3108 vpd	336 vph	286 vph
K-Factor	-	9.75%	9.18%
Directional Distribution	51% WB	51% WB	60% WB
Average Speed	36 MPH WB / 35 MPH EB		
85th % Speed	43 MPH WB / 42 MPH EB		
<i>Abbreviations:</i>	<i>Notes:</i>		
vpd = volume per day	K-Factor = Percent of daily traffic that occurs during the peak hour		
vph = volume per hour	85th % Speed = 85th percentile speed		
EB = Eastbound	Volumes are rounded, based on ATR data (Jan 5-6), unadjusted		
WB = Westbound			

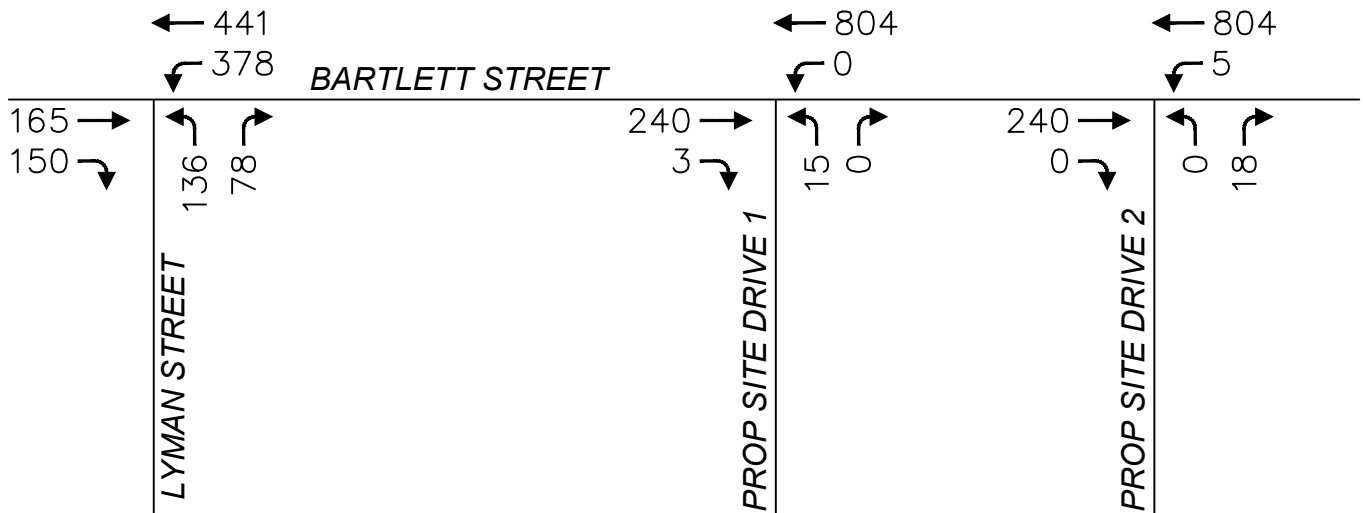
<sup>1</sup>Robert Nagi, PE & Tess Benson, EIT, Bartlett Street Definitive Subdivision Plans Traffic Impact Memorandum, Vanasse Hangen Brustlin, Inc. (VHB), Watertown, MA, 2020.

Seasonal variation was determined using the MassDOT weekday Seasonal and Axel Correction Factors. The statewide seasonal adjustment factor for a major collector for October is 0.98. This indicated that traffic volumes in October are lower than average annual traffic volumes, therefore no seasonal factor was applied to the count data. The seasonal factors and covid adjustment data are included in the Appendix.

**AM PEAK HOUR**



**PM PEAK HOUR**



**Figure 2**  
**2022 Existing Traffic Volume**  
**R.J. Devereaux Development**  
**Northborough, MA**

### 2.3 Crash Experience

Recent crash history for the study intersections for the most recent three-year period available (2019-2021) were reviewed as part of this study. Crash data presented in this report were obtained from the MassDOT Crash Record System (CRS). As part of this safety review, the “crash rate”, measured in crashes per million entering vehicles (MEV) for the study intersection, was also determined. The standard MassDOT Crash Rate Worksheet was used to determine the crash rate at the study intersection. The calculation of the crash rate relates the number of accidents at a location to the amount of traffic that passes through the location. It is a more comprehensive measure for identifying potentially hazardous locations compared to simple averages as it takes into account volume, although crash rates can skew higher due to low volumes. The calculated rate is compared to the MassDOT District-wide averages. Intersections experiencing crash rates greater than the above averages are potentially experiencing an unusually high number or higher than expected number of crashes relative to traffic volumes at that particular location and may warrant further investigation or improvements. MassDOT District 3, which includes the proposed development, has an average crash rate of 0.61 crashes per MEV for unsignalized intersections.

Table 2 provides a summary of the crash history at the study intersection of Lyman Street at Bartlett Street and the proposed site drives at Bartlett Street. The following summarizes the key aspects of the review:

- The proposed site drives at Bartlett Street have no crashes over the three-year study period.
- The unsignalized study intersection of Lyman Street at Bartlett Street, has a crash rate of 0.25 MEV (4 crashes total), below the 0.61 MEV average for District 3.
- The study intersection has a total of four crashes over a span of three years, resulting in a rate of 1.33 crashes/year.
- Of the 4 crashes at the intersection, 75% of them were single vehicle crashes, while the remaining 25% of the crashes were rear-ends.
- 75% of all crashes occurred during dark and dry conditions, while the remaining 25% of the crashes were dark (lit) and wet conditions.

*Table 2 – Summary of Reported Crash Data*

<b>Lyman Street at Bartlett Street</b>			
	2019	2020	2021
<b>Severity</b>			
Property Damage			2
Injury	1	1	
<b>Collision Type</b>			
Angle			1
Single Vehicle	1	1	1
<b>Time of Day</b>			
6:01 AM – 10:00 AM	1		
10:01 AM – 4:00 PM			
4:01 PM – 7:00 PM			
7:01 PM – 6:00 AM		1	2
<b>Roadway Conditions</b>			
Dry	1	1	1
Wet			1
<b>Season</b>			
Dec-Feb			1
Mar-May	1	1	
June-Aug			
Sept-Nov			1
<b>Light Conditions</b>			
Dark	1	1	1
Dark (Lit)			1
<b>Totals</b>	<b>1</b>	<b>1</b>	<b>2</b>
Annual Average Crashes	1.33		
<b>Intersection Crash Rate</b>	<b>0.25</b>		
MassDOT District 3 Average Crash Rate	0.61		



## 2.4 Sight Distance Analysis

Adequate sight distance is an important safety consideration at intersections and driveways. Sight distances were reviewed at the proposed site drive locations. Stopping sight distance (SSD) is the distance required for an approaching driver (with an eye height of 3.5 feet) to perceive and stop in time to avoid a collision with an object 2 feet high in the roadway. The values are based on a perception and reaction time of 2.5 seconds and braking distance required under wet, level pavements. Corner or intersection sight distance (ISD) is based upon the time required to perceive, react, and complete a desired exiting maneuver from a driveway once the driver decides to execute the maneuver. Adjustments for the grade of the roadway are applied to both SSD and ISD.

Values for ISD represent the time to (1) turn left or right, in addition to accelerating to the operating speed of the roadway, without causing approaching vehicles to reduce speed to less than 70 percent of their initial speed, and (2) upon turning left, to clear the near half of the intersection without conflicting with the vehicles approaching from the left. ISD is more related to operations and to some degree, the convenience or inconvenience of oncoming motorists. The minimum criteria are defined by the American Association of State and Highway and Transportation Officials (AASHTO)<sup>2</sup>. SSD relates specifically to safety. As indicated by AASHTO, if the available ISD meets or exceeds the minimum SSD criteria, then there is adequate safe sight distance available for motorists to avoid collisions. A criterion for calculating minimum required sight distances can be established based on operating speed, the speed at or under which most motorists (85th-percentile) actually travel along a particular portion of roadway.

The ATR data collected on Bartlett Street in vicinity of the site shows that the 85<sup>th</sup> percentile travel speed was approximately 45 mph for both directions. The posted speed limit along Bartlett Street is 45 mph in. However, to provide a conservative analysis a speed of 50 mph was analyzed since the posted speed limit matches the 85<sup>th</sup> percentile speed.

The SSD and ISD were measured in the field and compared to minimum and desirable distances. Table 3 summarizes the results of the evaluation. As noted in Table 3, the minimum SSD and ISD were met in both directions for the proposed site driveways based on the measures 85<sup>th</sup> percentile travel speed and posted speed limit.

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<sup>2</sup> American Association of State Highway and Transportation Officials (AASHTO), [A Policy on Geometric Design of Highways and Streets](#), (Green Book) Washington, D.C., 2011.

*Table 3 – Summary of Sight Distance Analysis*

Location	Sight Distance				
	Available	Posted Speed Limit (45 MPH)		85th %-ile Speed (50 MPH)	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
<b>Stopping Sight Distance</b>					
Proposed Site Drive 1					
Bartlett Street, looking east	689	360	-	425	-
Bartlett Street, looking west	580	360	-	425	-
Proposed Site Drive 2					
Bartlett Street, looking east	707	360	-	425	-
Bartlett Street, looking west	756	360	-	425	-
<b>Intersection Sight Distance</b>					
Proposed Site Drive 1					
Bartlett Street, looking east	1425	360	500	425	565
Bartlett Street, looking west	576	360	500	425	565
Proposed Site Drive 2					
Bartlett Street, looking east	600	360	500	425	565
Bartlett Street, looking west	768	360	500	425	565

### 3.0 FUTURE CONDITIONS

The impact of the proposed R.J. Devereaux development project on the roadway network within the study area was evaluated and the results are described in this section. This study used the year 2029 for the future analysis year, which represents a seven-year permitting and build-out timeframe from the present condition and is consistent with current MassDOT guidelines for traffic studies.

#### 3.1 No-Build Traffic Volumes

A year 2029 No-Build traffic volume network was developed by identifying potential area-wide background traffic volume growth and known specific nearby development projects that could contribute to traffic flow on the 2029 study network.

##### 3.1.1 Background Traffic Growth

Traffic growth and historical traffic count trends for the project's analysis area have been reviewed. Based upon a review of local count stations and other recently completed studies for projects in Northborough, an annual growth rate of one percent (1%) per year for seven years was used to forecast future roadway volumes. The count station used was MassDOT Permanent Count Station 254103 (Route 20) and 3122 (Hudson Street). These rates would presumably account for some of the more remote growth in the region as well as potential nearby smaller residential and business growth that could result in added traffic through the study area. The count station data can be found in the Appendix.

##### 3.1.2 Specific Development Projects

Correspondence regarding other projects in the area was conducted with the Town of Northborough Planning Board to identify two other development projects near the study area.

- A new warehouse/office project for Cable Matters, Inc. comprising of 6,000 square feet of office and 17,000 square feet of warehouse located at 1 Layman Street.
- A new warehouse development of 151,000 square feet located along Bartlett Street within the study area.

While the Lyman Street project is still under development, the Bartlett Street project is completed, and the vehicle trips from a previous traffic study<sup>3</sup> were implemented into the traffic network for this project.

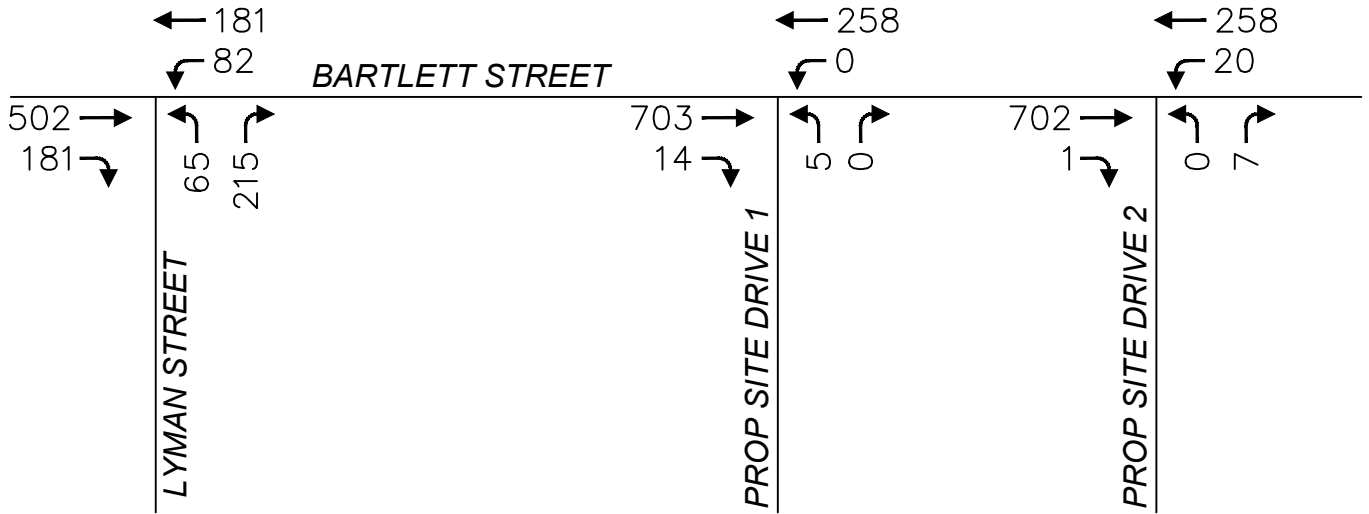
##### 3.1.3 No-Build Traffic Volumes

Based on the above noted research, the year 2029 No-Build peak hour traffic volume projections were developed by adding seven (7) years' background traffic growth of one percent (1%) annually plus the volumes projected to result from the other specific development projects to the existing traffic volumes in the study area. The projected year 2029 No-Build traffic volumes projected for the weekday morning and weekday afternoon peak hours at the study intersections are shown in Figures 3.

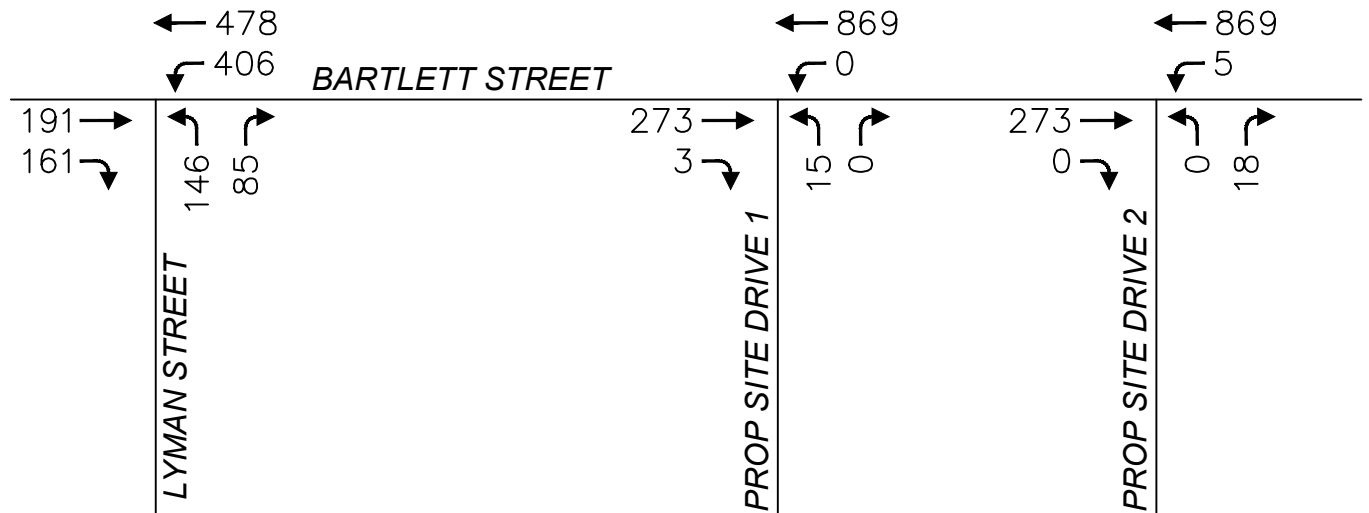
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<sup>3</sup> Robert Nagi, PE & Tess Benson, EIT, Bartlett Street Definitive Subdivision Plans Traffic Impact Memorandum, Vanasse Hangen Brustlin, Inc. (VHB), Watertown, MA, 2020.

**AM PEAK HOUR**



**PM PEAK HOUR**



**Figure 3**  
**2029 No-Build Traffic Volume**  
**R.J. Devereaux Development**  
**Northborough, MA**

## 3.2 PROBABLE IMPACTS OF THE PROJECT

The impact of the proposed development project on the roadway network within the study area was evaluated and the results are described in this section. The development involves the reuse of two buildings on a site that will house offices, repair facilities and some storage for the R.J. Devereaux company that provides construction services for the gas line utilities. The expected auto repair service on the site is expected to remain. Access to this proposed site will be provided via two site drives along Bartlett Street.

## 3.3 Site Generated Traffic Volumes

In this section, the traffic forecasts related to the development project are described. An estimate of traffic to be generated by the proposed development project was completed and assigned to roadways/intersections within the study area to develop the Build traffic condition, based upon the year 2029 No-Build traffic volume network.

### 3.3.1 Site Trip Generation

The proposed development includes the reuse of two existing buildings on site. Therefore, trips for both the existing and proposed developments need to be compared in order to estimate the net new trips as a result of the proposed development. The existing auto repair service is expected to remain and will not have an impact on the net new trips.

To estimate the number of trips that is currently generated by the two buildings at the existing development, statistics published by the Institute of Transportation Engineers (ITE) in Trip Generation Manual<sup>4</sup> for similar land uses were examined. The data have been compiled to provide transportation analysis with guidelines in forecasting daily and peak hour volumes for the specified use. The ITE report is based on observations of actual developments located in both general urban / suburban and dense multi-use urban setting. Based on a review of the ITE database, Land Use Code (LUC) 150 – Warehouse and 710 – General Office Building have been selected as the most similar to the existing conditions.

R.J. Devereaux provided Green with an estimate of vehicles that are expected to enter/exit the site. The estimate sheet is based on R.J. Devereaux's existing operations at other sites and can be found in the Appendix. This was used to estimate the number of trips that will be generated by the proposed development at 200 Bartlett Street. The proposed trip generation was then compared to the existing land use codes to determine a net new trip value for this project. It was determined that the proposed development is expected to generate approximately 143 net new trips over the course of an average weekday. In order to calculate the morning and afternoon peak hour trips from the estimate, directional distributions from ITE trip generation statistics were used. Currently, there are no land use codes that represent this particular development. However, in order to estimate a distribution Land Use Code 150 – Warehouse was selected as the project type. On a typical weekday, the directional distribution is 50% entering and 50% exiting. During the weekday morning peak hour the directional distribution is 66% entering and 34% exiting, while the weekday afternoon peak hour is 24% entering and 76% exiting. These directional distributions were applied to the estimate provided by R.J. Devereaux in order to determine the trips for the morning and afternoon peak hours in result to the proposed development. The total estimated trips generated by the projects are presented in Table 4.

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<sup>4</sup> Institute of Transportation Engineers, *Trip Generation Manual*, 10<sup>th</sup> Edition, Washington, D.C., September 2017.



*Table 4 – Summary of Estimated Site Trip Generation*

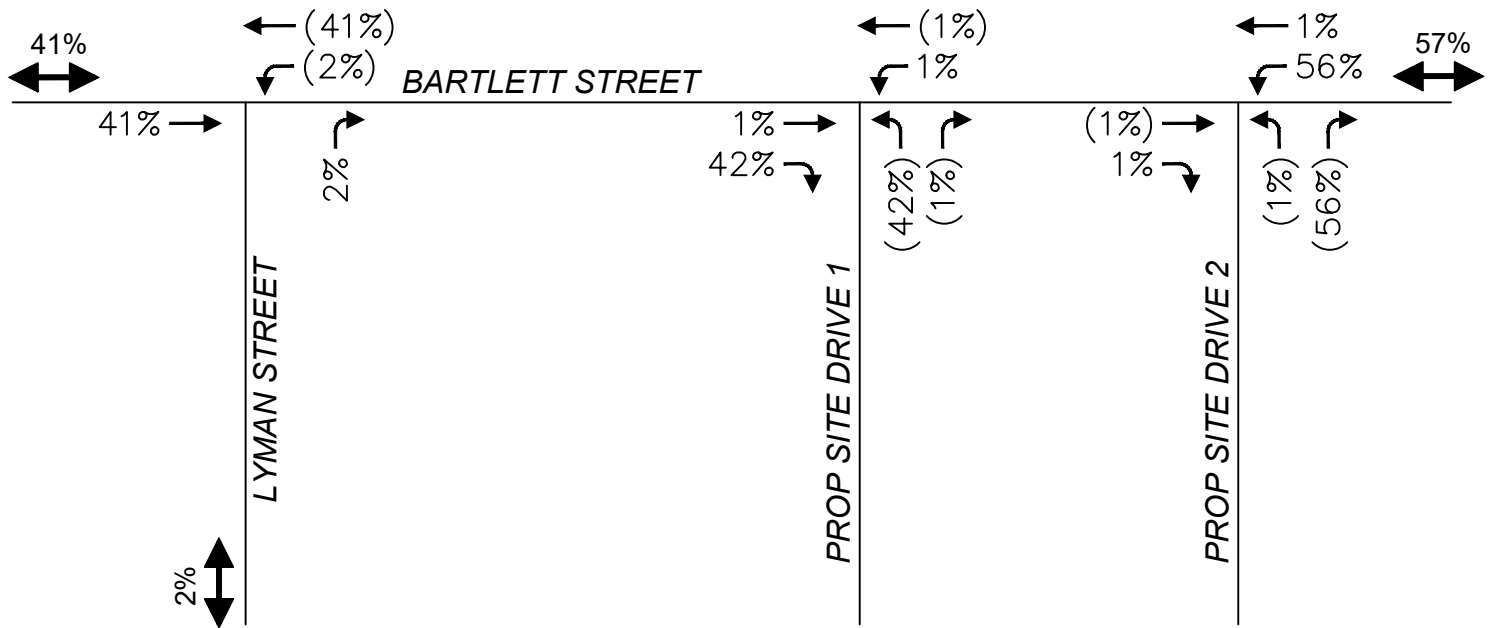
Development Project	Land Use/Historical Data	AM Peak Hour			PM Peak Hour			Daily
		Enter	Exit	Total	Enter	Exit	Total	
Existing 200 Bartlett Development	LUC 150	19	10	29	5	16	21	47
	LUC 710	16	2	18	3	17	20	124
Proposed 200 Bartlett Development	Estimate Sheet	31	16	47	11	36	47	314
<b>Total Trips Generated</b>		<b>-4</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>143</b>

### 3.3.2 Site Trip Distribution/Assignment

The vehicle trips generated by the proposed commercial development were distributed onto the roadway network to generate the future build volumes. The distribution to and from the site is based on the U.S. Census American Community Survey journey-to-work data from 2012-2016. Figure 4 shows the trips distribution percentages within the study areas.

### 3.3.3 Build Traffic Volumes

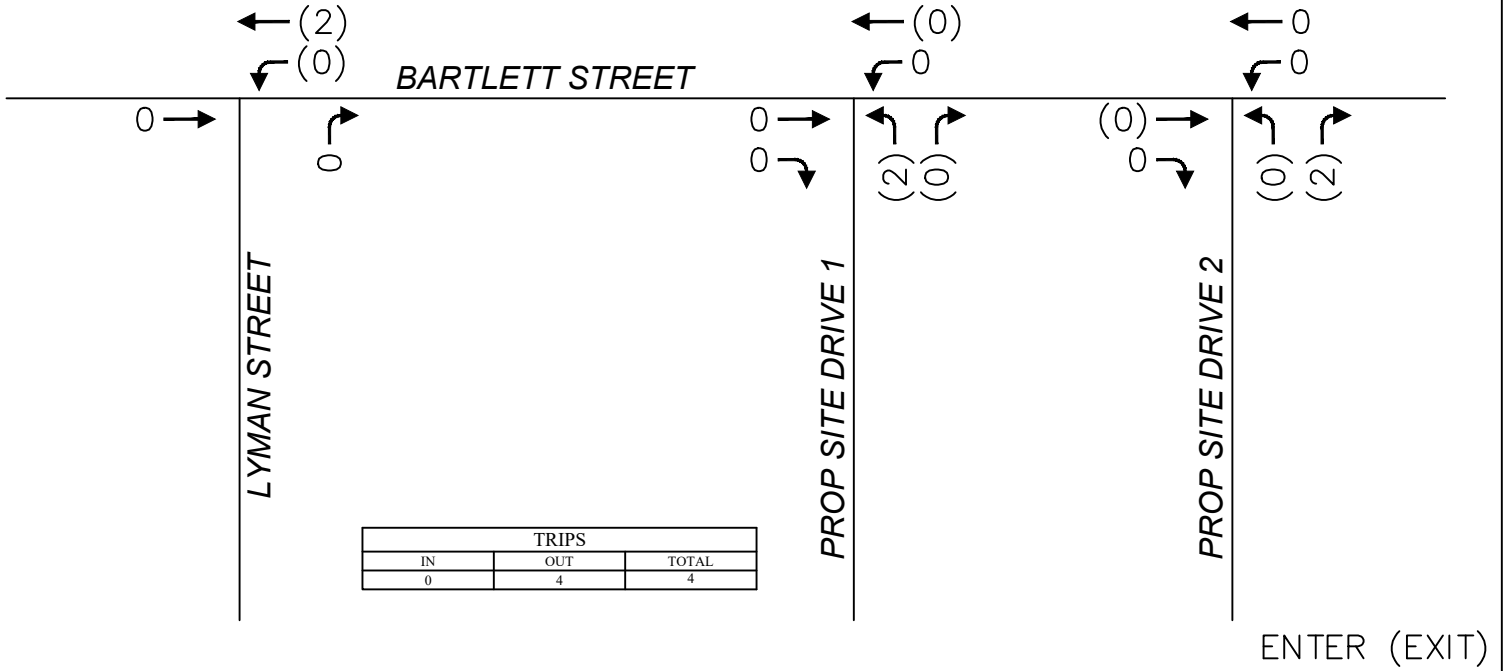
The vehicle-trip estimated for the proposed commercial development project were assigned to the study intersections and the study area roadways using the trip distribution percentages discussed above. Figure 5 shows the additional traffic expected to be generated by the proposed development project during the weekday AM and PM peak hours. The peak hour site traffic volumes were then added to the future No-Build traffic volumes in order to establish the 2029 Build Condition traffic volume network. Figure 6 presents the 2029 Build traffic volumes for the weekday morning and evening peak hours. Raw Census data for Journey to Work is included in the Appendix.



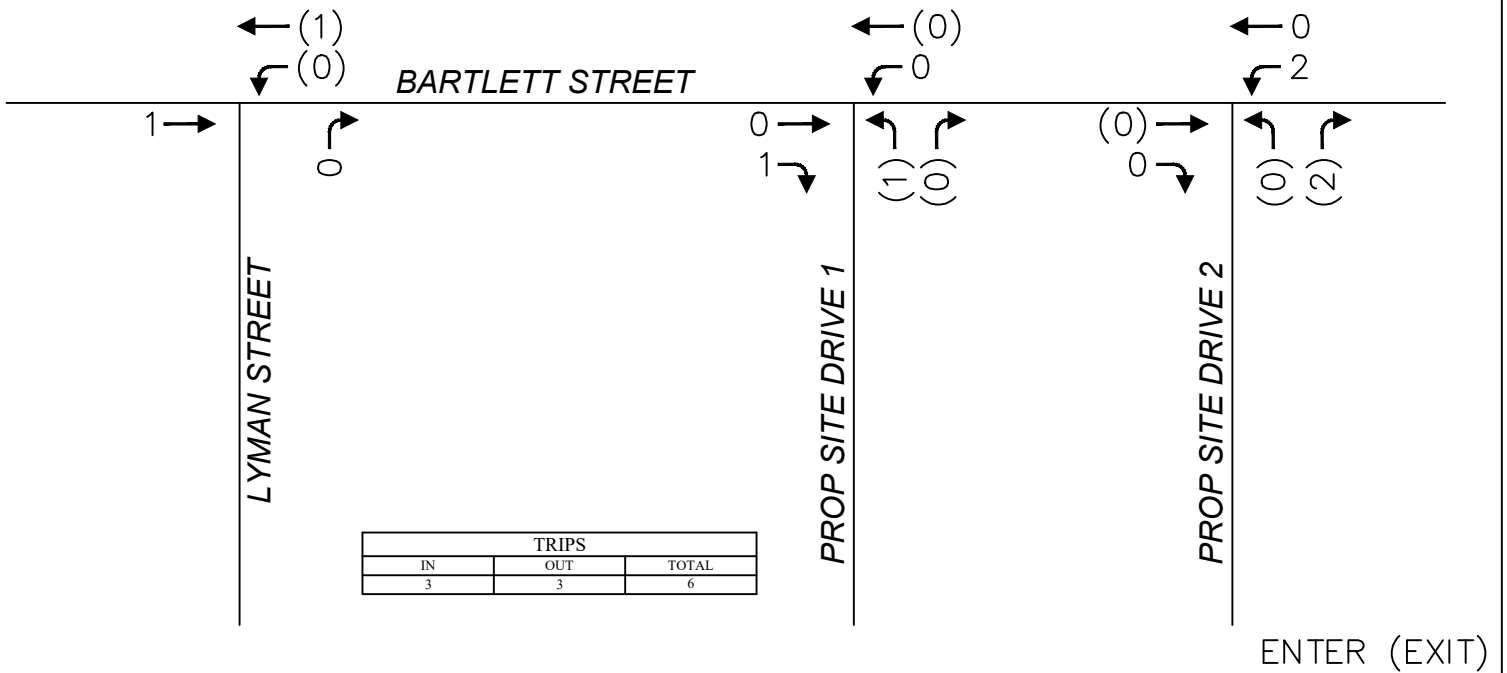
ENTER (EXIT)

**Figure 4**  
**Estimated Trip Distribution**  
**R.J. Devereaux Development**  
**Northborough, MA**

AM PEAK HOUR

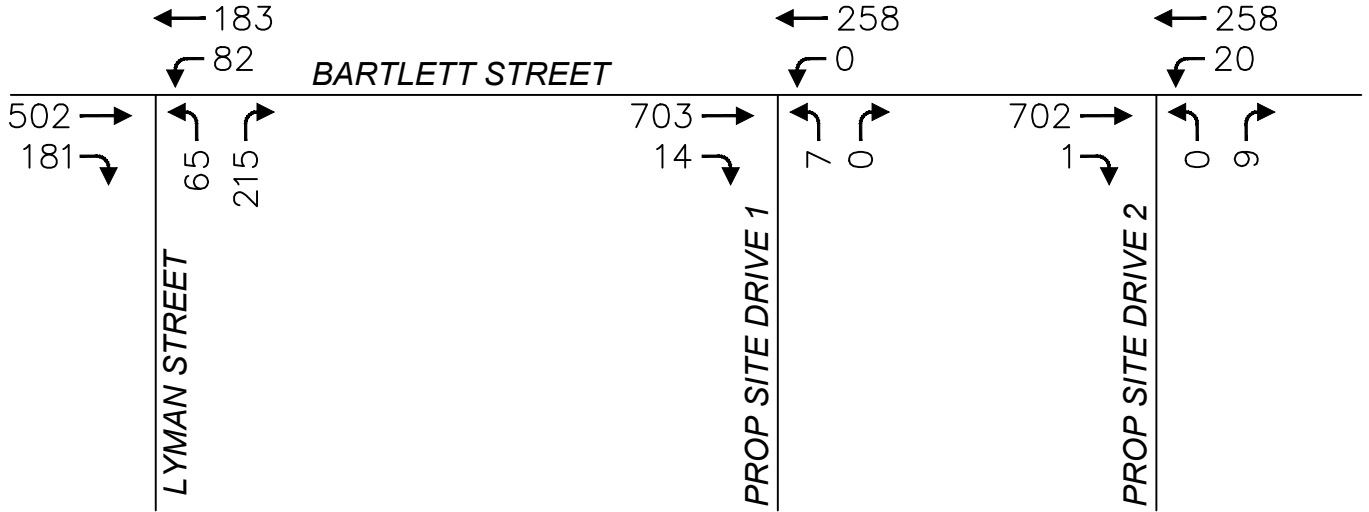


PM PEAK HOUR

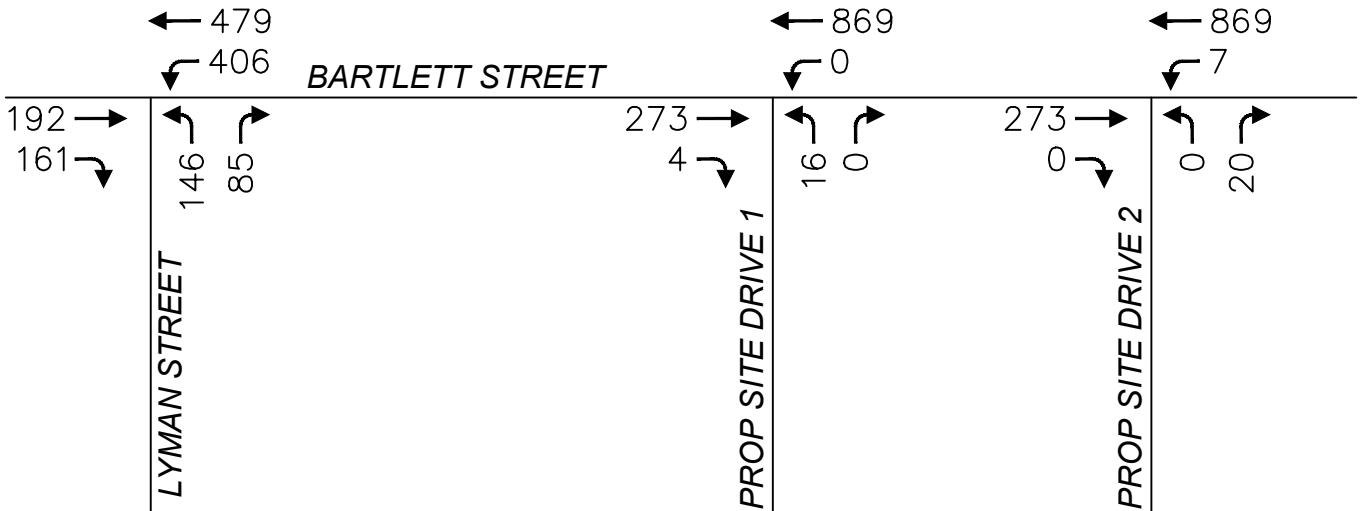


**Figure 5**  
**Estimated Trip Generation**  
**R.J. Devereaux Development**  
**Northborough, MA**

**AM PEAK HOUR**



**PM PEAK HOUR**



**Figure 6**  
**2029 Build Traffic Volume**  
**R.J. Devereaux Development**  
**Northborough, MA**

## 4.0 ANALYSIS AND PROPOSED CONDITIONS

Previous sections of this report described the current conditions of the study intersections and the development of the 2029 No-Build and 2029 Build traffic volume networks, including the site-generated trip forecasts. Included in this section is an examination of the volume changes, intersection capacity analyses for the study intersections and an analysis of available sight distances at the proposed site driveway.

### 4.1.1 Intersection Capacity Analysis

The study intersections were examined with regard to flow rates, capacity and delay characteristics to determine the Level of Service (LOS), using the methodology defined in the Highway Capacity Manual (HCM)<sup>5</sup> for the existing and future (No-Build and Build) traffic conditions. Level of Service is an indicator of operating conditions which occur on a given roadway feature while accommodating varying levels of traffic volumes. It is a qualitative measure that accounts for a number of operational factors including roadway geometry, speed, traffic composition, peak hour factors, travel delay, freedom to maneuver and driver expectation. When all of these measures are assessed, and a Level of Service is assigned to a roadway or intersection, it is equivalent to presenting an “index” to the operational qualities of the section under study. Level of Service is classified into six levels that are designated ‘A’ through ‘F’ based on the control delay ranges they fall under. Additionally, a movement with a volume-to-capacity (v/c) ratio of over 1.00 also has a LOS of ‘F’, regardless of delay. These are presented in Table 5 for both signalized and unsignalized intersections.

In practice, any given roadway/intersection may operate at a wide LOS range depending upon time of day, day of week or period of year. It should be noted that for unsignalized intersections, the LOS is not computed for the intersection as a whole. Instead, the level of service is determined by the computed or measured control delay for each individual critical movement (typically the side street movements).

**Table 5 – Level of Service Criteria for Unsignalized and Signalized Intersections**

LOS	Unsignalized Intersection (S)	Signalized Intersection (S)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50 or v/c ≥1.00	>80 or v/c ≥1.00
<i>Abbreviations:</i>		
S = Seconds, v/c = Volume-to-Capacity Ratio, LOS = Level of Service		

The study intersections were evaluated using the Synchro 10 computer software to complete the analysis for the unsignalized study intersection. Using existing roadway features and the intersection controls, traffic operations at the study intersection were evaluated for existing as well as predicted 2029 conditions. Analysis results are presented in Tables 6 and 7 for the weekday AM and weekday PM at the study intersections, respectively.

<sup>5</sup> Transportation Research Board, of the National Academies, Highway Capacity Manual 6<sup>th</sup> Edition, Washington, D.C., 2017.



**Table 6 – Summary of Level of Service Analysis Period: Weekday AM Peak Hour**

	2022 Existing Conditions				2029 No-Build Conditions				2029 Build Conditions			
	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)
<b>Lyman Street at Bartlett Street</b>												
NBL	75.4	F	0.98	295	138.5	F	1.18	427.5	139.8	F	1.18	427.5
WBL	9.6	A	0.11	10	9.9	A	0.12	10	9.9	A	0.12	10
WBT	0.0	A	0.00	0	0.0	A	0.00	0	0.0	A	0.00	0
<i>Overall Intersection</i>	22.1	C	-	-	39.6	E	-	-	39.9	E	-	-
<b>Site Drive 1 at Bartlett Street</b>												
NBL	17.9	C	0.02	2.5	19.7	C	0.02	2.5	19.8	C	0.03	2.5
WBL	0.0	A	0.00	0	0.00	A	0.00	0	0.00	A	0.00	0
<i>Overall Intersection</i>	0.1	A	-	-	0.1	A	-	-	0.1	A	-	-
<b>Site Drive 2 at Bartlett Street</b>												
NBL	13.3	B	0.02	2.5	14.1	B	0.02	2.5	14.1	B	0.02	2.5
WBL	9.1	A	0.02	2.5	9.4	A	0.03	2.5	9.4	A	0.03	2.5
<i>Overall Intersection</i>	0.3	A	-	-	0.3	A	-	-	0.3	A	-	-
<u>Abbreviations:</u> EB = Eastbound WB = Westbound NB = Northbound SB = Southbound S = Seconds FT = Feet LOS = Level of Service L=Left TH=Through R=Right				<u>Notes:</u> Delay = Average delay per vehicle (measured in seconds) 50th Q = 50th percentile queue length (measured in feet) 95th Q = 95th percentile queue length (measured in feet) v/c = Volume-to-Capacity Ratio								

*Table 7 – Summary of Level of Service Analysis Period: Weekday PM Peak Hour*

	2022 Existing Conditions				2029 No-Build Conditions				2029 Build Conditions			
	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)
<b>Lyman Street at Bartlett Street</b>												
NBL	1742.8	F	4.55	730	3228.7	F	7.71	855	3228.7	F	7.71	855
WBL	10.3	B	0.40	50	11	B	0.45	60	11	B	0.50	60
WBT	0.0	A	0.00	0	0.0	A	0.00	0	0.0	A	0.00	0
<i>Overall Intersection</i>	<i>277.3</i>	<i>F</i>	<i>-</i>	<i>-</i>	<i>507.1</i>	<i>F</i>	<i>-</i>	<i>-</i>	<i>506.5</i>	<i>F</i>	<i>-</i>	<i>-</i>
<b>Site Drive 1 at Bartlett Street</b>												
NBL	22.4	C	0.07	5	25.5	D	0.08	7.5	25.6	D	0.1	7.5
WBL	0.0	A	0.00	0	0.00	A	0.00	0	0.00	A	0.00	0
<i>Overall Intersection</i>	<i>0.3</i>	<i>A</i>	<i>-</i>	<i>-</i>	<i>0.3</i>	<i>A</i>	<i>-</i>	<i>-</i>	<i>0.4</i>	<i>A</i>	<i>-</i>	<i>-</i>
<b>Site Drive 2 at Bartlett Street</b>												
NBL	9.7	A	0.02	2.5	10	B	0.03	2.5	10	B	0.03	2.5
WBL	7.8	A	0.01	0	7.9	A	0.01	0	7.9	A	0.01	0
<i>Overall Intersection</i>	<i>0.2</i>	<i>A</i>	<i>-</i>	<i>-</i>	<i>0.2</i>	<i>A</i>	<i>-</i>	<i>-</i>	<i>0.2</i>	<i>A</i>	<i>-</i>	<i>-</i>
<u>Abbreviations:</u>				<u>Notes:</u>								
EB = Eastbound				S = Seconds								
WB = Westbound				FT = Feet								
NB = Northbound				LOS = Level of Service								
SB = Southbound				L=Left								
				TH=Through								
				R=Right								
				v/c = Volume-to-Capacity Ratio								
				Delay = Average delay per vehicle (measured in seconds)								
				50th Q = 50th percentile queue length (measured in feet)								
				95th Q = 95th percentile queue length (measured in feet)								

Highlights of the analysis include the following:

- The analysis below indicates that entering and exiting the site driveways for the proposed development at Bartlett Street will experience short delays with acceptable level of service under the Future Build Conditions.
- The intersection of Lyman Street at Bartlett Street experiences high delays and low levels of service during both the morning and afternoon peak hour under the existing and No-Build Conditions.
- It is noted that the proposed development has little to no impact on the intersection of Lyman Street at Bartlett Street. While the intersection operates at LOS E/F, the proposed development only adds six vehicle trips and does not affect the level of service or delay between the No-Build and Build condition.

In summary, the analysis has shown that the proposed development project does not impact the surrounding roadways and intersections within the study area.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The analysis indicated the following:

- The proposed project is a generator of 0 and 6 vehicle trips during the AM and PM peak hours, respectively, and 143 vehicle trips through the course of a weekday.
- The unsignalized intersection of Bartlett Street/Lyman Street, has a crash rate of 0.25 MEV, well below the 0.61 MEV average for District 3.
- There are no major safety issues currently exhibited at the study intersections based on review of historical crash records.
- The analysis showed that at the proposed site drives, traffic can enter and exit with acceptable level of service and low delays.
- Minimum safe stopping sight distance requirements at the proposed site drive intersections with Bartlett Street are satisfied.
- It is noted that the proposed development has little to no impact on the intersection of Lyman Street at Bartlett Street. While the intersection operates at LOS E/F, the proposed development only adds five vehicle trips and does not affect the level of service or delay between the No-Build and Build condition.

### 5.1.1 Recommendations

While the analysis shows that the proposed project can be accommodated within the study area network, several recommendations have been made to enhance the transportation system. The proposed actions are as follows:

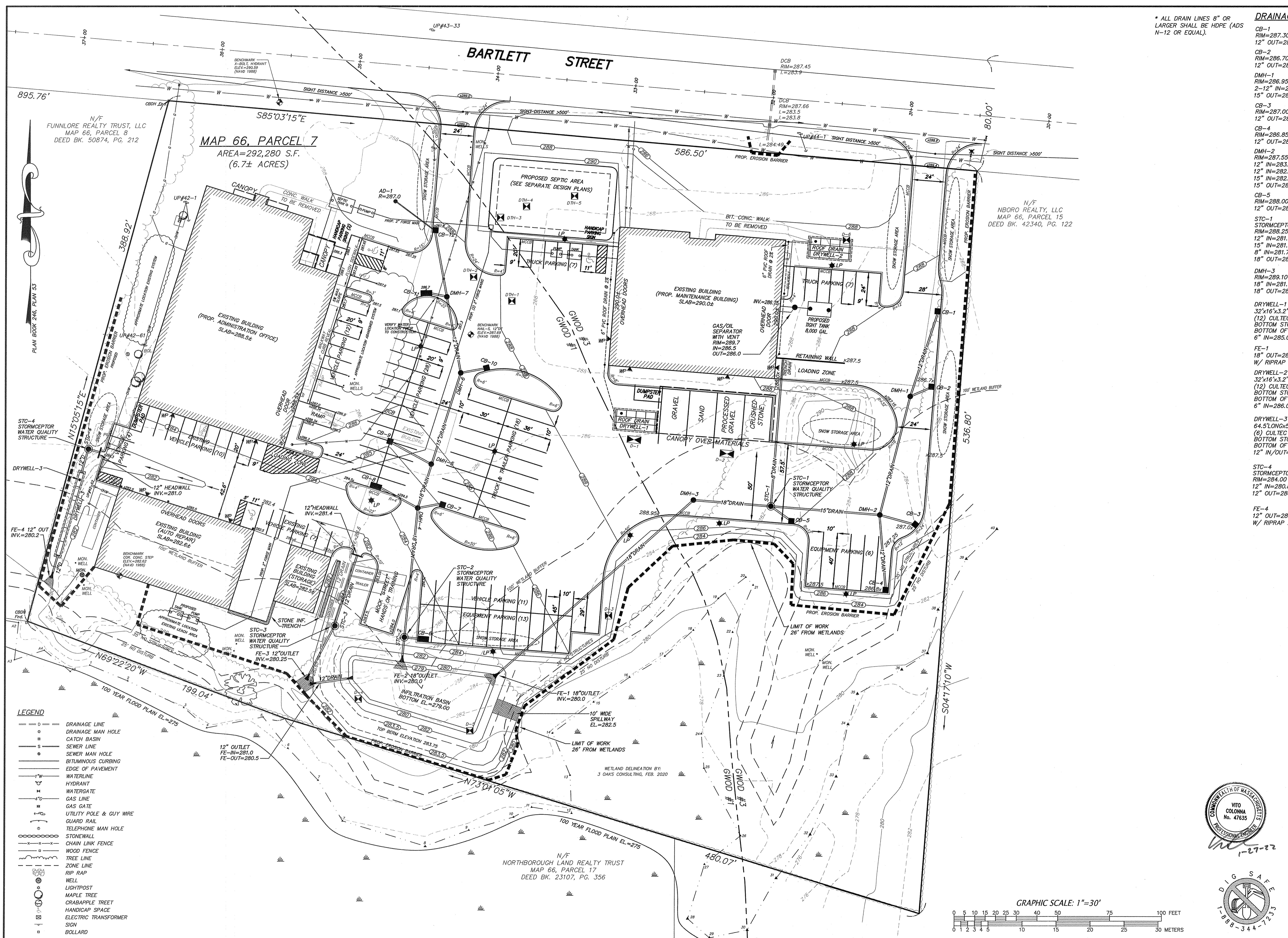
- Any proposed landscaping should be low enough and/or set back sufficiently so as not to create any sight distance constraints at the proposed site drives.
- Roadside vegetation within the right-of-way should be selectively cleared and trimmed to improve existing sight distance at the proposed site drives.
- Provide appropriate pavement markings and associated STOP bars marked at the site access driveways.
- All regulatory and warning signs to be installed shall be consistent with current Manual on Uniform Traffic Control Devices (MUTCD) standards and guidelines.



***PROPOSED SITE PLAN***







\* ALL DRAIN LINES 8" OR LARGER SHALL BE HDPE (ADS N-12 OR EQUAL).

DRAINAGE TABULATION	
AREA DRAIN-1 RIM=287.0 6" OUT=284.5	CB-11 (DOUBLE GRATE) RIM=286.80 12" OUT=283.50
CB-1 RIM=287.30 12" OUT=284.30	CB-12 RIM=287.80 6" IN=284.0 12" OUT=283.75
CB-2 RIM=286.70 12" OUT=283.70	DMH-7 RIM=286.65 2-12" IN=283.0 12" OUT=282.9
DMH-1 RIM=286.95 2-12" IN=283.95 15" OUT=283.80	DMH-10 RIM=287.20 12" OUT=283.60
CB-3 RIM=287.00 12" OUT=284.0	DMH-6 RIM=287.00 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45
CB-4 RIM=286.85 12" OUT=283.85	CB-10 RIM=287.20 12" OUT=283.60
DMH-2 RIM=287.55 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45	DMH-7 RIM=286.65 2-12" IN=283.0 12" OUT=282.9
CB-5 RIM=288.00 12" OUT=283.50	DMH-10 RIM=287.20 12" OUT=283.60
STC-1 RIM=288.25 12" IN=281.70 15" IN=281.70 8" IN=281.70 18" OUT=281.45	DMH-6 RIM=287.00 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45
DMH-3 RIM=289.10 18" IN=281.1 18" OUT=281.0	DMH-7 RIM=286.65 2-12" IN=283.0 12" OUT=282.9
DRYWELL-1 32'x16'x3.2' STONE BED (12) CULTEC R280HD CHAMBERS BOTTOM STONE BED=283.0 BOTTOM OF CHAMBERS=283.5 6" IN=285.0	DMH-10 RIM=287.20 12" OUT=283.60
FE-1 18" OUT=280.00 W/ RIPRAP APRON	DMH-6 RIM=287.00 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45
DRYWELL-2 32'x16'x3.2' STONE BED (12) CULTEC R280HD CHAMBERS BOTTOM STONE BED=284.0 BOTTOM OF CHAMBERS=284.5 6" IN=286.0	DMH-10 RIM=287.20 12" OUT=283.60
DRYWELL-3 64.5' LONG x 5' WIDE x 2.5' STONE BED (6) CULTEC 150XHD CHAMBERS BOTTOM STONE BED=279.35 BOTTOM OF CHAMBERS=279.85 12" IN/OUT=280.35	DMH-6 RIM=287.00 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45
STC-4 RIM=284.00 12" IN=280.8 12" OUT=280.55	DMH-10 RIM=287.20 12" OUT=283.60
FE-4 12" OUT=280.2 W/ RIPRAP APRON	DMH-6 RIM=287.00 12" IN=283.50 (CB-3) 12" IN=282.60 (CB-4) 15" IN=282.60 (DMH-1) 15" OUT=282.45

APPLICANT:  
R.J. DEVEREAUX CORP.

OWNER:  
THE BARTLETT STREET REALTY TRUST  
205 WALNUT STREET  
FRAMINGHAM, MA 01701

**CONNORSTONE ENGINEERING INC.**  
CIVIL ENGINEERS AND LAND SURVEYORS  
10 SOUTHWEST CUTOFF, SUITE 7  
NORTHBOROUGH, MASSACHUSETTS 01532  
PHONE: 508-393-9727 FAX: 508-393-5242

PROPOSED SITE PLAN  
OF  
200-220 BARTLETT STREET  
IN  
NORTHBOROUGH, MA

1/27/22	SITE PLAN APPLICATION
12/14/21	CON. COMM. EDITS
REVISED:	DESCRIPTION:
DRAWN BY: REM	CHECK BY: VC
DATE: NOVEMBER 23, 2021	
SCALE: 1"=30'	SHEET 3 OF 6.

**PROPOSED SITE PLAN**



N/F NORTHBOROUGH LAND REALTY TRUST  
MAP 66, PARCEL 17  
DEED BK. 23107, PG. 356

- LEGEND**
- D --- DRAINAGE LINE
  - DRAINAGE MAN HOLE
  - CATCH BASIN
  - S --- SEWER LINE
  - SEWER MAN HOLE
  - B --- BITUMINOUS CURBING
  - E --- EDGE OF PAVEMENT
  - W --- WATERLINE
  - H --- WATERMATE
  - G --- GAS LINE
  - G --- GAS GATE
  - U --- UTILITY POLE & GUY WIRE
  - R --- GUARD RAIL
  - TELEPHONE MAN HOLE
  - S --- STONEWALL
  - C --- CHAIN LINK FENCE
  - W --- WOOD FENCE
  - T --- TREE LINE
  - Z --- ZONE LINE
  - R --- RIP RAP
  - WELL
  - LIGHTPOST
  - MAPLE TREE
  - CRABAPPLE TREE
  - HANDICAP SPACE
  - ELECTRIC TRANSFORMER
  - SIGN
  - BOLLARD



***TRAFFIC VOLUME DATA***

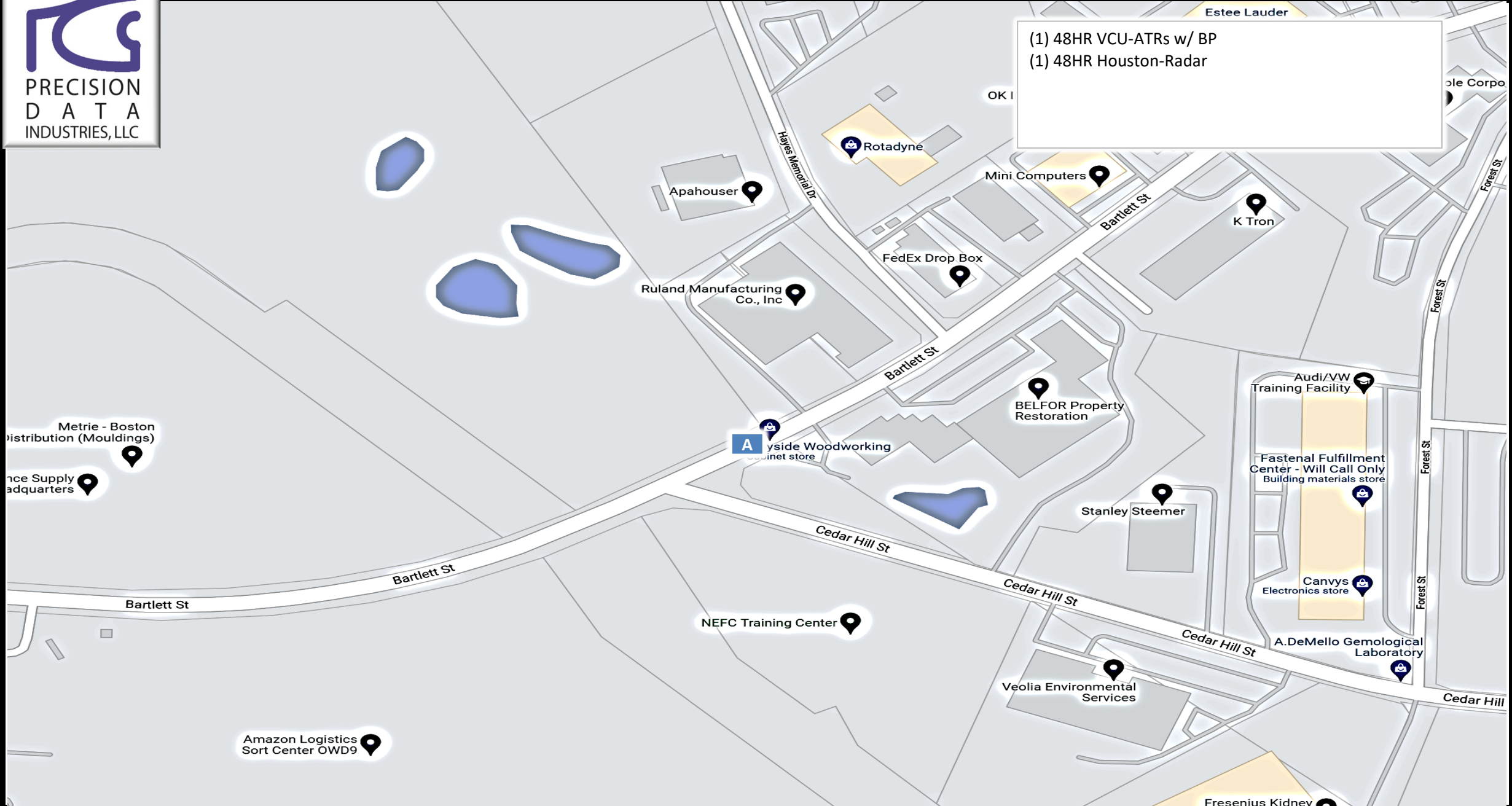






# Location Map: 218348 Northborough, MA

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)



(1) 48HR VCU-ATRs w/ BP  
(1) 48HR Houston-Radar

<b>Client:</b> Green International	<b>Engineer:</b> C. Tobias	<b>Site Code:</b> Task Order 27	<b>Date:</b> Wed 1/5 thru Thurs 1/6/2022	<b>PDI Job #</b> 218348	<b>City, State:</b> Northborough, MA
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Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File # 218348 ATR-A

Count Date: Wednesday, January 5, 2022  
 Direction: EB

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	1	0	1	2
12:15 AM	8	0	0	8
12:30 AM	2	0	0	2
12:45 AM	0	0	1	1
1:00 AM	3	0	0	3
1:15 AM	1	0	1	2
1:30 AM	4	0	0	4
1:45 AM	3	0	1	4
2:00 AM	0	1	0	1
2:15 AM	2	0	0	2
2:30 AM	0	2	0	2
2:45 AM	0	0	0	0
3:00 AM	1	1	1	3
3:15 AM	0	2	0	2
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	3	0	0	3
4:15 AM	2	0	0	2
4:30 AM	3	1	0	4
4:45 AM	6	0	0	6
5:00 AM	7	0	0	7
5:15 AM	8	1	0	9
5:30 AM	8	0	1	9
5:45 AM	19	1	1	21
6:00 AM	11	0	0	11
6:15 AM	19	0	0	19
6:30 AM	23	0	0	23
6:45 AM	23	0	1	24
7:00 AM	24	0	1	25
7:15 AM	25	0	1	26
7:30 AM	40	0	0	40
7:45 AM	37	3	0	40
8:00 AM	31	3	0	34
8:15 AM	27	1	1	29
8:30 AM	20	2	1	23
8:45 AM	22	3	2	27
9:00 AM	22	1	1	24
9:15 AM	15	1	0	16
9:30 AM	19	3	3	25
9:45 AM	21	6	3	30
10:00 AM	10	1	4	15
10:15 AM	12	4	2	18
10:30 AM	12	5	1	18
10:45 AM	17	1	0	18
11:00 AM	21	3	0	24
11:15 AM	10	3	1	14
11:30 AM	16	4	2	22
11:45 AM	14	4	0	18

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	28	0	2	30
12:15 PM	22	2	0	24
12:30 PM	18	2	0	20
12:45 PM	17	1	2	20
1:00 PM	20	1	0	21
1:15 PM	14	1	0	15
1:30 PM	16	2	1	19
1:45 PM	20	2	2	24
2:00 PM	30	2	1	33
2:15 PM	22	2	0	24
2:30 PM	31	1	2	34
2:45 PM	26	2	3	31
3:00 PM	41	1	1	43
3:15 PM	25	1	0	26
3:30 PM	25	1	0	26
3:45 PM	29	2	1	32
4:00 PM	22	1	0	23
4:15 PM	23	3	1	27
4:30 PM	22	0	0	22
4:45 PM	22	1	0	23
5:00 PM	25	1	1	27
5:15 PM	28	1	0	29
5:30 PM	24	0	0	24
5:45 PM	19	0	0	19
6:00 PM	31	1	0	32
6:15 PM	16	1	1	18
6:30 PM	12	0	0	12
6:45 PM	10	0	1	11
7:00 PM	10	0	0	10
7:15 PM	22	0	0	22
7:30 PM	22	0	0	22
7:45 PM	14	0	0	14
8:00 PM	16	1	0	17
8:15 PM	9	0	0	9
8:30 PM	10	0	1	11
8:45 PM	5	1	0	6
9:00 PM	7	0	0	7
9:15 PM	7	0	1	8
9:30 PM	3	0	0	3
9:45 PM	5	0	0	5
10:00 PM	6	1	0	7
10:15 PM	1	0	0	1
10:30 PM	5	0	0	5
10:45 PM	2	0	0	2
11:00 PM	3	0	0	3
11:15 PM	1	0	0	1
11:30 PM	3	0	0	3
11:45 PM	4	1	0	5

AM Total	572	57	31	660
Percentage	86.67%	8.64%	4.70%	
AM Peak	7:30 AM	9:45 AM	9:30 AM	7:30 AM
Volume	135	16	12	143

PM Total	793	36	21	850
Percentage	93.29%	4.24%	2.47%	
PM Peak	2:30 PM	1:30 PM	2:00 PM	2:30 PM
Volume	123	8	6	134

Day Total	1365	93	52	1510
Percentage	90.40%	6.16%	3.44%	

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File # 218348 ATR-A

Count Date: Thursday, January 6, 2022  
 Direction: EB

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	3	0	1	4
12:15 AM	0	0	0	0
12:30 AM	0	0	1	1
12:45 AM	1	1	0	2
1:00 AM	11	0	0	11
1:15 AM	4	1	0	5
1:30 AM	2	0	0	2
1:45 AM	2	0	1	3
2:00 AM	1	0	0	1
2:15 AM	1	1	0	2
2:30 AM	0	0	1	1
2:45 AM	0	1	0	1
3:00 AM	1	1	0	2
3:15 AM	1	0	0	1
3:30 AM	0	2	0	2
3:45 AM	1	0	0	1
4:00 AM	2	1	0	3
4:15 AM	4	0	1	5
4:30 AM	4	0	0	4
4:45 AM	4	1	0	5
5:00 AM	4	0	0	4
5:15 AM	10	0	0	10
5:30 AM	11	0	0	11
5:45 AM	20	2	0	22
6:00 AM	10	0	0	10
6:15 AM	19	1	0	20
6:30 AM	17	1	2	20
6:45 AM	26	0	1	27
7:00 AM	23	1	0	24
7:15 AM	20	0	1	21
7:30 AM	41	1	0	42
7:45 AM	29	4	1	34
8:00 AM	27	4	2	33
8:15 AM	38	4	1	43
8:30 AM	19	1	2	22
8:45 AM	32	1	4	37
9:00 AM	20	3	1	24
9:15 AM	14	2	0	16
9:30 AM	17	0	5	22
9:45 AM	22	4	1	27
10:00 AM	16	1	2	19
10:15 AM	11	2	7	20
10:30 AM	24	0	1	25
10:45 AM	14	3	2	19
11:00 AM	15	0	0	15
11:15 AM	16	3	1	20
11:30 AM	11	3	0	14
11:45 AM	13	4	4	21

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	18	1	1	20
12:15 PM	30	2	0	32
12:30 PM	23	3	1	27
12:45 PM	16	1	0	17
1:00 PM	22	2	0	24
1:15 PM	19	2	0	21
1:30 PM	22	3	1	26
1:45 PM	25	1	2	28
2:00 PM	34	1	2	37
2:15 PM	26	0	0	26
2:30 PM	27	0	0	27
2:45 PM	19	1	2	22
3:00 PM	24	1	0	25
3:15 PM	36	0	0	36
3:30 PM	28	1	2	31
3:45 PM	29	1	1	31
4:00 PM	19	0	1	20
4:15 PM	29	0	0	29
4:30 PM	21	1	2	24
4:45 PM	25	0	0	25
5:00 PM	36	1	1	38
5:15 PM	37	2	0	39
5:30 PM	21	1	0	22
5:45 PM	23	0	2	25
6:00 PM	19	0	0	19
6:15 PM	16	1	0	17
6:30 PM	19	0	0	19
6:45 PM	16	1	0	17
7:00 PM	5	0	0	5
7:15 PM	13	0	0	13
7:30 PM	27	0	0	27
7:45 PM	11	0	0	11
8:00 PM	11	0	0	11
8:15 PM	8	0	1	9
8:30 PM	12	0	0	12
8:45 PM	7	0	0	7
9:00 PM	8	1	0	9
9:15 PM	3	1	0	4
9:30 PM	11	1	1	13
9:45 PM	4	0	0	4
10:00 PM	2	0	0	2
10:15 PM	4	0	0	4
10:30 PM	3	0	0	3
10:45 PM	1	0	0	1
11:00 PM	3	0	0	3
11:15 PM	3	0	0	3
11:30 PM	2	0	0	2
11:45 PM	2	0	0	2

AM Total 581 54 43 678  
 Percentage 85.69% 7.96% 6.34%  
 AM Peak 7:30 AM 7:30 AM 9:30 AM 7:30 AM  
 Volume 135 13 15 152

PM Total 819 30 20 869  
 Percentage 94.25% 3.45% 2.30%  
 PM Peak 4:30 PM 12:15 PM 1:15 PM 4:30 PM  
 Volume 119 8 5 126

Day Total 1400 84 63 1547  
 Percentage 90.50% 5.43% 4.07%

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File # 218348 ATR-A

Count Date: Wednesday, January 5, 2022  
 Direction: WB

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	5	0	0	5
12:15 AM	3	0	0	3
12:30 AM	0	0	0	0
12:45 AM	1	0	0	1
1:00 AM	0	1	0	1
1:15 AM	0	0	0	0
1:30 AM	1	0	1	2
1:45 AM	1	1	0	2
2:00 AM	1	0	0	1
2:15 AM	1	0	1	2
2:30 AM	0	0	0	0
2:45 AM	0	0	1	1
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	1	0	0	1
3:45 AM	1	0	0	1
4:00 AM	3	0	0	3
4:15 AM	3	0	0	3
4:30 AM	3	0	1	4
4:45 AM	5	0	0	5
5:00 AM	6	0	0	6
5:15 AM	8	0	0	8
5:30 AM	2	0	0	2
5:45 AM	5	0	0	5
6:00 AM	6	0	0	6
6:15 AM	7	1	0	8
6:30 AM	15	0	1	16
6:45 AM	17	3	0	20
7:00 AM	10	1	0	11
7:15 AM	22	1	1	24
7:30 AM	44	1	1	46
7:45 AM	58	3	0	61
8:00 AM	29	4	0	33
8:15 AM	18	1	0	19
8:30 AM	30	2	0	32
8:45 AM	21	3	0	24
9:00 AM	23	3	1	27
9:15 AM	16	4	2	22
9:30 AM	9	1	1	11
9:45 AM	10	1	0	11
10:00 AM	7	5	0	12
10:15 AM	9	1	0	10
10:30 AM	13	2	0	15
10:45 AM	16	0	2	18
11:00 AM	13	3	1	17
11:15 AM	18	1	5	24
11:30 AM	11	3	0	14
11:45 AM	24	1	1	26

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	28	4	0	32
12:15 PM	20	4	0	24
12:30 PM	23	6	0	29
12:45 PM	18	2	1	21
1:00 PM	18	1	1	20
1:15 PM	12	2	0	14
1:30 PM	8	3	1	12
1:45 PM	27	2	3	32
2:00 PM	25	3	1	29
2:15 PM	31	0	1	32
2:30 PM	40	2	1	43
2:45 PM	27	1	1	29
3:00 PM	31	0	1	32
3:15 PM	25	2	1	28
3:30 PM	59	3	1	63
3:45 PM	30	0	1	31
4:00 PM	41	1	1	43
4:15 PM	29	0	1	30
4:30 PM	38	2	2	42
4:45 PM	34	1	3	38
5:00 PM	40	2	3	45
5:15 PM	43	3	0	46
5:30 PM	36	3	3	42
5:45 PM	21	0	3	24
6:00 PM	26	1	1	28
6:15 PM	16	1	0	17
6:30 PM	16	1	2	19
6:45 PM	15	0	1	16
7:00 PM	24	0	1	25
7:15 PM	15	1	0	16
7:30 PM	19	0	0	19
7:45 PM	19	0	0	19
8:00 PM	10	0	0	10
8:15 PM	9	0	2	11
8:30 PM	8	0	0	8
8:45 PM	7	1	1	9
9:00 PM	10	0	1	11
9:15 PM	3	0	0	3
9:30 PM	5	0	0	5
9:45 PM	6	0	1	7
10:00 PM	1	0	0	1
10:15 PM	4	0	1	5
10:30 PM	2	0	0	2
10:45 PM	0	0	0	0
11:00 PM	5	1	0	6
11:15 PM	3	0	0	3
11:30 PM	0	0	0	0
11:45 PM	1	0	0	1

AM Total	496	47	20	563
Percentage	88.10%	8.35%	3.55%	
AM Peak	7:15 AM	8:30 AM	10:30 AM	7:15 AM
Volume	153	12	8	164

PM Total	928	53	41	1022
Percentage	90.80%	5.19%	4.01%	
PM Peak	3:30 PM	12:00 PM	4:15 PM	4:30 PM
Volume	159	16	9	171

Day Total	1424	100	61	1585
Percentage	89.84%	6.31%	3.85%	

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File # 218348 ATR-A

Count Date: Thursday, January 6, 2022  
 Direction: WB

AM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	3	1	0	4
12:15 AM	5	0	0	5
12:30 AM	0	1	0	1
12:45 AM	2	1	0	3
1:00 AM	1	1	0	2
1:15 AM	3	1	0	4
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	1	0	1	2
2:15 AM	0	1	1	2
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	1	0	1	2
3:15 AM	0	0	1	1
3:30 AM	0	0	0	0
3:45 AM	4	0	1	5
4:00 AM	0	0	0	0
4:15 AM	1	1	0	2
4:30 AM	4	1	0	5
4:45 AM	7	0	0	7
5:00 AM	3	0	0	3
5:15 AM	2	0	0	2
5:30 AM	5	1	0	6
5:45 AM	5	0	0	5
6:00 AM	9	1	0	10
6:15 AM	9	1	0	10
6:30 AM	10	3	0	13
6:45 AM	17	1	0	18
7:00 AM	8	0	1	9
7:15 AM	19	2	2	23
7:30 AM	45	1	0	46
7:45 AM	57	0	0	57
8:00 AM	23	1	0	24
8:15 AM	22	2	1	25
8:30 AM	32	2	0	34
8:45 AM	25	2	1	28
9:00 AM	11	0	1	12
9:15 AM	7	1	2	10
9:30 AM	5	1	0	6
9:45 AM	14	1	3	18
10:00 AM	9	2	0	11
10:15 AM	15	3	1	19
10:30 AM	13	1	1	15
10:45 AM	10	0	2	12
11:00 AM	24	1	3	28
11:15 AM	5	0	1	6
11:30 AM	17	3	1	21
11:45 AM	32	0	1	33

PM	Cars	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	24	3	1	28
12:15 PM	18	1	0	19
12:30 PM	24	0	1	25
12:45 PM	27	1	0	28
1:00 PM	21	2	2	25
1:15 PM	17	0	0	17
1:30 PM	11	1	2	14
1:45 PM	29	4	0	33
2:00 PM	33	1	0	34
2:15 PM	41	2	0	43
2:30 PM	46	2	1	49
2:45 PM	30	2	0	32
3:00 PM	36	2	4	42
3:15 PM	35	0	0	35
3:30 PM	38	1	1	40
3:45 PM	32	1	1	34
4:00 PM	38	1	1	40
4:15 PM	36	0	0	36
4:30 PM	52	1	1	54
4:45 PM	30	0	2	32
5:00 PM	35	0	1	36
5:15 PM	47	1	3	51
5:30 PM	32	1	1	34
5:45 PM	26	0	1	27
6:00 PM	28	2	1	31
6:15 PM	16	1	1	18
6:30 PM	14	1	1	16
6:45 PM	9	0	1	10
7:00 PM	14	1	3	18
7:15 PM	11	0	2	13
7:30 PM	15	1	2	18
7:45 PM	10	0	1	11
8:00 PM	8	0	0	8
8:15 PM	10	0	0	10
8:30 PM	8	0	0	8
8:45 PM	7	0	0	7
9:00 PM	6	1	0	7
9:15 PM	3	0	2	5
9:30 PM	8	1	0	9
9:45 PM	4	0	1	5
10:00 PM	4	0	1	5
10:15 PM	4	0	0	4
10:30 PM	4	0	0	4
10:45 PM	3	1	0	4
11:00 PM	1	1	0	2
11:15 PM	0	0	0	0
11:30 PM	2	0	0	2
11:45 PM	1	0	0	1

AM Total 485 38 26 549  
 Percentage 88.34% 6.92% 4.74%  
 AM Peak 7:30 AM 8:00 AM 10:15 AM 7:30 AM  
 Volume 147 7 7 152

PM Total 948 37 39 1024  
 Percentage 92.58% 3.61% 3.81%  
 PM Peak 4:30 PM 1:45 PM 6:45 PM 4:30 PM  
 Volume 164 9 8 173

Day Total 1433 75 65 1573  
 Percentage 91.10% 4.77% 4.13%

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PRECISION  
 DATA  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118

PDI File # 218348 ATR-A

Direction: EB

Weekly Report

Day Date	Wednesday 01/05/22		Thursday 01/06/22												Week Ave			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
12:00	2	30	4	20	0	0	0	0	0	0	0	0	0	0	3	25		
12:15	8	24	0	32	0	0	0	0	0	0	0	0	0	0	4	28		
12:30	2	20	1	27	0	0	0	0	0	0	0	0	0	0	2	24		
12:45	1	20	2	17	0	0	0	0	0	0	0	0	0	0	2	19		
1:00	3	21	11	24	0	0	0	0	0	0	0	0	0	0	7	23		
1:15	2	15	5	21	0	0	0	0	0	0	0	0	0	0	4	18		
1:30	4	19	2	26	0	0	0	0	0	0	0	0	0	0	3	23		
1:45	4	24	3	28	0	0	0	0	0	0	0	0	0	0	4	26		
2:00	1	33	1	37	0	0	0	0	0	0	0	0	0	0	1	35		
2:15	2	24	2	26	0	0	0	0	0	0	0	0	0	0	2	25		
2:30	2	34	1	27	0	0	0	0	0	0	0	0	0	0	2	31		
2:45	0	31	1	22	0	0	0	0	0	0	0	0	0	0	1	27		
3:00	3	43	2	25	0	0	0	0	0	0	0	0	0	0	3	34		
3:15	2	26	1	36	0	0	0	0	0	0	0	0	0	0	2	31		
3:30	0	26	2	31	0	0	0	0	0	0	0	0	0	0	1	29		
3:45	0	32	1	31	0	0	0	0	0	0	0	0	0	0	1	32		
4:00	3	23	3	20	0	0	0	0	0	0	0	0	0	0	3	22		
4:15	2	27	5	29	0	0	0	0	0	0	0	0	0	0	4	28		
4:30	4	22	4	24	0	0	0	0	0	0	0	0	0	0	4	23		
4:45	6	23	5	25	0	0	0	0	0	0	0	0	0	0	6	24		
5:00	7	27	4	38	0	0	0	0	0	0	0	0	0	0	6	33		
5:15	9	29	10	39	0	0	0	0	0	0	0	0	0	0	10	34		
5:30	9	24	11	22	0	0	0	0	0	0	0	0	0	0	10	23		
5:45	21	19	22	25	0	0	0	0	0	0	0	0	0	0	22	22		
6:00	11	32	10	19	0	0	0	0	0	0	0	0	0	0	11	26		
6:15	19	18	20	17	0	0	0	0	0	0	0	0	0	0	20	18		
6:30	23	12	20	19	0	0	0	0	0	0	0	0	0	0	22	16		
6:45	24	11	27	17	0	0	0	0	0	0	0	0	0	0	26	14		
7:00	25	10	24	5	0	0	0	0	0	0	0	0	0	0	25	8		
7:15	26	22	21	13	0	0	0	0	0	0	0	0	0	0	24	18		
7:30	40	22	42	27	0	0	0	0	0	0	0	0	0	0	41	25		
7:45	40	14	34	11	0	0	0	0	0	0	0	0	0	0	37	13		
8:00	34	17	33	11	0	0	0	0	0	0	0	0	0	0	34	14		
8:15	29	9	43	9	0	0	0	0	0	0	0	0	0	0	36	9		
8:30	23	11	22	12	0	0	0	0	0	0	0	0	0	0	23	12		
8:45	27	6	37	7	0	0	0	0	0	0	0	0	0	0	32	7		
9:00	24	7	24	9	0	0	0	0	0	0	0	0	0	0	24	8		
9:15	16	8	16	4	0	0	0	0	0	0	0	0	0	0	16	6		
9:30	25	3	22	13	0	0	0	0	0	0	0	0	0	0	24	8		
9:45	30	5	27	4	0	0	0	0	0	0	0	0	0	0	29	5		
10:00	15	7	19	2	0	0	0	0	0	0	0	0	0	0	17	5		
10:15	18	1	20	4	0	0	0	0	0	0	0	0	0	0	19	3		
10:30	18	5	25	3	0	0	0	0	0	0	0	0	0	0	22	4		
10:45	18	2	19	1	0	0	0	0	0	0	0	0	0	0	19	2		
11:00	24	3	15	3	0	0	0	0	0	0	0	0	0	0	20	3		
11:15	14	1	20	3	0	0	0	0	0	0	0	0	0	0	17	2		
11:30	22	3	14	2	0	0	0	0	0	0	0	0	0	0	18	3		
11:45	18	5	21	2	0	0	0	0	0	0	0	0	0	0	20	4		
<b>Total</b>	<b>660</b>	<b>850</b>	<b>678</b>	<b>869</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>669</b>	<b>860</b>		
<b>Day Total</b>	<b>1510</b>		<b>1547</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>1529</b>			
<b>Peak HR</b>	<b>7:30 AM</b>	<b>2:30 PM</b>	<b>7:30 AM</b>	<b>4:30 PM</b>													<b>7:30 AM</b>	<b>3:00 PM</b>
<b>Volume</b>	<b>143</b>	<b>134</b>	<b>152</b>	<b>126</b>													<b>148</b>	<b>125</b>

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PRECISION  
 DATA  
 INDUSTRIES, LLC

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118

PDI File # 218348 ATR-A

Direction: WB

Weekly Report

Day Date	Wednesday 01/05/22		Thursday 01/06/22												Week Ave			
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
12:00	5	32	4	28	0	0	0	0	0	0	0	0	0	0	5	30		
12:15	3	24	5	19	0	0	0	0	0	0	0	0	0	0	4	22		
12:30	0	29	1	25	0	0	0	0	0	0	0	0	0	0	1	27		
12:45	1	21	3	28	0	0	0	0	0	0	0	0	0	0	2	25		
1:00	1	20	2	25	0	0	0	0	0	0	0	0	0	0	2	23		
1:15	0	14	4	17	0	0	0	0	0	0	0	0	0	0	2	16		
1:30	2	12	0	14	0	0	0	0	0	0	0	0	0	0	1	13		
1:45	2	32	0	33	0	0	0	0	0	0	0	0	0	0	1	33		
2:00	1	29	2	34	0	0	0	0	0	0	0	0	0	0	2	32		
2:15	2	32	2	43	0	0	0	0	0	0	0	0	0	0	2	38		
2:30	0	43	0	49	0	0	0	0	0	0	0	0	0	0	0	46		
2:45	1	29	0	32	0	0	0	0	0	0	0	0	0	0	1	31		
3:00	0	32	2	42	0	0	0	0	0	0	0	0	0	0	1	37		
3:15	0	28	1	35	0	0	0	0	0	0	0	0	0	0	1	32		
3:30	1	63	0	40	0	0	0	0	0	0	0	0	0	0	1	52		
3:45	1	31	5	34	0	0	0	0	0	0	0	0	0	0	3	33		
4:00	3	43	0	40	0	0	0	0	0	0	0	0	0	0	2	42		
4:15	3	30	2	36	0	0	0	0	0	0	0	0	0	0	3	33		
4:30	4	42	5	54	0	0	0	0	0	0	0	0	0	0	5	48		
4:45	5	38	7	32	0	0	0	0	0	0	0	0	0	0	6	35		
5:00	6	45	3	36	0	0	0	0	0	0	0	0	0	0	5	41		
5:15	8	46	2	51	0	0	0	0	0	0	0	0	0	0	5	49		
5:30	2	42	6	34	0	0	0	0	0	0	0	0	0	0	4	38		
5:45	5	24	5	27	0	0	0	0	0	0	0	0	0	0	5	26		
6:00	6	28	10	31	0	0	0	0	0	0	0	0	0	0	8	30		
6:15	8	17	10	18	0	0	0	0	0	0	0	0	0	0	9	18		
6:30	16	19	13	16	0	0	0	0	0	0	0	0	0	0	15	18		
6:45	20	16	18	10	0	0	0	0	0	0	0	0	0	0	19	13		
7:00	11	25	9	18	0	0	0	0	0	0	0	0	0	0	10	22		
7:15	24	16	23	13	0	0	0	0	0	0	0	0	0	0	24	15		
7:30	46	19	46	18	0	0	0	0	0	0	0	0	0	0	46	19		
7:45	61	19	57	11	0	0	0	0	0	0	0	0	0	0	59	15		
8:00	33	10	24	8	0	0	0	0	0	0	0	0	0	0	29	9		
8:15	19	11	25	10	0	0	0	0	0	0	0	0	0	0	22	11		
8:30	32	8	34	8	0	0	0	0	0	0	0	0	0	0	33	8		
8:45	24	9	28	7	0	0	0	0	0	0	0	0	0	0	26	8		
9:00	27	11	12	7	0	0	0	0	0	0	0	0	0	0	20	9		
9:15	22	3	10	5	0	0	0	0	0	0	0	0	0	0	16	4		
9:30	11	5	6	9	0	0	0	0	0	0	0	0	0	0	9	7		
9:45	11	7	18	5	0	0	0	0	0	0	0	0	0	0	15	6		
10:00	12	1	11	5	0	0	0	0	0	0	0	0	0	0	12	3		
10:15	10	5	19	4	0	0	0	0	0	0	0	0	0	0	15	5		
10:30	15	2	15	4	0	0	0	0	0	0	0	0	0	0	15	3		
10:45	18	0	12	4	0	0	0	0	0	0	0	0	0	0	15	2		
11:00	17	6	28	2	0	0	0	0	0	0	0	0	0	0	23	4		
11:15	24	3	6	0	0	0	0	0	0	0	0	0	0	0	15	2		
11:30	14	0	21	2	0	0	0	0	0	0	0	0	0	0	18	1		
11:45	26	1	33	1	0	0	0	0	0	0	0	0	0	0	30	1		
<b>Total</b>	<b>563</b>	<b>1022</b>	<b>549</b>	<b>1024</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>556</b>	<b>1023</b>		
<b>Day Total</b>	<b>1585</b>		<b>1573</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>1579</b>			
<b>Peak HR</b>	<b>7:15 AM</b>	<b>4:30 PM</b>	<b>7:30 AM</b>	<b>4:30 PM</b>													<b>7:15 AM</b>	<b>4:30 PM</b>
<b>Volume</b>	<b>164</b>	<b>171</b>	<b>152</b>	<b>173</b>													<b>157</b>	<b>172</b>

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Wednesday, January 5, 2022

**Speed (60-minute)**

WB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	2	2	3	0	1	0	0	0	0	0	9	37.0	33.2
1:00 AM	0	1	1	0	2	0	1	0	0	0	0	0	0	5	36.4	29.0
2:00 AM	0	0	0	0	2	1	1	0	0	0	0	0	0	4	40.7	36.5
3:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	54.1	49.5
4:00 AM	0	2	1	2	2	2	5	0	1	0	0	0	0	15	42.0	34.2
5:00 AM	0	0	0	0	6	5	6	3	1	0	0	0	0	21	45.0	39.0
6:00 AM	0	3	2	5	10	16	11	2	0	0	0	0	0	49	42.0	34.6
7:00 AM	0	0	3	19	21	35	39	17	9	2	0	0	0	145	45.4	38.4
8:00 AM	0	3	1	16	24	31	22	9	3	0	0	0	0	109	43.0	36.0
9:00 AM	0	1	8	11	18	19	11	8	1	0	0	0	0	77	44.0	34.4
10:00 AM	0	1	3	8	11	20	8	3	0	0	0	0	0	54	40.1	34.8
11:00 AM	0	0	4	10	14	27	22	6	1	0	0	0	0	84	43.0	36.3
12:00 PM	0	0	7	14	19	34	23	6	2	0	0	0	0	105	42.0	35.5
1:00 PM	0	0	6	12	12	16	25	5	1	0	0	0	0	77	43.0	35.9
2:00 PM	1	0	11	13	32	41	27	10	1	0	0	0	0	136	42.0	35.4
3:00 PM	0	0	5	11	28	46	45	18	1	0	0	0	0	154	44.0	37.6
4:00 PM	2	1	9	18	34	52	30	9	1	0	0	0	0	156	41.8	35.1
5:00 PM	0	6	10	23	40	53	21	3	0	0	0	0	0	156	39.8	33.3
6:00 PM	0	0	1	13	22	24	19	3	0	0	0	0	0	82	42.0	35.3
7:00 PM	0	1	1	5	23	29	16	4	0	0	0	0	0	79	41.0	35.9
8:00 PM	0	1	0	6	9	16	4	3	0	0	0	0	0	39	40.0	34.9
9:00 PM	0	0	0	2	5	12	6	1	0	0	0	0	0	26	41.8	37.0
10:00 PM	0	0	0	1	3	0	2	1	1	0	0	0	0	8	44.8	37.8
11:00 PM	0	0	0	1	2	5	2	0	0	0	0	0	0	10	40.3	35.6
<b>Total</b>	<b>3</b>	<b>20</b>	<b>74</b>	<b>192</b>	<b>341</b>	<b>487</b>	<b>347</b>	<b>112</b>	<b>23</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1602</b>	<b>43.0</b>	<b>35.7</b>
<b>Percent</b>	<b>0.19%</b>	<b>1.25%</b>	<b>4.62%</b>	<b>11.99%</b>	<b>21.29%</b>	<b>30.40%</b>	<b>21.66%</b>	<b>6.99%</b>	<b>1.44%</b>	<b>0.19%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak		6:00 AM	9:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM				7:00 AM
Volume	0	3	8	19	24	35	39	17	9	2	0	0	0	145
PM Peak	4:00 PM	5:00 PM	2:00 PM	5:00 PM	5:00 PM	5:00 PM	3:00 PM	3:00 PM	12:00 PM					4:00 PM
Volume	2	6	11	23	40	53	45	18	2	0	0	0	0	156

15th Percentile:	28.0 MPH	Average Speed:	35.7 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	34 to 43 MPH	Number of Vehicles > 35 MPH:	867
85th Percentile:	43.0 MPH	Number in Pace:	859	Percent of Vehicles > 35 MPH:	54.1%
95th Percentile:	46.0 MPH	Percent in Pace:	53.6%		

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Wednesday, January 5, 2022

**Speed (60-minute)**

EB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	2	5	3	2	0	0	0	0	0	12	43.7	38.4
1:00 AM	0	0	5	1	3	3	2	2	0	0	0	0	0	16	43.5	32.3
2:00 AM	0	0	0	1	1	1	0	1	0	0	0	0	0	4	41.1	35.0
3:00 AM	0	0	3	0	2	0	0	1	0	0	0	0	0	6	37.0	30.0
4:00 AM	1	2	3	6	1	4	2	0	0	0	0	0	0	19	37.6	28.1
5:00 AM	1	1	2	9	15	7	7	5	0	0	0	0	0	47	42.1	33.7
6:00 AM	0	2	2	11	16	25	22	6	0	0	0	0	0	84	42.0	36.1
7:00 AM	1	0	5	17	22	40	40	14	0	0	0	0	0	139	43.3	36.7
8:00 AM	0	0	4	11	16	34	38	14	1	0	0	0	0	118	43.5	37.6
9:00 AM	0	3	10	15	20	29	19	6	0	0	0	0	0	102	42.0	34.0
10:00 AM	1	3	5	20	17	19	11	3	0	0	0	0	0	79	40.3	32.7
11:00 AM	0	0	5	16	21	16	21	6	1	0	0	0	0	86	43.0	35.1
12:00 PM	0	5	4	15	25	28	20	3	1	0	0	0	0	101	41.0	34.0
1:00 PM	1	1	8	12	19	25	15	5	4	0	0	0	0	90	42.0	34.9
2:00 PM	0	4	5	18	19	42	29	7	1	1	0	0	0	126	42.3	35.6
3:00 PM	1	3	2	29	28	36	27	5	1	0	0	0	0	132	41.0	34.5
4:00 PM	0	3	8	28	19	30	18	1	0	0	0	0	0	107	40.0	32.8
5:00 PM	0	2	12	20	34	29	12	1	0	0	0	0	0	110	38.0	32.4
6:00 PM	0	0	10	12	22	24	11	2	1	0	0	0	0	82	40.0	33.3
7:00 PM	0	0	3	11	19	20	15	4	1	1	0	0	0	74	43.0	36.0
8:00 PM	0	0	7	9	10	13	5	4	1	0	0	0	0	49	40.8	33.8
9:00 PM	0	1	0	3	6	8	4	3	0	0	0	0	0	25	44.0	36.2
10:00 PM	0	0	1	1	4	3	6	1	0	0	0	0	0	16	42.0	36.9
11:00 PM	0	0	0	2	1	5	3	1	0	0	0	0	0	12	42.7	37.3
<b>Total</b>	<b>6</b>	<b>30</b>	<b>104</b>	<b>267</b>	<b>342</b>	<b>446</b>	<b>330</b>	<b>97</b>	<b>12</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1636</b>	<b>42.0</b>	<b>34.7</b>
<b>Percent</b>	<b>0.37%</b>	<b>1.83%</b>	<b>6.36%</b>	<b>16.32%</b>	<b>20.90%</b>	<b>27.26%</b>	<b>20.17%</b>	<b>5.93%</b>	<b>0.73%</b>	<b>0.12%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak	4:00 AM	9:00 AM	9:00 AM	10:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM						7:00 AM
Volume	1	3	10	20	22	40	40	14	1	0	0	0	0	0	139
PM Peak	1:00 PM	12:00 PM	5:00 PM	3:00 PM	5:00 PM	2:00 PM	2:00 PM	2:00 PM	1:00 PM	2:00 PM					3:00 PM
Volume	1	5	12	29	34	42	29	7	4	1	0	0	0	132	

15th Percentile:	27.0 MPH	Average Speed:	34.7 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	810
85th Percentile:	42.0 MPH	Number in Pace:	836	Percent of Vehicles > 35 MPH:	49.5%
95th Percentile:	45.0 MPH	Percent in Pace:	51.1%		



Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Wednesday, January 5, 2022

**Speed (60-minute)**

**Combined WB and EB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	2	4	8	3	3	0	0	0	0	0	21	43.0	36.2
1:00 AM	0	1	6	1	5	3	3	2	0	0	0	0	0	21	42.0	31.5
2:00 AM	0	0	0	1	3	2	1	1	0	0	0	0	0	8	41.9	35.8
3:00 AM	0	0	3	0	2	0	1	1	0	1	0	0	0	8	45.9	34.9
4:00 AM	1	4	4	8	3	6	7	0	1	0	0	0	0	34	41.1	30.8
5:00 AM	1	1	2	9	21	12	13	8	1	0	0	0	0	68	44.0	35.4
6:00 AM	0	5	4	16	26	41	33	8	0	0	0	0	0	133	42.0	35.6
7:00 AM	1	0	8	36	43	75	79	31	9	2	0	0	0	284	44.0	37.6
8:00 AM	0	3	5	27	40	65	60	23	4	0	0	0	0	227	43.1	36.8
9:00 AM	0	4	18	26	38	48	30	14	1	0	0	0	0	179	42.0	34.2
10:00 AM	1	4	8	28	28	39	19	6	0	0	0	0	0	133	40.2	33.6
11:00 AM	0	0	9	26	35	43	43	12	2	0	0	0	0	170	43.0	35.7
12:00 PM	0	5	11	29	44	62	43	9	3	0	0	0	0	206	41.0	34.8
1:00 PM	1	1	14	24	31	41	40	10	5	0	0	0	0	167	43.0	35.4
2:00 PM	1	4	16	31	51	83	56	17	2	1	0	0	0	262	42.0	35.5
3:00 PM	1	3	7	40	56	82	72	23	2	0	0	0	0	286	43.0	36.2
4:00 PM	2	4	17	46	53	82	48	10	1	0	0	0	0	263	41.0	34.2
5:00 PM	0	8	22	43	74	82	33	4	0	0	0	0	0	266	39.0	33.0
6:00 PM	0	0	11	25	44	48	30	5	1	0	0	0	0	164	40.6	34.3
7:00 PM	0	1	4	16	42	49	31	8	1	1	0	0	0	153	42.2	36.0
8:00 PM	0	1	7	15	19	29	9	7	1	0	0	0	0	88	40.0	34.3
9:00 PM	0	1	0	5	11	20	10	4	0	0	0	0	0	51	44.0	36.6
10:00 PM	0	0	1	2	7	3	8	2	1	0	0	0	0	24	42.6	37.2
11:00 PM	0	0	0	3	3	10	5	1	0	0	0	0	0	22	41.9	36.5
<b>Total</b>	<b>9</b>	<b>50</b>	<b>178</b>	<b>459</b>	<b>683</b>	<b>933</b>	<b>677</b>	<b>209</b>	<b>35</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3238</b>	<b>42.0</b>	<b>35.2</b>
<b>Percent</b>	<b>0.28%</b>	<b>1.54%</b>	<b>5.50%</b>	<b>14.18%</b>	<b>21.09%</b>	<b>28.81%</b>	<b>20.91%</b>	<b>6.45%</b>	<b>1.08%</b>	<b>0.15%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak	4:00 AM	6:00 AM	9:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM						7:00 AM
Volume	1	5	18	36	43	75	79	31	9	2	0	0	0			284
PM Peak	4:00 PM	5:00 PM	5:00 PM	4:00 PM	5:00 PM	2:00 PM	3:00 PM	3:00 PM	1:00 PM	2:00 PM						3:00 PM
Volume	2	8	22	46	74	83	72	23	5	1	0	0	0			286

15th Percentile:	28.0 MPH	Average Speed:	35.2 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	1677
85th Percentile:	42.0 MPH	Number in Pace:	1694	Percent of Vehicles > 35 MPH:	51.8%
95th Percentile:	46.0 MPH	Percent in Pace:	52.3%		

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Thursday, January 6, 2022

**Speed (60-minute)**

WB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	3	4	3	1	2	0	0	0	0	0	13	44.4	34.6
1:00 AM	0	0	0	0	1	4	0	0	1	0	0	0	0	6	41.8	39.2
2:00 AM	0	1	1	1	0	1	0	0	0	0	0	0	0	4	34.0	27.3
3:00 AM	0	2	2	0	2	2	1	0	0	0	0	0	0	9	38.0	29.9
4:00 AM	0	1	2	2	4	4	2	0	0	0	0	0	0	15	38.9	32.4
5:00 AM	0	0	0	3	7	3	3	0	0	0	0	0	0	16	39.5	33.6
6:00 AM	1	2	6	7	19	13	4	0	0	0	0	0	0	52	37.0	31.2
7:00 AM	0	2	3	18	21	32	39	13	2	1	0	0	0	131	44.0	37.2
8:00 AM	0	1	5	15	24	32	24	6	4	1	0	0	0	112	43.0	36.1
9:00 AM	0	1	5	8	12	12	7	3	0	1	0	0	0	49	43.0	34.4
10:00 AM	0	1	4	11	11	12	11	6	0	0	0	0	0	56	42.8	35.1
11:00 AM	0	3	4	6	15	28	23	5	1	0	0	0	0	85	43.0	36.3
12:00 PM	0	0	4	12	17	36	23	7	2	0	0	0	0	101	43.0	36.7
1:00 PM	0	2	1	10	13	29	24	11	1	0	0	0	0	91	43.5	37.0
2:00 PM	0	2	5	15	34	47	42	9	5	0	0	0	0	159	43.0	36.7
3:00 PM	0	1	4	17	30	51	40	9	2	0	0	0	0	154	42.1	36.3
4:00 PM	0	1	3	17	29	51	41	18	4	0	0	0	0	164	44.0	37.4
5:00 PM	0	0	5	20	33	60	28	7	0	0	0	0	0	153	41.0	35.5
6:00 PM	0	2	2	10	19	21	16	4	0	0	0	0	0	74	42.0	35.1
7:00 PM	0	0	2	4	16	20	13	5	2	0	0	0	0	62	43.0	36.9
8:00 PM	0	0	0	2	6	13	7	6	1	0	0	0	0	35	45.9	38.5
9:00 PM	0	2	1	3	3	6	5	3	2	0	0	0	0	25	48.0	36.7
10:00 PM	0	0	0	2	3	4	5	2	1	0	0	0	0	17	45.8	38.7
11:00 PM	0	0	0	0	2	1	1	0	0	0	0	0	0	4	39.1	35.8
<b>Total</b>	<b>1</b>	<b>24</b>	<b>59</b>	<b>186</b>	<b>325</b>	<b>485</b>	<b>360</b>	<b>116</b>	<b>28</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1587</b>	<b>43.0</b>	<b>36.2</b>
<b>Percent</b>	<b>0.06%</b>	<b>1.51%</b>	<b>3.72%</b>	<b>11.72%</b>	<b>20.48%</b>	<b>30.56%</b>	<b>22.68%</b>	<b>7.31%</b>	<b>1.76%</b>	<b>0.19%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>			

AM Peak	6:00 AM	11:00 AM	6:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	7:00 AM						7:00 AM
Volume	1	3	6	18	24	32	39	13	4	1	0	0	0			131
PM Peak		1:00 PM	2:00 PM	5:00 PM	2:00 PM	5:00 PM	2:00 PM	4:00 PM	2:00 PM							4:00 PM
Volume	0	2	5	20	34	60	42	18	5	0	0	0	0			164

15th Percentile:	29.0 MPH	Average Speed:	36.2 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	37.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	910
85th Percentile:	43.0 MPH	Number in Pace:	870	Percent of Vehicles > 35 MPH:	57.3%
95th Percentile:	47.0 MPH	Percent in Pace:	54.8%		

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Thursday, January 6, 2022

**Speed (60-minute)**

EB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	1	2	2	2	2	2	0	0	0	0	0	0	11	39.0	30.5
1:00 AM	0	1	2	1	8	5	4	1	0	0	0	0	0	22	40.0	33.1
2:00 AM	0	0	0	1	1	1	1	1	0	0	0	0	0	5	42.8	37.4
3:00 AM	0	0	0	0	3	2	0	0	1	0	0	0	0	6	39.5	36.7
4:00 AM	0	3	3	7	2	3	1	0	0	0	0	0	0	19	36.3	27.6
5:00 AM	0	4	1	9	13	10	9	2	0	0	0	0	0	48	41.0	33.3
6:00 AM	0	1	5	14	23	26	14	2	0	0	0	0	0	85	40.4	34.2
7:00 AM	0	0	3	16	25	35	37	10	0	1	0	0	0	127	42.1	36.7
8:00 AM	1	1	6	18	23	41	39	8	2	0	0	0	0	139	42.0	35.9
9:00 AM	0	4	4	26	17	20	18	8	4	0	0	0	0	101	44.0	34.6
10:00 AM	0	4	4	12	21	26	28	3	0	0	0	1	0	99	42.0	35.3
11:00 AM	1	4	8	8	15	18	15	5	1	0	0	0	0	75	42.0	33.7
12:00 PM	0	5	3	16	15	31	29	3	1	0	1	0	0	104	42.0	35.4
1:00 PM	0	2	7	15	15	30	27	15	1	0	0	0	0	112	44.0	36.4
2:00 PM	0	3	8	24	14	38	28	6	3	0	0	0	0	124	41.0	35.0
3:00 PM	0	2	6	21	18	35	42	7	1	1	0	0	0	133	43.0	36.2
4:00 PM	0	1	7	16	26	26	21	7	1	0	0	0	0	105	41.0	34.6
5:00 PM	0	1	13	33	31	36	23	2	0	0	0	0	0	139	40.0	32.9
6:00 PM	1	3	5	11	19	20	16	5	0	0	0	0	0	80	40.0	34.0
7:00 PM	0	1	3	2	18	18	14	4	1	0	0	0	0	61	42.0	36.0
8:00 PM	0	1	0	6	5	10	12	5	0	0	0	0	0	39	42.6	36.7
9:00 PM	1	2	2	6	7	3	7	3	0	0	1	0	0	32	42.0	33.8
10:00 PM	0	0	0	1	3	3	2	1	1	0	0	0	0	11	43.0	38.0
11:00 PM	0	1	0	3	2	3	1	1	0	0	0	0	0	11	39.0	32.9
<b>Total</b>	<b>4</b>	<b>45</b>	<b>92</b>	<b>268</b>	<b>326</b>	<b>442</b>	<b>390</b>	<b>99</b>	<b>17</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1688</b>	<b>42.0</b>	<b>34.9</b>
<b>Percent</b>	<b>0.24%</b>	<b>2.67%</b>	<b>5.45%</b>	<b>15.88%</b>	<b>19.31%</b>	<b>26.18%</b>	<b>23.10%</b>	<b>5.86%</b>	<b>1.01%</b>	<b>0.12%</b>	<b>0.12%</b>	<b>0.06%</b>	<b>0.00%</b>			

AM Peak	8:00 AM	5:00 AM	11:00 AM	9:00 AM	7:00 AM	8:00 AM	8:00 AM	7:00 AM	9:00 AM	7:00 AM		10:00 AM		8:00 AM
Volume	1	4	8	26	25	41	39	10	4	1	0	1	0	139
PM Peak	6:00 PM	12:00 PM	5:00 PM	5:00 PM	5:00 PM	2:00 PM	3:00 PM	1:00 PM	2:00 PM	3:00 PM	12:00 PM			5:00 PM
Volume	1	5	13	33	31	38	42	15	3	1	1	0	0	139

15th Percentile:	27.0 MPH	Average Speed:	34.9 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	871
85th Percentile:	42.0 MPH	Number in Pace:	859	Percent of Vehicles > 35 MPH:	51.6%
95th Percentile:	45.0 MPH	Percent in Pace:	50.9%		

Bartlett Street  
 just east of Cedar Hill Street  
 City, State: Northborough, MA  
 Client: Green International/ C. Tobias  
 Site Code: Task Order 27



PDI File #: 218348 ATR-A

Count Date  
 Thursday, January 6, 2022

**Speed (60-minute)**

**Combined WB and EB**

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	1	2	5	6	5	3	2	0	0	0	0	0	24	41.7	32.7
1:00 AM	0	1	2	1	9	9	4	1	1	0	0	0	0	28	40.0	34.4
2:00 AM	0	1	1	2	1	2	1	1	0	0	0	0	0	9	39.8	32.9
3:00 AM	0	2	2	0	5	4	1	0	1	0	0	0	0	15	38.0	32.6
4:00 AM	0	4	5	9	6	7	3	0	0	0	0	0	0	34	38.0	29.7
5:00 AM	0	4	1	12	20	13	12	2	0	0	0	0	0	64	40.6	33.3
6:00 AM	1	3	11	21	42	39	18	2	0	0	0	0	0	137	38.6	33.0
7:00 AM	0	2	6	34	46	67	76	23	2	2	0	0	0	258	43.5	36.9
8:00 AM	1	2	11	33	47	73	63	14	6	1	0	0	0	251	43.0	36.0
9:00 AM	0	5	9	34	29	32	25	11	4	1	0	0	0	150	43.0	34.6
10:00 AM	0	5	8	23	32	38	39	9	0	0	0	1	0	155	42.0	35.2
11:00 AM	1	7	12	14	30	46	38	10	2	0	0	0	0	160	42.2	35.1
12:00 PM	0	5	7	28	32	67	52	10	3	0	1	0	0	205	42.0	36.0
1:00 PM	0	4	8	25	28	59	51	26	2	0	0	0	0	203	44.0	36.7
2:00 PM	0	5	13	39	48	85	70	15	8	0	0	0	0	283	43.0	35.9
3:00 PM	0	3	10	38	48	86	82	16	3	1	0	0	0	287	43.0	36.3
4:00 PM	0	2	10	33	55	77	62	25	5	0	0	0	0	269	43.0	36.3
5:00 PM	0	1	18	53	64	96	51	9	0	0	0	0	0	292	41.0	34.3
6:00 PM	1	5	7	21	38	41	32	9	0	0	0	0	0	154	41.0	34.6
7:00 PM	0	1	5	6	34	38	27	9	3	0	0	0	0	123	42.7	36.5
8:00 PM	0	1	0	8	11	23	19	11	1	0	0	0	0	74	45.0	37.6
9:00 PM	1	4	3	9	10	9	12	6	2	0	1	0	0	57	44.2	35.1
10:00 PM	0	0	0	3	6	7	7	3	2	0	0	0	0	28	45.0	38.4
11:00 PM	0	1	0	3	4	4	2	1	0	0	0	0	0	15	39.8	33.7
<b>Total</b>	<b>5</b>	<b>69</b>	<b>151</b>	<b>454</b>	<b>651</b>	<b>927</b>	<b>750</b>	<b>215</b>	<b>45</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3275</b>	<b>42.0</b>	<b>35.5</b>
<b>Percent</b>	<b>0.15%</b>	<b>2.11%</b>	<b>4.61%</b>	<b>13.86%</b>	<b>19.88%</b>	<b>28.31%</b>	<b>22.90%</b>	<b>6.56%</b>	<b>1.37%</b>	<b>0.15%</b>	<b>0.06%</b>	<b>0.03%</b>	<b>0.00%</b>			

AM Peak	6:00 AM	11:00 AM	11:00 AM	7:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	7:00 AM		10:00 AM		7:00 AM
Volume	1	7	12	34	47	73	76	23	6	2	0	1	0	258
PM Peak	6:00 PM	12:00 PM	5:00 PM	5:00 PM	5:00 PM	5:00 PM	3:00 PM	1:00 PM	2:00 PM	3:00 PM	12:00 PM			5:00 PM
Volume	1	5	18	53	64	96	82	26	8	1	1	0	0	292

15th Percentile:	28.0 MPH	Average Speed:	35.5 MPH	Posted Speed Limit:	35 MPH
50th Percentile:	36.0 MPH	10 MPH Pace:	33 to 42 MPH	Number of Vehicles > 35 MPH:	1781
85th Percentile:	42.0 MPH	Number in Pace:	1729	Percent of Vehicles > 35 MPH:	54.4%
95th Percentile:	46.0 MPH	Percent in Pace:	52.8%		





**PRECISION  
DATA  
INDUSTRIES, LLC**

## Location Map: 197253 Northborough, MA

Precision Data Industries, LLC 46 Morton Street, Framingham, MA 01702 ph: 508-875-0100 email: datarequests@pdillc.com

(3) 6:30-9am/ 4-6pm TMCs  
(1) 48HR (v/c/s) ATR



<b>Client:</b> VHB	<b>Engineer:</b> T. Benson	<b>Site Code:</b> 83468.19	<b>Date:</b> Wed 10/16 thru Thurs 10/17/2019	<b>PDI Job #</b> 197253	<b>City, State:</b> Northborough, MA
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Bartlett Street  
 west of Cedarr Hill Road  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson



197253 A Volume  
 Site Code: 83468.19  
 Date Start: 10/16/19  
 Date End: 10/17/19

Start Time	EB		WB		Combin ed		10/16/19 Wed			
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.				
12:00	4	52	2	77	6	129				
12:15	1	53	3	45	4	98				
12:30	0	59	4	46	4	105				
12:45	0	61	1	49	1	110	442			
01:00	4	57	6	51	10	108				
01:15	5	47	3	52	8	99				
01:30	0	49	5	66	5	115				
01:45	6	62	3	46	9	108	430			
02:00	3	66	4	45	7	111				
02:15	1	50	5	59	6	109				
02:30	3	68	1	88	4	156				
02:45	2	77	4	73	6	150	526			
03:00	1	86	4	95	5	181				
03:15	2	61	4	72	6	133				
03:30	6	60	5	107	11	167				
03:45	7	54	10	75	17	129	610			
04:00	3	45	9	119	12	164				
04:15	9	52	8	118	17	170				
04:30	14	71	4	163	18	234				
04:45	15	69	6	174	21	243	811			
05:00	27	68	10	214	37	282				
05:15	18	71	12	211	30	282				
05:30	36	37	20	192	56	229				
05:45	49	47	21	155	70	202	995			
06:00	48	55	22	105	70	160				
06:15	47	37	31	96	78	133				
06:30	73	30	43	69	116	99				
06:45	110	28	78	69	188	97	489			
07:00	108	31	101	41	209	72				
07:15	120	27	38	37	158	64				
07:30	161	30	40	34	201	64				
07:45	145	40	77	256	38	150	278			
08:00	139	29	61	32	200	61				
08:15	146	25	59	19	205	44				
08:30	168	18	52	15	220	33				
08:45	166	19	35	207	12	78	169			
09:00	115	16	56	19	171	35				
09:15	92	17	29	15	121	32				
09:30	67	19	33	15	100	34				
09:45	58	14	31	149	16	65	131			
10:00	52	15	29	11	81	26				
10:15	41	12	41	8	82	20				
10:30	48	2	31	11	79	13				
10:45	37	3	39	140	7	37	69			
11:00	41	8	27	10	68	18				
11:15	41	2	32	8	73	10				
11:30	47	1	54	9	101	10				
11:45	67	8	51	164	7	34	53			
Total	2353	1908	1244	3095	3597	5003				
Percent	65.4%	38.1%	34.6%	61.9%						
Day Total		4261		4339		8600				
Peak Vol.	08:00	-	02:30	-	06:30	-	04:30	-	-	-
P.H.F.	0.921	-	0.849	-	0.644	-	0.924	-	0.954	-



Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson



197253 A Volume  
Site Code: 83468.19  
Date Start: 10/16/19  
Date End: 10/17/19

Start Time	EB		WB		Combin ed		10/17/19 Thu							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	4	60	2	70	6	130								
12:15	0	56	3	54	3	110								
12:30	3	56	3	55	6	111								
12:45	1	64	236	1	9	49	228	17	113	464				
01:00	2	62	3	48	5	110								
01:15	2	48	1	44	3	92								
01:30	0	47	5	43	5	90								
01:45	1	42	199	5	14	34	169	6	19	76	368			
02:00	4	66	6	58	10	124								
02:15	3	58	1	55	4	113								
02:30	0	59	3	69	3	128								
02:45	4	69	252	9	19	76	258	13	30	145	510			
03:00	2	67	5	75	7	142								
03:15	5	63	2	79	7	142								
03:30	11	45	3	123	14	168								
03:45	6	49	224	13	23	121	398	19	47	170	622			
04:00	6	48	7	118	13	166								
04:15	14	47	5	120	19	167								
04:30	18	48	4	156	22	204								
04:45	18	38	181	5	21	150	544	23	77	188	725			
05:00	17	64	11	197	28	261								
05:15	25	38	15	190	40	228								
05:30	29	50	13	160	42	210								
05:45	43	60	212	23	62	131	678	66	176	191	890			
06:00	51	43	21	97	72	140								
06:15	58	56	26	114	84	170								
06:30	72	34	38	71	110	105								
06:45	102	18	151	81	166	64	346	183	449	82	497			
07:00	90	20	105	45	195	65								
07:15	119	27	41	36	160	63								
07:30	160	37	55	38	215	75								
07:45	156	29	113	56	257	32	151	212	782	61	264			
08:00	150	42	61	26	211	68								
08:15	172	31	44	17	216	48								
08:30	175	18	35	15	210	33								
08:45	170	667	22	113	48	188	17	75	218	855	39	188		
09:00	121	17	43	12	164	29								
09:15	68	28	36	15	104	43								
09:30	71	26	51	16	122	42								
09:45	70	330	20	91	41	171	11	54	111	501	31	145		
10:00	52	10	35	14	87	24								
10:15	52	6	17	14	69	20								
10:30	36	7	31	13	67	20								
10:45	38	178	4	27	31	114	5	46	69	292	9	73		
11:00	47	5	37	18	84	23								
11:15	39	4	36	7	75	11								
11:30	49	4	50	13	99	17								
11:45	46	181	4	17	79	202	7	45	125	383	11	62		
Total	2382	1816	1246	2992	3628	4808								
Percent	65.7%	37.8%	34.3%	62.2%										
Day Total		4198		4238		8436								
Peak Vol.	08:00	-	02:30	-	06:45	-	04:45	-	08:00	-	05:00	-	-	-
P.H.F.	0.953	-	0.935	-	0.671	-	0.885	-	0.981	-	0.852	-	-	-

Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson



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

197253 A Class  
Site Code: 83468.19  
Date Start: 16-Oct-19  
Date End: 17-Oct-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/16/1														
9	0	1	0	0	1	0	0	0	3	0	0	0	0	5
01:00	1	5	2	1	0	1	0	0	4	0	1	0	0	15
02:00	0	1	0	1	0	1	0	0	5	0	1	0	0	9
03:00	0	6	1	1	0	0	0	0	7	0	0	1	0	16
04:00	1	22	8	2	5	1	0	1	1	0	0	0	0	41
05:00	3	66	26	3	20	3	0	2	7	0	0	0	0	130
06:00	2	183	48	11	24	1	0	6	3	0	0	0	0	278
07:00	6	408	72	11	21	6	1	4	4	1	0	0	0	534
08:00	6	482	81	5	29	3	1	9	2	1	0	0	0	619
09:00	7	231	38	8	28	6	0	7	6	0	0	1	0	332
10:00	2	101	26	1	11	2	1	28	6	0	0	0	0	178
11:00	2	124	30	3	23	4	2	5	3	0	0	0	0	196
12 PM	4	153	38	3	17	4	1	4	1	0	0	0	0	225
13:00	0	146	38	5	14	1	2	5	4	0	0	0	0	215
14:00	4	177	42	3	21	5	2	3	4	0	0	0	0	261
15:00	0	178	49	5	16	6	0	3	4	0	0	0	0	261
16:00	7	157	32	2	25	12	1	0	1	0	0	0	0	237
17:00	4	167	40	0	8	1	0	1	1	1	0	0	0	223
18:00	2	106	22	1	12	1	1	2	3	0	0	0	0	150
19:00	0	89	25	1	8	0	0	1	3	0	1	0	0	128
20:00	1	52	19	0	9	0	0	3	1	0	6	0	0	91
21:00	3	33	10	1	4	2	0	1	8	0	4	0	0	66
22:00	0	23	5	0	2	0	0	0	2	0	0	0	0	32
23:00	1	9	2	0	1	1	0	0	5	0	0	0	0	19
Total	56	2920	654	68	299	61	12	85	88	3	13	2	0	4261
Percent	1.3%	68.5%	15.3%	1.6%	7.0%	1.4%	0.3%	2.0%	2.1%	0.1%	0.3%	0.0%	0.0%	
AM Peak	09:00	08:00	08:00	06:00	08:00	07:00	11:00	10:00	03:00	07:00	01:00	03:00		08:00
Vol.	7	482	81	11	29	6	2	28	7	1	1	1		619
PM Peak	16:00	15:00	15:00	13:00	16:00	16:00	13:00	13:00	21:00	17:00	20:00			14:00
Vol.	7	178	49	5	25	12	2	5	8	1	6			261



Bartlett Street  
 west of Cedarr Hill Road  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson



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

197253 A Class  
 Site Code: 83468.19  
 Date Start: 16-Oct-19  
 Date End: 17-Oct-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/17/1														
9	0	1	1	0	1	0	0	0	5	0	0	0	0	8
01:00	0	1	1	0	0	0	0	0	2	0	1	0	0	5
02:00	1	1	0	3	0	1	0	0	4	0	1	0	0	11
03:00	3	9	1	1	3	3	0	0	4	0	0	0	0	24
04:00	2	25	11	1	5	3	0	1	8	0	0	0	0	56
05:00	3	56	30	2	10	5	0	3	5	0	0	0	0	114
06:00	1	192	53	10	13	1	0	5	7	0	1	0	0	283
07:00	6	424	66	9	8	3	1	4	3	0	1	0	0	525
08:00	9	551	70	4	20	4	1	5	3	0	0	0	0	667
09:00	2	237	56	6	12	5	1	8	2	0	0	1	0	330
10:00	5	102	28	2	11	0	0	25	5	0	0	0	0	178
11:00	4	111	36	1	11	3	0	11	4	0	0	0	0	181
12 PM	9	155	42	2	13	6	1	2	6	0	0	0	0	236
13:00	4	146	31	2	12	2	1	1	0	0	0	0	0	199
14:00	2	184	46	2	12	1	0	3	2	0	0	0	0	252
15:00	3	175	34	0	9	0	0	1	2	0	0	0	0	224
16:00	1	148	19	3	7	0	0	3	0	0	0	0	0	181
17:00	3	157	37	1	11	1	0	1	1	0	0	0	0	212
18:00	1	123	12	0	11	1	0	2	1	0	0	0	0	151
19:00	3	84	16	1	4	0	0	1	2	0	2	0	0	113
20:00	3	83	12	1	3	2	0	1	2	0	6	0	0	113
21:00	1	63	11	1	2	1	0	1	6	0	5	0	0	91
22:00	1	18	1	0	0	1	0	0	6	0	0	0	0	27
23:00	2	7	3	0	4	1	0	0	0	0	0	0	0	17
Total	69	3053	617	52	182	44	5	78	80	0	17	1	0	4198
Percent	1.6%	72.7%	14.7%	1.2%	4.3%	1.0%	0.1%	1.9%	1.9%	0.0%	0.4%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	06:00	08:00	05:00	07:00	10:00	04:00		01:00	09:00		08:00
Vol.	9	551	70	10	20	5	1	25	8		1	1		667
PM Peak	12:00	14:00	14:00	16:00	12:00	12:00	12:00	14:00	12:00		20:00			14:00
Vol.	9	184	46	3	13	6	1	3	6		6			252

Bartlett Street  
 west of Cedarr Hill Road  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson



197253 A Class  
 Site Code: 83468.19  
 Date Start: 16-Oct-19  
 Date End: 17-Oct-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/16/1														
9	2	4	1	0	0	2	0	0	0	0	1	0	0	10
01:00	2	6	1	0	0	2	0	1	4	0	1	0	0	17
02:00	2	2	0	1	1	3	0	0	4	0	0	1	0	14
03:00	5	7	1	0	0	5	0	0	4	0	1	0	0	23
04:00	3	11	3	2	0	3	0	1	2	0	2	0	0	27
05:00	4	31	9	2	10	3	0	2	0	0	2	0	0	63
06:00	5	110	25	12	10	5	0	0	3	0	4	0	0	174
07:00	5	193	42	2	5	2	0	0	5	0	2	0	0	256
08:00	7	145	36	1	8	7	0	1	1	0	1	0	0	207
09:00	7	102	21	5	8	2	1	1	1	0	1	0	0	149
10:00	2	88	26	4	10	4	0	5	1	0	0	0	0	140
11:00	2	116	29	5	7	1	0	3	1	0	0	0	0	164
12 PM	4	153	34	3	13	6	0	4	0	0	0	0	0	217
13:00	2	131	40	11	21	4	1	4	1	0	0	0	0	215
14:00	7	186	37	3	20	5	0	4	3	0	0	0	0	265
15:00	4	258	55	6	18	2	0	3	3	0	0	0	0	349
16:00	4	443	91	2	17	3	0	12	2	0	0	0	0	574
17:00	7	612	101	3	22	4	1	20	2	0	0	0	0	772
18:00	8	254	38	0	18	4	1	10	6	0	0	0	0	339
19:00	4	112	18	2	6	0	0	6	2	0	0	0	0	150
20:00	0	51	17	1	4	1	0	0	4	0	0	0	0	78
21:00	3	45	9	1	1	3	0	0	3	0	0	0	0	65
22:00	2	22	6	0	3	2	0	1	1	0	0	0	0	37
23:00	0	23	6	0	0	1	0	0	4	0	0	0	0	34
Total	91	3105	646	66	202	74	4	78	57	0	15	1	0	4339
Percent	2.1%	71.6%	14.9%	1.5%	4.7%	1.7%	0.1%	1.8%	1.3%	0.0%	0.3%	0.0%	0.0%	
AM Peak	08:00	07:00	07:00	06:00	05:00	08:00	09:00	10:00	07:00		06:00	02:00		07:00
Vol.	7	193	42	12	10	7	1	5	5		4	1		256
PM Peak	18:00	17:00	17:00	13:00	17:00	12:00	13:00	17:00	18:00					17:00
Vol.	8	612	101	11	22	6	1	20	6					772

Bartlett Street  
 west of Cedarr Hill Road  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson



197253 A Class  
 Site Code: 83468.19  
 Date Start: 16-Oct-19  
 Date End: 17-Oct-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/17/1														
9	0	2	0	0	0	0	0	0	6	0	1	0	0	9
01:00	1	4	3	0	1	1	0	1	2	0	1	0	0	14
02:00	2	1	1	1	2	2	0	0	10	0	0	0	0	19
03:00	4	5	7	0	2	3	0	0	2	0	0	0	0	23
04:00	4	6	3	0	1	4	0	0	2	0	0	1	0	21
05:00	4	30	10	3	5	4	0	1	2	0	3	0	0	62
06:00	7	103	22	12	8	2	0	1	3	0	8	0	0	166
07:00	4	207	27	2	6	7	1	0	1	0	1	1	0	257
08:00	5	138	29	4	6	3	0	2	0	0	1	0	0	188
09:00	5	106	35	3	9	7	0	3	3	0	0	0	0	171
10:00	3	76	27	2	4	1	0	1	0	0	0	0	0	114
11:00	6	137	30	3	11	8	0	6	1	0	0	0	0	202
12 PM	5	166	40	3	9	1	0	4	0	0	0	0	0	228
13:00	4	113	25	8	17	0	0	1	0	0	1	0	0	169
14:00	4	189	45	3	12	0	0	3	2	0	0	0	0	258
15:00	7	296	63	6	12	4	0	10	0	0	0	0	0	398
16:00	7	442	74	2	10	2	0	6	1	0	0	0	0	544
17:00	13	543	81	2	20	3	0	13	3	0	0	0	0	678
18:00	6	267	38	3	12	2	1	10	7	0	0	0	0	346
19:00	6	109	17	2	7	2	0	6	2	0	0	0	0	151
20:00	1	59	9	1	1	2	0	0	2	0	0	0	0	75
21:00	2	44	3	0	0	2	0	0	3	0	0	0	0	54
22:00	4	35	2	0	2	3	0	0	0	0	0	0	0	46
23:00	2	29	10	0	1	2	0	0	1	0	0	0	0	45
Total	106	3107	601	60	158	65	2	68	53	0	16	2	0	4238
Percent	2.5%	73.3%	14.2%	1.4%	3.7%	1.5%	0.0%	1.6%	1.3%	0.0%	0.4%	0.0%	0.0%	
AM Peak	06:00	07:00	09:00	06:00	11:00	11:00	07:00	11:00	02:00		06:00	04:00		07:00
Vol.	7	207	35	12	11	8	1	6	10		8	1		257
PM Peak	17:00	17:00	17:00	13:00	17:00	15:00	18:00	17:00	18:00		13:00			17:00
Vol.	13	543	81	8	20	4	1	13	7		1			678



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

Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson

197253 A Speed  
Site Code: 83468.19  
Date Start: 16-Oct-19  
Date End: 17-Oct-19

EB

Start Time	14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
10/16/19	0	0	0	0	2	2	0	1	0	0	0	0	0	5	45	37
01:00	0	0	0	1	5	5	3	0	1	0	0	0	0	15	41	37
02:00	0	0	0	0	1	5	2	0	1	0	0	0	0	9	43	39
03:00	0	0	0	2	3	4	3	2	2	0	0	0	0	16	47	39
04:00	0	0	0	0	3	7	12	17	2	0	0	0	0	41	47	43
05:00	0	0	0	2	13	21	44	34	13	3	0	0	0	130	48	43
06:00	0	0	0	1	16	54	133	64	9	1	0	0	0	278	46	42
07:00	0	1	0	8	29	115	247	112	21	1	0	0	0	534	46	42
08:00	0	0	0	0	17	63	241	223	71	3	1	0	0	619	48	44
09:00	0	3	0	8	18	39	96	127	36	5	0	0	0	332	48	44
10:00	0	0	1	0	21	47	52	46	9	2	0	0	0	178	47	41
11:00	0	0	0	3	8	49	57	67	11	1	0	0	0	196	47	42
12 PM	0	0	0	15	12	25	84	72	16	1	0	0	0	225	47	42
13:00	0	0	0	1	9	47	98	52	8	0	0	0	0	215	46	42
14:00	0	1	0	4	20	52	99	68	16	1	0	0	0	261	47	42
15:00	0	0	0	2	10	33	109	85	19	2	1	0	0	261	47	43
16:00	2	1	0	0	13	42	90	67	19	3	0	0	0	237	47	43
17:00	0	1	0	0	3	35	101	67	15	1	0	0	0	223	47	43
18:00	0	0	2	0	13	35	50	34	13	3	0	0	0	150	48	42
19:00	0	0	1	7	3	26	59	25	7	0	0	0	0	128	46	41
20:00	0	0	0	4	12	22	26	22	3	1	1	0	0	91	47	41
21:00	0	1	0	1	12	16	23	11	2	0	0	0	0	66	45	40
22:00	0	0	0	0	3	13	9	7	0	0	0	0	0	32	45	40
23:00	0	0	0	2	6	5	5	1	0	0	0	0	0	19	42	36
Total	2	8	4	61	252	762	1643	1204	294	28	3	0	0	4261		
%	0.0%	0.2%	0.1%	1.4%	5.9%	17.9%	38.6%	28.3%	6.9%	0.7%	0.1%	0.0%	0.0%			
AM Peak		09:00	10:00	07:00	07:00	07:00	07:00	08:00	08:00	09:00	08:00			08:00		
Vol.		3	1	8	29	115	247	223	71	5	1			619		
PM Peak	16:00	14:00	18:00	12:00	14:00	14:00	15:00	15:00	15:00	16:00	15:00			14:00		
Vol.	2	1	2	15	20	52	109	85	19	3	1			261		

Stats  
15th Percentile : 36 MPH  
50th Percentile : 42 MPH  
85th Percentile : 47 MPH  
95th Percentile : 50 MPH

Mean Speed(Average) : 42 MPH  
10 MPH Pace Speed : 40-49 MPH  
Number in Pace : 2847  
Percent in Pace : 66.8%  
Number of Vehicles > 40 MPH : 2843  
Percent of Vehicles > 40 MPH : 66.7%



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

Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson

197253 A Speed  
Site Code: 83468.19  
Date Start: 16-Oct-19  
Date End: 17-Oct-19

EB

Start Time	14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
10/17/19	0	0	0	1	2	5	0	0	0	0	0	0	0	8	37	34
01:00	0	0	0	0	1	4	0	0	0	0	0	0	0	5	38	36
02:00	0	0	2	0	3	3	2	1	0	0	0	0	0	11	42	35
03:00	0	0	0	2	2	7	5	6	1	0	0	1	0	24	47	41
04:00	0	0	0	3	10	9	18	13	2	1	0	0	0	56	46	40
05:00	0	0	1	13	17	27	31	21	4	0	0	0	0	114	45	39
06:00	0	0	2	6	50	110	89	20	5	1	0	0	0	283	43	38
07:00	0	0	0	6	55	182	208	67	7	0	0	0	0	525	43	40
08:00	0	0	3	35	45	157	286	119	20	2	0	0	0	667	45	41
09:00	0	0	0	5	39	92	123	62	9	0	0	0	0	330	45	40
10:00	0	0	2	13	37	39	50	30	7	0	0	0	0	178	45	39
11:00	0	0	0	4	24	41	52	47	12	1	0	0	0	181	47	41
12 PM	1	1	0	6	14	50	93	61	9	1	0	0	0	236	46	41
13:00	0	0	0	4	5	38	83	56	11	2	0	0	0	199	47	43
14:00	0	0	0	0	6	36	108	84	14	4	0	0	0	252	47	44
15:00	0	0	0	2	4	40	103	55	16	3	1	0	0	224	47	43
16:00	0	0	0	0	5	26	74	62	13	1	0	0	0	181	47	44
17:00	0	0	1	5	9	35	79	65	16	2	0	0	0	212	47	43
18:00	0	0	1	2	5	30	63	44	5	1	0	0	0	151	47	42
19:00	0	0	0	0	5	26	44	34	4	0	0	0	0	113	47	42
20:00	0	0	0	4	11	42	33	16	7	0	0	0	0	113	45	40
21:00	0	0	0	2	15	26	29	15	4	0	0	0	0	91	45	40
22:00	0	0	0	2	0	8	8	9	0	0	0	0	0	27	46	41
23:00	0	0	0	1	4	2	6	3	1	0	0	0	0	17	46	40
Total	1	1	12	116	368	1035	1587	890	167	19	1	1	0	4198		
%	0.0%	0.0%	0.3%	2.8%	8.8%	24.7%	37.8%	21.2%	4.0%	0.5%	0.0%	0.0%	0.0%			
AM Peak			08:00	08:00	07:00	07:00	08:00	08:00	08:00	08:00		03:00		08:00		
Vol.			3	35	55	182	286	119	20	2		1		667		
PM Peak	12:00	12:00	17:00	12:00	21:00	12:00	14:00	14:00	15:00	14:00	15:00			14:00		
Vol.	1	1	1	6	15	50	108	84	16	4	1			252		

Stats  
15th Percentile : 34 MPH  
50th Percentile : 40 MPH  
85th Percentile : 46 MPH  
95th Percentile : 48 MPH

Mean Speed(Average) : 41 MPH  
10 MPH Pace Speed : 35-44 MPH  
Number in Pace : 2622  
Percent in Pace : 62.5%  
Number of Vehicles > 40 MPH : 2348  
Percent of Vehicles > 40 MPH : 55.9%



PRECISION  
D A T A  
INDUSTRIES, LLC

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Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson

197253 A Speed  
Site Code: 83468.19  
Date Start: 16-Oct-19  
Date End: 17-Oct-19

WB

Start Time	14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
10/16/19	0	0	0	5	0	1	3	1	0	0	0	0	0	10	43	35
01:00	0	0	0	6	8	2	0	1	0	0	0	0	0	17	35	32
02:00	0	0	1	7	2	2	0	2	0	0	0	0	0	14	38	32
03:00	0	0	3	9	4	3	2	2	0	0	0	0	0	23	40	32
04:00	0	0	2	11	3	5	5	0	0	1	0	0	0	27	40	33
05:00	0	1	1	9	11	20	12	7	2	0	0	0	0	63	43	37
06:00	0	0	0	15	38	62	40	14	4	1	0	0	0	174	43	37
07:00	1	1	2	10	24	80	91	41	5	1	0	0	0	256	45	40
08:00	0	0	2	12	18	61	76	31	6	1	0	0	0	207	45	40
09:00	0	0	0	4	18	50	52	20	4	1	0	0	0	149	44	40
10:00	0	0	0	6	20	37	60	14	1	2	0	0	0	140	43	39
11:00	0	0	0	6	22	58	50	25	3	0	0	0	0	164	44	39
12 PM	0	2	1	7	19	65	85	34	4	0	0	0	0	217	44	40
13:00	0	1	3	9	26	79	72	22	2	1	0	0	0	215	43	39
14:00	1	0	0	19	23	79	89	47	7	0	0	0	0	265	45	40
15:00	0	0	0	7	33	107	140	51	11	0	0	0	0	349	44	40
16:00	1	0	0	5	29	145	254	116	22	2	0	0	0	574	46	41
17:00	0	0	10	13	78	267	308	84	11	1	0	0	0	772	43	39
18:00	0	0	4	20	58	111	96	47	3	0	0	0	0	339	43	38
19:00	0	0	0	10	34	46	45	10	4	1	0	0	0	150	43	38
20:00	0	0	0	9	11	26	25	5	2	0	0	0	0	78	43	38
21:00	1	1	2	3	11	29	15	2	1	0	0	0	0	65	41	36
22:00	0	1	2	7	12	10	3	2	0	0	0	0	0	37	38	33
23:00	0	0	0	4	13	9	5	3	0	0	0	0	0	34	41	36
Total	4	7	33	213	515	1354	1528	581	92	12	0	0	0	4339		
%	0.1%	0.2%	0.8%	4.9%	11.9%	31.2%	35.2%	13.4%	2.1%	0.3%	0.0%	0.0%	0.0%			
AM Peak	07:00	05:00	03:00	06:00	06:00	07:00	07:00	07:00	08:00	10:00				07:00		
Vol.	1	1	3	15	38	80	91	41	6	2				256		
PM Peak	14:00	12:00	17:00	18:00	17:00	17:00	17:00	16:00	16:00	16:00				17:00		
Vol.	1	2	10	20	78	267	308	116	22	2				772		

Stats  
 15th Percentile : 32 MPH  
 50th Percentile : 39 MPH  
 85th Percentile : 44 MPH  
 95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH  
 10 MPH Pace Speed : 35-44 MPH  
 Number in Pace : 2882  
 Percent in Pace : 66.4%  
 Number of Vehicles > 40 MPH : 1907  
 Percent of Vehicles > 40 MPH : 44.0%

Bartlett Street  
west of Cedarr Hill Road  
City, State: Northborough, MA  
Client: VHB/ T. Benson



197253 A Speed  
Site Code: 83468.19  
Date Start: 16-Oct-19  
Date End: 17-Oct-19

WB

Start Time	14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
10/17/19	0	0	2	4	1	1	1	0	0	0	0	0	0	9	37	29
01:00	0	0	0	5	6	2	1	0	0	0	0	0	0	14	36	32
02:00	0	0	0	10	5	2	1	1	0	0	0	0	0	19	36	31
03:00	0	0	4	3	6	6	3	0	0	0	1	0	0	23	39	34
04:00	0	0	0	8	8	4	0	1	0	0	0	0	0	21	36	32
05:00	0	0	4	10	17	19	9	3	0	0	0	0	0	62	40	34
06:00	0	0	0	17	43	57	39	10	0	0	0	0	0	166	42	36
07:00	0	0	1	10	35	127	65	19	0	0	0	0	0	257	42	38
08:00	0	0	0	17	27	75	59	10	0	0	0	0	0	188	42	37
09:00	0	2	3	5	38	55	52	16	0	0	0	0	0	171	43	38
10:00	0	0	2	1	23	48	32	5	3	0	0	0	0	114	42	38
11:00	0	0	4	13	39	63	57	23	3	0	0	0	0	202	43	38
12 PM	0	1	2	7	27	86	70	28	7	0	0	0	0	228	44	39
13:00	0	1	0	9	18	54	59	20	8	0	0	0	0	169	44	39
14:00	0	0	1	7	20	97	93	36	3	1	0	0	0	258	44	40
15:00	0	0	1	10	41	133	162	47	4	0	0	0	0	398	43	40
16:00	0	0	0	17	51	193	210	64	9	0	0	0	0	544	43	40
17:00	0	0	5	21	79	265	233	70	5	0	0	0	0	678	43	39
18:00	0	0	7	32	45	136	87	34	5	0	0	0	0	346	43	38
19:00	0	0	3	12	24	57	44	10	1	0	0	0	0	151	42	37
20:00	0	0	0	5	16	22	24	7	1	0	0	0	0	75	43	38
21:00	0	0	0	5	5	19	18	5	2	0	0	0	0	54	43	39
22:00	0	0	0	10	3	11	17	4	1	0	0	0	0	46	43	38
23:00	0	1	1	2	11	14	9	5	2	0	0	0	0	45	44	37
Total	0	5	40	240	588	1546	1345	418	54	1	1	0	0	4238		
%	0.0%	0.1%	0.9%	5.7%	13.9%	36.5%	31.7%	9.9%	1.3%	0.0%	0.0%	0.0%	0.0%			
AM Peak		09:00	03:00	06:00	06:00	07:00	07:00	11:00	10:00		03:00			07:00		
Vol.		2	4	17	43	127	65	23	3		1			257		
PM Peak		12:00	18:00	18:00	17:00	17:00	17:00	17:00	16:00	14:00				17:00		
Vol.		1	7	32	79	265	233	70	9	1				678		

Stats  
15th Percentile : 31 MPH  
50th Percentile : 38 MPH  
85th Percentile : 43 MPH  
95th Percentile : 47 MPH

Mean Speed(Average) : 38 MPH  
10 MPH Pace Speed : 35-44 MPH  
Number in Pace : 2891  
Percent in Pace : 68.2%  
Number of Vehicles > 40 MPH : 1550  
Percent of Vehicles > 40 MPH : 36.6%

PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	19	4	0	23	13	14	0	27	15	62	0	77	127
6:45 AM	60	11	0	71	24	46	0	70	27	81	0	108	249
Total	79	15	0	94	37	60	0	97	42	143	0	185	376
7:00 AM	87	12	0	99	27	48	0	75	28	83	0	111	285
7:15 AM	24	8	0	32	31	12	0	43	19	97	0	116	191
7:30 AM	25	11	0	36	46	12	0	58	29	115	0	144	238
7:45 AM	42	23	1	66	43	13	0	56	44	120	0	164	286
Total	178	54	1	233	147	85	0	232	120	415	0	535	1000
8:00 AM	44	9	0	53	44	13	0	57	39	101	0	140	250
8:15 AM	37	19	0	56	46	11	0	57	38	117	0	155	268
8:30 AM	37	23	0	60	61	22	0	83	43	104	0	147	290
8:45 AM	20	12	0	32	38	16	0	54	47	129	0	176	262
Total	138	63	0	201	189	62	0	251	167	451	0	618	1070
Grand Total	395	132	1	528	373	207	0	580	329	1009	0	1338	2446
Approach %	74.8	25.0	0.2		64.3	35.7	0.0		24.6	75.4	0.0		
Total %	16.1	5.4	0.0	21.6	15.2	8.5	0.0	23.7	13.5	41.3	0.0	54.7	
Exiting Leg Total				1383				461				602	2446
Cars	352	123	1	476	352	184	0	536	315	961	0	1276	2288
% Cars	89.1	93.2	100.0	90.2	94.4	88.9	0.0	92.4	95.7	95.2	0.0	95.4	93.5
Exiting Leg Total				1314				438				536	2288
Heavy Vehicles	43	9	0	52	21	23	0	44	14	48	0	62	158
% Heavy Vehicles	10.9	6.8	0.0	9.8	5.6	11.1	0.0	7.6	4.3	4.8	0.0	4.6	6.5
Exiting Leg Total				69				23				66	158

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	42	23	1	66	43	13	0	56	44	120	0	164	286
8:00 AM	44	9	0	53	44	13	0	57	39	101	0	140	250
8:15 AM	37	19	0	56	46	11	0	57	38	117	0	155	268
8:30 AM	37	23	0	60	61	22	0	83	43	104	0	147	290
Total Volume	160	74	1	235	194	59	0	253	164	442	0	606	1094
% Approach Total	68.1	31.5	0.4		76.7	23.3	0.0		27.1	72.9	0.0		
PHF	0.909	0.804	0.250	0.890	0.795	0.670	0.000	0.762	0.932	0.921	0.000	0.924	0.943
Cars	140	68	1	209	184	51	0	235	159	424	0	583	1027
Cars %	87.5	91.9	100.0	88.9	94.8	86.4	0.0	92.9	97.0	95.9	0.0	96.2	93.9
Heavy Vehicles	20	6	0	26	10	8	0	18	5	18	0	23	67
Heavy Vehicles %	12.5	8.1	0.0	11.1	5.2	13.6	0.0	7.1	3.0	4.1	0.0	3.8	6.1
Cars Enter Leg	140	68	1	209	184	51	0	235	159	424	0	583	1027
Heavy Enter Leg	20	6	0	26	10	8	0	18	5	18	0	23	67
Total Entering Leg	160	74	1	235	194	59	0	253	164	442	0	606	1094
Cars Exiting Leg				609				227				191	1027
Heavy Exiting Leg				28				11				28	67
Total Exiting Leg				637				238				219	1094



PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	15	4	0	19	12	8	0	20	15	60	0	75	114
6:45 AM	53	10	0	63	23	41	0	64	26	77	0	103	230
Total	68	14	0	82	35	49	0	84	41	137	0	178	344
7:00 AM	85	10	0	95	24	47	0	71	24	70	0	94	260
7:15 AM	20	8	0	28	29	11	0	40	19	92	0	111	179
7:30 AM	22	11	0	33	46	11	0	57	28	112	0	140	230
7:45 AM	37	22	1	60	39	12	0	51	43	114	0	157	268
Total	164	51	1	216	138	81	0	219	114	388	0	502	937
8:00 AM	40	9	0	49	43	11	0	54	39	99	0	138	241
8:15 AM	35	17	0	52	45	10	0	55	37	112	0	149	256
8:30 AM	28	20	0	48	57	18	0	75	40	99	0	139	262
8:45 AM	17	12	0	29	34	15	0	49	44	126	0	170	248
Total	120	58	0	178	179	54	0	233	160	436	0	596	1007
Grand Total	352	123	1	476	352	184	0	536	315	961	0	1276	2288
Approach %	73.9	25.8	0.2		65.7	34.3	0.0		24.7	75.3	0.0		
Total %	15.4	5.4	0.0	20.8	15.4	8.0	0.0	23.4	13.8	42.0	0.0	55.8	
Exiting Leg Total				1314				438				536	2288

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

7:45 AM	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	37	22	1	60	39	12	0	51	43	114	0	157	268
8:00 AM	40	9	0	49	43	11	0	54	39	99	0	138	241
8:15 AM	35	17	0	52	45	10	0	55	37	112	0	149	256
8:30 AM	28	20	0	48	57	18	0	75	40	99	0	139	262
Total Volume	140	68	1	209	184	51	0	235	159	424	0	583	1027
% Approach Total	67.0	32.5	0.5		78.3	21.7	0.0		27.3	72.7	0.0		
PHF	0.875	0.773	0.250	0.871	0.807	0.708	0.000	0.783	0.924	0.930	0.000	0.928	0.958
Entering Leg	140	68	1	209	184	51	0	235	159	424	0	583	1027
Exiting Leg				609				227				191	1027
Total				818				462				774	2054

PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**



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

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	4	0	0	4	1	6	0	7	0	2	0	2	13
6:45 AM	7	1	0	8	1	5	0	6	1	4	0	5	19
Total	11	1	0	12	2	11	0	13	1	6	0	7	32
7:00 AM	2	2	0	4	3	1	0	4	4	13	0	17	25
7:15 AM	4	0	0	4	2	1	0	3	0	5	0	5	12
7:30 AM	3	0	0	3	0	1	0	1	1	3	0	4	8
7:45 AM	5	1	0	6	4	1	0	5	1	6	0	7	18
Total	14	3	0	17	9	4	0	13	6	27	0	33	63
8:00 AM	4	0	0	4	1	2	0	3	0	2	0	2	9
8:15 AM	2	2	0	4	1	1	0	2	1	5	0	6	12
8:30 AM	9	3	0	12	4	4	0	8	3	5	0	8	28
8:45 AM	3	0	0	3	4	1	0	5	3	3	0	6	14
Total	18	5	0	23	10	8	0	18	7	15	0	22	63
Grand Total	43	9	0	52	21	23	0	44	14	48	0	62	158
Approach %	82.7	17.3	0.0		47.7	52.3	0.0		22.6	77.4	0.0		
Total %	27.2	5.7	0.0	32.9	13.3	14.6	0.0	27.8	8.9	30.4	0.0	39.2	
Exiting Leg Total	69				23				66				158
Buses	9	0	0	9	0	9	0	9	7	11	0	18	36
% Buses	20.9	0.0	0.0	17.3	0.0	39.1	0.0	20.5	50.0	22.9	0.0	29.0	22.8
Exiting Leg Total	11				7				18				36
Single-Unit Trucks	25	5	0	30	17	10	0	27	5	29	0	34	91
% Single-Unit	58.1	55.6	0.0	57.7	81.0	43.5	0.0	61.4	35.7	60.4	0.0	54.8	57.6
Exiting Leg Total	46				10				35				91
Articulated Trucks	9	4	0	13	4	4	0	8	2	8	0	10	31
% Articulated	20.9	44.4	0.0	25.0	19.0	17.4	0.0	18.2	14.3	16.7	0.0	16.1	19.6
Exiting Leg Total	12				6				13				31

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	4	0	0	4	1	6	0	7	0	2	0	2	13
6:45 AM	7	1	0	8	1	5	0	6	1	4	0	5	19
7:00 AM	2	2	0	4	3	1	0	4	4	13	0	17	25
7:15 AM	4	0	0	4	2	1	0	3	0	5	0	5	12
Total Volume	17	3	0	20	7	13	0	20	5	24	0	29	69
% Approach Total	85.0	15.0	0.0		35.0	65.0	0.0		17.2	82.8	0.0		
PHF	0.607	0.375	0.000	0.625	0.583	0.542	0.000	0.714	0.313	0.462	0.000	0.426	0.690
Buses	9	0	0	9	0	7	0	7	5	11	0	16	32
Buses %	52.9	0.0	0.0	45.0	0.0	53.8	0.0	35.0	100.0	45.8	0.0	55.2	46.4
Single-Unit Trucks	7	1	0	8	7	3	0	10	0	10	0	10	28
Single-Unit %	41.2	33.3	0.0	40.0	100.0	23.1	0.0	50.0	0.0	41.7	0.0	34.5	40.6
Articulated Trucks	1	2	0	3	0	3	0	3	0	3	0	3	9
Articulated %	5.9	66.7	0.0	15.0	0.0	23.1	0.0	15.0	0.0	12.5	0.0	10.3	13.0
Buses	9	0	0	9	0	7	0	7	5	11	0	16	32
Single-Unit Trucks	7	1	0	8	7	3	0	10	0	10	0	10	28
Articulated Trucks	1	2	0	3	0	3	0	3	0	3	0	3	9
Total Entering Leg	17	3	0	20	7	13	0	20	5	24	0	29	69
Buses	11				5				16				32
Single-Unit Trucks	17				1				10				28
Articulated Trucks	3				2				4				9
Total Exiting Leg	31				8				30				69

PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	3	0	0	3	0	2	0	2	0	2	0	2	7
6:45 AM	6	0	0	6	0	4	0	4	1	3	0	4	14
Total	9	0	0	9	0	6	0	6	1	5	0	6	21
7:00 AM	0	0	0	0	0	1	0	1	4	6	0	10	11
7:15 AM	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
7:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	4	6	0	10	12
8:00 AM	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
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
8:45 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	0	0	0	0	1	0	1	2	0	0	2	3
Grand Total	9	0	0	9	0	9	0	9	7	11	0	18	36
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		38.9	61.1	0.0		
Total %	25.0	0.0	0.0	25.0	0.0	25.0	0.0	25.0	19.4	30.6	0.0	50.0	
Exiting Leg Total	11				7				18				36

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	3	0	0	3	0	2	0	2	0	2	0	2	7
6:45 AM	6	0	0	6	0	4	0	4	1	3	0	4	14
7:00 AM	0	0	0	0	0	1	0	1	4	6	0	10	11
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	9	0	0	9	0	7	0	7	5	11	0	16	32
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0		31.3	68.8	0.0		
PHF	0.375	0.000	0.000	0.375	0.000	0.438	0.000	0.438	0.313	0.458	0.000	0.400	0.571
Entering Leg	9	0	0	9	0	7	0	7	5	11	0	16	32
Exiting Leg	11				5				16				32
Total	20				12				32				64

PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



### Single-Unit Trucks

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	1	0	0	1	1	3	0	4	0	0	0	0	5
6:45 AM	0	0	0	0	1	0	0	1	0	1	0	1	2
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>7</b>
7:00 AM	2	1	0	3	3	0	0	3	0	6	0	6	12
7:15 AM	4	0	0	4	2	0	0	2	0	3	0	3	9
7:30 AM	2	0	0	2	0	1	0	1	1	2	0	3	6
7:45 AM	2	0	0	2	2	0	0	2	0	5	0	5	9
<b>Total</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>17</b>	<b>36</b>
8:00 AM	4	0	0	4	1	2	0	3	0	2	0	2	9
8:15 AM	1	2	0	3	1	1	0	2	1	3	0	4	9
8:30 AM	6	2	0	8	4	3	0	7	2	5	0	7	22
8:45 AM	3	0	0	3	2	0	0	2	1	2	0	3	8
<b>Total</b>	<b>14</b>	<b>4</b>	<b>0</b>	<b>18</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>14</b>	<b>4</b>	<b>12</b>	<b>0</b>	<b>16</b>	<b>48</b>
Grand Total	25	5	0	30	17	10	0	27	5	29	0	34	91
Approach %	83.3	16.7	0.0		63.0	37.0	0.0		14.7	85.3	0.0		
Total %	27.5	5.5	0.0	33.0	18.7	11.0	0.0	29.7	5.5	31.9	0.0	37.4	
Exiting Leg Total	46				10				35				91

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	2	0	0	2	2	0	0	2	0	5	0	5	9
8:00 AM	4	0	0	4	1	2	0	3	0	2	0	2	9
8:15 AM	1	2	0	3	1	1	0	2	1	3	0	4	9
8:30 AM	6	2	0	8	4	3	0	7	2	5	0	7	22
Total Volume	13	4	0	17	8	6	0	14	3	15	0	18	49
% Approach Total	76.5	23.5	0.0		57.1	42.9	0.0		16.7	83.3	0.0		
PHF	0.542	0.500	0.000	0.531	0.500	0.500	0.000	0.500	0.375	0.750	0.000	0.643	0.557
Entering Leg	13	4	0	17	8	6	0	14	3	15	0	18	49
Exiting Leg	23				7				19				49
Total	40				21				37				98

PDI File #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
6:45 AM	1	1	0	2	0	1	0	1	0	0	0	0	3
Total	1	1	0	2	0	2	0	2	0	0	0	0	4
7:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	2
7:15 AM	0	0	0	0	0	1	0	1	0	2	0	2	3
7:30 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
7:45 AM	3	1	0	4	2	0	0	2	1	1	0	2	8
Total	4	2	0	6	2	1	0	3	1	5	0	6	15
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:30 AM	3	1	0	4	0	1	0	1	0	0	0	0	5
8:45 AM	0	0	0	0	2	0	0	2	1	1	0	2	4
Total	4	1	0	5	2	1	0	3	1	3	0	4	12
Grand Total	9	4	0	13	4	4	0	8	2	8	0	10	31
Approach %	69.2	30.8	0.0		50.0	50.0	0.0		20.0	80.0	0.0		
Total %	29.0	12.9	0.0	41.9	12.9	12.9	0.0	25.8	6.5	25.8	0.0	32.3	
Exiting Leg Total	12				6				13				31

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	3	1	0	4	2	0	0	2	1	1	0	2	8
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:30 AM	3	1	0	4	0	1	0	1	0	0	0	0	5
Total Volume	7	2	0	9	2	1	0	3	1	3	0	4	16
% Approach Total	77.8	22.2	0.0		66.7	33.3	0.0		25.0	75.0	0.0		
PHF	0.583	0.500	0.000	0.563	0.250	0.250	0.000	0.375	0.250	0.375	0.000	0.500	0.500
Entering Leg	7	2	0	9	2	1	0	3	1	3	0	4	16
Exiting Leg	5				3				8				16
Total	14				6				12				32

PDI File #: 197253 A  
 Location: S: Lyman Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 6:30 AM  
 End Time: 9:00 AM



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
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	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	0.0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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	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 #: **197253 A**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
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
Total %	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 06:30 AM to 09:00 AM begins at:

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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	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 #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	69	49	0	118	25	31	1	57	17	25	0	42	217
4:15 PM	74	46	0	120	16	39	0	55	25	37	0	62	237
4:30 PM	101	74	0	175	23	30	0	53	23	36	0	59	287
4:45 PM	95	76	0	171	19	27	0	46	26	44	0	70	287
<b>Total</b>	<b>339</b>	<b>245</b>	<b>0</b>	<b>584</b>	<b>83</b>	<b>127</b>	<b>1</b>	<b>211</b>	<b>91</b>	<b>142</b>	<b>0</b>	<b>233</b>	<b>1028</b>
5:00 PM	122	92	0	214	23	41	0	64	46	40	0	86	364
5:15 PM	104	111	0	215	20	39	0	59	40	53	0	93	367
5:30 PM	107	88	0	195	14	25	0	39	34	23	0	57	291
5:45 PM	77	54	0	131	13	20	0	33	34	37	0	71	235
<b>Total</b>	<b>410</b>	<b>345</b>	<b>0</b>	<b>755</b>	<b>70</b>	<b>125</b>	<b>0</b>	<b>195</b>	<b>154</b>	<b>153</b>	<b>0</b>	<b>307</b>	<b>1257</b>
Grand Total	749	590	0	1339	153	252	1	406	245	295	0	540	2285
Approach %	55.9	44.1	0.0		37.7	62.1	0.2		45.4	54.6	0.0		
Total %	32.8	25.8	0.0	58.6	6.7	11.0	0.0	17.8	10.7	12.9	0.0	23.6	
Exiting Leg Total				448				836				1001	2285
Cars	731	575	0	1306	140	247	1	388	238	271	0	509	2203
% Cars	97.6	97.5	0.0	97.5	91.5	98.0	100.0	95.6	97.1	91.9	0.0	94.3	96.4
Exiting Leg Total				411				814				978	2203
Heavy Vehicles	18	15	0	33	13	5	0	18	7	24	0	31	82
% Heavy Vehicles	2.4	2.5	0.0	2.5	8.5	2.0	0.0	4.4	2.9	8.1	0.0	5.7	3.6
Exiting Leg Total				37				22				23	82

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

4:45 PM	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	95	76	0	171	19	27	0	46	26	44	0	70	287
5:00 PM	122	92	0	214	23	41	0	64	46	40	0	86	364
5:15 PM	104	111	0	215	20	39	0	59	40	53	0	93	367
5:30 PM	107	88	0	195	14	25	0	39	34	23	0	57	291
Total Volume	428	367	0	795	76	132	0	208	146	160	0	306	1309
% Approach Total	53.8	46.2	0.0		36.5	63.5	0.0		47.7	52.3	0.0		
PHF	0.877	0.827	0.000	0.924	0.826	0.805	0.000	0.813	0.793	0.755	0.000	0.823	0.892
Cars	423	357	0	780	69	129	0	198	144	154	0	298	1276
Cars %	98.8	97.3	0.0	98.1	90.8	97.7	0.0	95.2	98.6	96.3	0.0	97.4	97.5
Heavy Vehicles	5	10	0	15	7	3	0	10	2	6	0	8	33
Heavy Vehicles %	1.2	2.7	0.0	1.9	9.2	2.3	0.0	4.8	1.4	3.8	0.0	2.6	2.5
Cars Enter Leg	423	357	0	780	69	129	0	198	144	154	0	298	1276
Heavy Enter Leg	5	10	0	15	7	3	0	10	2	6	0	8	33
Total Entering Leg	428	367	0	795	76	132	0	208	146	160	0	306	1309
Cars Exiting Leg				223				501				552	1276
Heavy Exiting Leg				13				12				8	33
Total Exiting Leg				236				513				560	1309



PDI File #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	62	48	0	110	24	31	1	56	17	21	0	38	204
4:15 PM	70	46	0	116	15	38	0	53	22	30	0	52	221
4:30 PM	99	70	0	169	20	29	0	49	22	30	0	52	270
4:45 PM	93	74	0	167	18	26	0	44	26	44	0	70	281
<b>Total</b>	<b>324</b>	<b>238</b>	<b>0</b>	<b>562</b>	<b>77</b>	<b>124</b>	<b>1</b>	<b>202</b>	<b>87</b>	<b>125</b>	<b>0</b>	<b>212</b>	<b>976</b>
5:00 PM	120	88	0	208	21	41	0	62	45	38	0	83	353
5:15 PM	103	110	0	213	17	37	0	54	40	49	0	89	356
5:30 PM	107	85	0	192	13	25	0	38	33	23	0	56	286
5:45 PM	77	54	0	131	12	20	0	32	33	36	0	69	232
<b>Total</b>	<b>407</b>	<b>337</b>	<b>0</b>	<b>744</b>	<b>63</b>	<b>123</b>	<b>0</b>	<b>186</b>	<b>151</b>	<b>146</b>	<b>0</b>	<b>297</b>	<b>1227</b>
Grand Total	731	575	0	1306	140	247	1	388	238	271	0	509	2203
Approach %	56.0	44.0	0.0		36.1	63.7	0.3		46.8	53.2	0.0		
Total %	33.2	26.1	0.0	59.3	6.4	11.2	0.0	17.6	10.8	12.3	0.0	23.1	
Exiting Leg Total				411				814				978	2203

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

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	93	74	0	167	18	26	0	44	26	44	0	70	281
5:00 PM	120	88	0	208	21	41	0	62	45	38	0	83	353
5:15 PM	103	110	0	213	17	37	0	54	40	49	0	89	356
5:30 PM	107	85	0	192	13	25	0	38	33	23	0	56	286
Total Volume	423	357	0	780	69	129	0	198	144	154	0	298	1276
% Approach Total	54.2	45.8	0.0		34.8	65.2	0.0		48.3	51.7	0.0		
PHF	0.881	0.811	0.000	0.915	0.821	0.787	0.000	0.798	0.800	0.786	0.000	0.837	0.896
Entering Leg	423	357	0	780	69	129	0	198	144	154	0	298	1276
Exiting Leg				223				501				552	1276
<b>Total</b>				<b>1003</b>				<b>699</b>				<b>850</b>	<b>2552</b>

PDI File #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



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

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	7	1	0	8	1	0	0	1	0	4	0	4	13
4:15 PM	4	0	0	4	1	1	0	2	3	7	0	10	16
4:30 PM	2	4	0	6	3	1	0	4	1	6	0	7	17
4:45 PM	2	2	0	4	1	1	0	2	0	0	0	0	6
<b>Total</b>	<b>15</b>	<b>7</b>	<b>0</b>	<b>22</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>17</b>	<b>0</b>	<b>21</b>	<b>52</b>
5:00 PM	2	4	0	6	2	0	0	2	1	2	0	3	11
5:15 PM	1	1	0	2	3	2	0	5	0	4	0	4	11
5:30 PM	0	3	0	3	1	0	0	1	1	0	0	1	5
5:45 PM	0	0	0	0	1	0	0	1	1	1	0	2	3
<b>Total</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>11</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>30</b>
<b>Grand Total</b>	<b>18</b>	<b>15</b>	<b>0</b>	<b>33</b>	<b>13</b>	<b>5</b>	<b>0</b>	<b>18</b>	<b>7</b>	<b>24</b>	<b>0</b>	<b>31</b>	<b>82</b>
Approach %	54.5	45.5	0.0		72.2	27.8	0.0		22.6	77.4	0.0		
Total %	22.0	18.3	0.0	40.2	15.9	6.1	0.0	22.0	8.5	29.3	0.0	37.8	
Exiting Leg Total	37				22				23				82
Buses	0	1	0	1	2	1	0	3	1	0	0	1	5
% Buses	0.0	6.7	0.0	3.0	15.4	20.0	0.0	16.7	14.3	0.0	0.0	3.2	6.1
Exiting Leg Total	2				2				1				5
Single-Unit Trucks	13	9	0	22	3	3	0	6	3	19	0	22	50
% Single-Unit	72.2	60.0	0.0	66.7	23.1	60.0	0.0	33.3	42.9	79.2	0.0	71.0	61.0
Exiting Leg Total	22				12				16				50
Articulated Trucks	5	5	0	10	8	1	0	9	3	5	0	8	27
% Articulated	27.8	33.3	0.0	30.3	61.5	20.0	0.0	50.0	42.9	20.8	0.0	25.8	32.9
Exiting Leg Total	13				8				6				27

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

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	7	1	0	8	1	0	0	1	0	4	0	4	13
4:15 PM	4	0	0	4	1	1	0	2	3	7	0	10	16
4:30 PM	2	4	0	6	3	1	0	4	1	6	0	7	17
4:45 PM	2	2	0	4	1	1	0	2	0	0	0	0	6
<b>Total Volume</b>	<b>15</b>	<b>7</b>	<b>0</b>	<b>22</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>17</b>	<b>0</b>	<b>21</b>	<b>52</b>
<b>% Approach Total</b>	<b>68.2</b>	<b>31.8</b>	<b>0.0</b>		<b>66.7</b>	<b>33.3</b>	<b>0.0</b>		<b>19.0</b>	<b>81.0</b>	<b>0.0</b>		
PHF	0.536	0.438	0.000	0.688	0.500	0.750	0.000	0.563	0.333	0.607	0.000	0.525	0.765
Buses	0	1	0	1	1	0	0	1	1	0	0	1	3
Buses %	0.0	14.3	0.0	4.5	16.7	0.0	0.0	11.1	25.0	0.0	0.0	4.8	5.8
Single-Unit Trucks	10	4	0	14	3	2	0	5	2	17	0	19	38
Single-Unit %	66.7	57.1	0.0	63.6	50.0	66.7	0.0	55.6	50.0	100.0	0.0	90.5	73.1
Articulated Trucks	5	2	0	7	2	1	0	3	1	0	0	1	11
Articulated %	33.3	28.6	0.0	31.8	33.3	33.3	0.0	33.3	25.0	0.0	0.0	4.8	21.2
Buses	0	1	0	1	1	0	0	1	1	0	0	1	3
Single-Unit Trucks	10	4	0	14	3	2	0	5	2	17	0	19	38
Articulated Trucks	5	2	0	7	2	1	0	3	1	0	0	1	11
<b>Total Entering Leg</b>	<b>15</b>	<b>7</b>	<b>0</b>	<b>22</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>17</b>	<b>0</b>	<b>21</b>	<b>52</b>
Buses	1				2				0				3
Single-Unit Trucks	20				6				12				38
Articulated Trucks	2				3				6				11
<b>Total Exiting Leg</b>	<b>23</b>				<b>11</b>				<b>18</b>				<b>52</b>

PDI File #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Buses**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
4:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	1	1	0	0	1	1	0	0	1	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
<b>Total</b>	0	0	0	0	1	1	0	2	0	0	0	0	2
<b>Grand Total</b>	0	1	0	1	2	1	0	3	1	0	0	1	5
Approach %	0.0	100.0	0.0		66.7	33.3	0.0		100.0	0.0	0.0		
Total %	0.0	20.0	0.0	20.0	40.0	20.0	0.0	60.0	20.0	0.0	0.0	20.0	
Exiting Leg Total				2				2				1	5

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

4:00 PM	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
4:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	0	1	0	1	1	0	0	1	1	0	0	1	3
<b>% Approach Total</b>	0.0	100.0	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.375
Entering Leg	0	1	0	1	1	0	0	1	1	0	0	1	3
Exiting Leg				1				2				0	3
<b>Total</b>				2				3				1	6

PDI File #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Single-Unit Trucks**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	5	0	0	5	1	0	0	1	0	4	0	4	10
4:15 PM	2	0	0	2	0	1	0	1	2	7	0	9	12
4:30 PM	1	2	0	3	2	0	0	2	0	6	0	6	11
4:45 PM	2	2	0	4	0	1	0	1	0	0	0	0	5
<b>Total</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>14</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>17</b>	<b>0</b>	<b>19</b>	<b>38</b>
5:00 PM	2	4	0	6	0	0	0	0	0	1	0	1	7
5:15 PM	1	0	0	1	0	1	0	1	0	0	0	0	2
5:30 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
<b>Total</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>12</b>
<b>Grand Total</b>	<b>13</b>	<b>9</b>	<b>0</b>	<b>22</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>19</b>	<b>0</b>	<b>22</b>	<b>50</b>
Approach %	59.1	40.9	0.0		50.0	50.0	0.0		13.6	86.4	0.0		
Total %	26.0	18.0	0.0	44.0	6.0	6.0	0.0	12.0	6.0	38.0	0.0	44.0	
Exiting Leg Total				22				12				16	50

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

4:00 PM	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	5	0	0	5	1	0	0	1	0	4	0	4	10
4:15 PM	2	0	0	2	0	1	0	1	2	7	0	9	12
4:30 PM	1	2	0	3	2	0	0	2	0	6	0	6	11
4:45 PM	2	2	0	4	0	1	0	1	0	0	0	0	5
<b>Total Volume</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>14</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>17</b>	<b>0</b>	<b>19</b>	<b>38</b>
<b>% Approach Total</b>	<b>71.4</b>	<b>28.6</b>	<b>0.0</b>		<b>60.0</b>	<b>40.0</b>	<b>0.0</b>		<b>10.5</b>	<b>89.5</b>	<b>0.0</b>		
PHF	0.500	0.500	0.000	0.700	0.375	0.500	0.000	0.625	0.250	0.607	0.000	0.528	0.792
Entering Leg	10	4	0	14	3	2	0	5	2	17	0	19	38
Exiting Leg				20				6				12	38
<b>Total</b>				<b>34</b>				<b>11</b>				<b>31</b>	<b>76</b>

PDI File #: **197253 AA**  
 Location: **S: Lyman Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**Articulated Trucks**

	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	2	1	0	3	0	0	0	0	0	0	0	0	3
4:15 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
4:30 PM	1	1	0	2	1	1	0	2	1	0	0	1	5
4:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
<b>Total</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>11</b>
5:00 PM	0	0	0	0	2	0	0	2	1	1	0	2	4
5:15 PM	0	1	0	1	3	0	0	3	0	4	0	4	8
5:30 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>7</b>	<b>16</b>
<b>Grand Total</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>10</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>27</b>
Approach %	50.0	50.0	0.0		88.9	11.1	0.0		37.5	62.5	0.0		
Total %	18.5	18.5	0.0	37.0	29.6	3.7	0.0	33.3	11.1	18.5	0.0	29.6	
Exiting Leg Total				13				8				6	27

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

4:30 PM	Bartlett Street				Lyman Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:30 PM	1	1	0	2	1	1	0	2	1	0	0	1	5
4:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	2	0	0	2	1	1	0	2	4
5:15 PM	0	1	0	1	3	0	0	3	0	4	0	4	8
Total Volume	1	2	0	3	7	1	0	8	2	5	0	7	18
% Approach Total	33.3	66.7	0.0		87.5	12.5	0.0		28.6	71.4	0.0		
PHF	0.250	0.500	0.000	0.375	0.583	0.250	0.000	0.667	0.500	0.313	0.000	0.438	0.563
Entering Leg	1	2	0	3	7	1	0	8	2	5	0	7	18
Exiting Leg				12				4				2	18
Total				15				12				9	36

PDI File #: 197253 AA  
 Location: S: Lyman Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 4:00 PM  
 End Time: 6:00 PM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
Approach %	100.0	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 %	100.0	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	0.0	0.0	
Exiting Leg Total	0						0						0						1

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

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
% Approach Total	100.0	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	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg	0						0						0						1
<b>Total</b>	<b>1</b>						<b>0</b>						<b>0</b>						<b>1</b>

PDI File #: 197253 AA  
 Location: S: Lyman Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 4:00 PM  
 End Time: 6:00 PM  
 Class:



**Pedestrians**

	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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
Total %	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	Bartlett Street						Lyman Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	0.0	0.0	0.0	0.000
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 #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	28	10	0	38	3	0	0	3	4	67	0	71	112
6:45 AM	72	5	0	77	2	1	0	3	1	112	0	113	193
<b>Total</b>	<b>100</b>	<b>15</b>	<b>0</b>	<b>115</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>179</b>	<b>0</b>	<b>184</b>	<b>305</b>
7:00 AM	99	0	0	99	1	2	0	3	6	105	0	111	213
7:15 AM	32	4	0	36	2	3	0	5	5	117	0	122	163
7:30 AM	33	6	0	39	1	2	0	3	6	160	0	166	208
7:45 AM	72	2	0	74	1	4	0	5	7	145	0	152	231
<b>Total</b>	<b>236</b>	<b>12</b>	<b>0</b>	<b>248</b>	<b>5</b>	<b>11</b>	<b>0</b>	<b>16</b>	<b>24</b>	<b>527</b>	<b>0</b>	<b>551</b>	<b>815</b>
8:00 AM	49	3	0	52	0	5	0	5	3	139	0	142	199
8:15 AM	55	2	0	57	2	4	0	6	6	149	0	155	218
8:30 AM	48	1	0	49	1	10	0	11	9	168	0	177	237
8:45 AM	30	5	0	35	3	3	0	6	5	156	0	161	202
<b>Total</b>	<b>182</b>	<b>11</b>	<b>0</b>	<b>193</b>	<b>6</b>	<b>22</b>	<b>0</b>	<b>28</b>	<b>23</b>	<b>612</b>	<b>0</b>	<b>635</b>	<b>856</b>
Grand Total	518	38	0	556	16	34	0	50	52	1318	0	1370	1976
Approach %	93.2	6.8	0.0		32.0	68.0	0.0		3.8	96.2	0.0		
Total %	26.2	1.9	0.0	28.1	0.8	1.7	0.0	2.5	2.6	66.7	0.0	69.3	
Exiting Leg Total				1334				90				552	1976
Cars	481	29	0	510	8	9	0	17	29	1251	0	1280	1807
% Cars	92.9	76.3	0.0	91.7	50.0	26.5	0.0	34.0	55.8	94.9	0.0	93.4	91.4
Exiting Leg Total				1259				58				490	1807
Heavy Vehicles	37	9	0	46	8	25	0	33	23	67	0	90	169
% Heavy Vehicles	7.1	23.7	0.0	8.3	50.0	73.5	0.0	66.0	44.2	5.1	0.0	6.6	8.6
Exiting Leg Total				75				32				62	169

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	72	2	0	74	1	4	0	5	7	145	0	152	231
8:00 AM	49	3	0	52	0	5	0	5	3	139	0	142	199
8:15 AM	55	2	0	57	2	4	0	6	6	149	0	155	218
8:30 AM	48	1	0	49	1	10	0	11	9	168	0	177	237
Total Volume	224	8	0	232	4	23	0	27	25	601	0	626	885
% Approach Total	96.6	3.4	0.0		14.8	85.2	0.0		4.0	96.0	0.0		
PHF	0.778	0.667	0.000	0.784	0.500	0.575	0.000	0.614	0.694	0.894	0.000	0.884	0.934
Cars	213	3	0	216	1	6	0	7	11	579	0	590	813
Cars %	95.1	37.5	0.0	93.1	25.0	26.1	0.0	25.9	44.0	96.3	0.0	94.2	91.9
Heavy Vehicles	11	5	0	16	3	17	0	20	14	22	0	36	72
Heavy Vehicles %	4.9	62.5	0.0	6.9	75.0	73.9	0.0	74.1	56.0	3.7	0.0	5.8	8.1
Cars Enter Leg	213	3	0	216	1	6	0	7	11	579	0	590	813
Heavy Enter Leg	11	5	0	16	3	17	0	20	14	22	0	36	72
Total Entering Leg	224	8	0	232	4	23	0	27	25	601	0	626	885
Cars Exiting Leg				580				14				219	813
Heavy Exiting Leg				25				19				28	72
Total Exiting Leg				605				33				247	885



PDI File #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	21	8	0	29	3	0	0	3	4	61	0	65	97
6:45 AM	63	4	0	67	1	1	0	2	1	103	0	104	173
Total	84	12	0	96	4	1	0	5	5	164	0	169	270
7:00 AM	94	0	0	94	1	0	0	1	1	92	0	93	188
7:15 AM	31	4	0	35	1	0	0	1	3	109	0	112	148
7:30 AM	30	5	0	35	1	1	0	2	5	158	0	163	200
7:45 AM	69	0	0	69	1	0	0	1	2	138	0	140	210
Total	224	9	0	233	4	1	0	5	11	497	0	508	746
8:00 AM	48	1	0	49	0	3	0	3	2	135	0	137	189
8:15 AM	50	1	0	51	0	1	0	1	3	145	0	148	200
8:30 AM	46	1	0	47	0	2	0	2	4	161	0	165	214
8:45 AM	29	5	0	34	0	1	0	1	4	149	0	153	188
Total	173	8	0	181	0	7	0	7	13	590	0	603	791
Grand Total	481	29	0	510	8	9	0	17	29	1251	0	1280	1807
Approach %	94.3	5.7	0.0		47.1	52.9	0.0		2.3	97.7	0.0		
Total %	26.6	1.6	0.0	28.2	0.4	0.5	0.0	0.9	1.6	69.2	0.0	70.8	
Exiting Leg Total				1259				58				490	1807

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

7:45 AM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	69	0	0	69	1	0	0	1	2	138	0	140	210
8:00 AM	48	1	0	49	0	3	0	3	2	135	0	137	189
8:15 AM	50	1	0	51	0	1	0	1	3	145	0	148	200
8:30 AM	46	1	0	47	0	2	0	2	4	161	0	165	214
Total Volume	213	3	0	216	1	6	0	7	11	579	0	590	813
% Approach Total	98.6	1.4	0.0		14.3	85.7	0.0		1.9	98.1	0.0		
PHF	0.772	0.750	0.000	0.783	0.250	0.500	0.000	0.583	0.688	0.899	0.000	0.894	0.950
Entering Leg	213	3	0	216	1	6	0	7	11	579	0	590	813
Exiting Leg				580				14				219	813
Total				796				21				809	1626

PDI File #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**



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

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	7	2	0	9	0	0	0	0	0	6	0	6	15
6:45 AM	9	1	0	10	1	0	0	1	0	9	0	9	20
Total	16	3	0	19	1	0	0	1	0	15	0	15	35
7:00 AM	5	0	0	5	0	2	0	2	5	13	0	18	25
7:15 AM	1	0	0	1	1	3	0	4	2	8	0	10	15
7:30 AM	3	1	0	4	0	1	0	1	1	2	0	3	8
7:45 AM	3	2	0	5	0	4	0	4	5	7	0	12	21
Total	12	3	0	15	1	10	0	11	13	30	0	43	69
8:00 AM	1	2	0	3	0	2	0	2	1	4	0	5	10
8:15 AM	5	1	0	6	2	3	0	5	3	4	0	7	18
8:30 AM	2	0	0	2	1	8	0	9	5	7	0	12	23
8:45 AM	1	0	0	1	3	2	0	5	1	7	0	8	14
Total	9	3	0	12	6	15	0	21	10	22	0	32	65
Grand Total	37	9	0	46	8	25	0	33	23	67	0	90	169
Approach %	80.4	19.6	0.0		24.2	75.8	0.0		25.6	74.4	0.0		
Total %	21.9	5.3	0.0	27.2	4.7	14.8	0.0	19.5	13.6	39.6	0.0	53.3	
Exiting Leg Total	75				32				62				169
Buses	9	0	0	9	0	0	0	0	0	11	0	11	20
% Buses	24.3	0.0	0.0	19.6	0.0	0.0	0.0	0.0	0.0	16.4	0.0	12.2	11.8
Exiting Leg Total	11				0				9				20
Single-Unit Trucks	9	2	0	11	1	19	0	20	19	30	0	49	80
% Single-Unit	24.3	22.2	0.0	23.9	12.5	76.0	0.0	60.6	82.6	44.8	0.0	54.4	47.3
Exiting Leg Total	31				21				28				80
Articulated Trucks	19	7	0	26	7	6	0	13	4	26	0	30	69
% Articulated	51.4	77.8	0.0	56.5	87.5	24.0	0.0	39.4	17.4	38.8	0.0	33.3	40.8
Exiting Leg Total	33				11				25				69

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	7	2	0	9	0	0	0	0	0	6	0	6	15
6:45 AM	9	1	0	10	1	0	0	1	0	9	0	9	20
7:00 AM	5	0	0	5	0	2	0	2	5	13	0	18	25
7:15 AM	1	0	0	1	1	3	0	4	2	8	0	10	15
Total Volume	22	3	0	25	2	5	0	7	7	36	0	43	75
% Approach Total	88.0	12.0	0.0		28.6	71.4	0.0		16.3	83.7	0.0		
PHF	0.611	0.375	0.000	0.625	0.500	0.417	0.000	0.438	0.350	0.692	0.000	0.597	0.750
Buses	9	0	0	9	0	0	0	0	0	11	0	11	20
Buses %	40.9	0.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	30.6	0.0	25.6	26.7
Single-Unit Trucks	3	0	0	3	0	5	0	5	6	14	0	20	28
Single-Unit %	13.6	0.0	0.0	12.0	0.0	100.0	0.0	71.4	85.7	38.9	0.0	46.5	37.3
Articulated Trucks	10	3	0	13	2	0	0	2	1	11	0	12	27
Articulated %	45.5	100.0	0.0	52.0	100.0	0.0	0.0	28.6	14.3	30.6	0.0	27.9	36.0
Buses	9	0	0	9	0	0	0	0	0	11	0	11	20
Single-Unit Trucks	3	0	0	3	0	5	0	5	6	14	0	20	28
Articulated Trucks	10	3	0	13	2	0	0	2	1	11	0	12	27
Total Entering Leg	22	3	0	25	2	5	0	7	7	36	0	43	75
Buses	11				0				9				20
Single-Unit Trucks	14				6				8				28
Articulated Trucks	13				4				10				27
Total Exiting Leg	38				10				27				75

PDI File #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	3	0	0	3	0	0	0	0	0	1	0	1	4
6:45 AM	6	0	0	6	0	0	0	0	0	4	0	4	10
Total	9	0	0	9	0	0	0	0	0	5	0	5	14
7:00 AM	0	0	0	0	0	0	0	0	0	6	0	6	6
7:15 AM	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
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	6	0	6	6
8:00 AM	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
8:30 AM	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
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	9	0	0	9	0	0	0	0	0	11	0	11	20
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	45.0	0.0	0.0	45.0	0.0	0.0	0.0	0.0	0.0	55.0	0.0	55.0	
Exiting Leg Total	11				0				9				20

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	3	0	0	3	0	0	0	0	0	1	0	1	4
6:45 AM	6	0	0	6	0	0	0	0	0	4	0	4	10
7:00 AM	0	0	0	0	0	0	0	0	0	6	0	6	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	9	0	0	9	0	0	0	0	0	11	0	11	20
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.458	0.000	0.458	0.500
Entering Leg	9	0	0	9	0	0	0	0	0	11	0	11	20
Exiting Leg	11				0				9				20
Total	20				0				20				40

PDI File #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
6:30 AM	1	0	0	1	0	0	0	0	0	0	1	0	1	2
6:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	1	0	0	1	0	0	0	0	0	0	5	0	5	6
7:00 AM	2	0	0	2	0	2	0	2	5	4	0	9	13	
7:15 AM	0	0	0	0	0	3	0	3	1	5	0	6	9	
7:30 AM	2	0	0	2	0	0	0	0	0	1	0	1	3	
7:45 AM	0	1	0	1	0	3	0	3	4	3	0	7	11	
Total	4	1	0	5	0	8	0	8	10	13	0	23	36	
8:00 AM	1	1	0	2	0	2	0	2	1	2	0	3	7	
8:15 AM	2	0	0	2	0	2	0	2	2	0	0	2	6	
8:30 AM	0	0	0	0	0	6	0	6	5	7	0	12	18	
8:45 AM	1	0	0	1	1	1	0	2	1	3	0	4	7	
Total	4	1	0	5	1	11	0	12	9	12	0	21	38	
Grand Total	9	2	0	11	1	19	0	20	19	30	0	49	80	
Approach %	81.8	18.2	0.0		5.0	95.0	0.0		38.8	61.2	0.0			
Total %	11.3	2.5	0.0	13.8	1.3	23.8	0.0	25.0	23.8	37.5	0.0	61.3		
Exiting Leg Total	31				21				28				80	

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

7:45 AM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	0	1	0	1	0	3	0	3	4	3	0	7	11
8:00 AM	1	1	0	2	0	2	0	2	1	2	0	3	7
8:15 AM	2	0	0	2	0	2	0	2	2	0	0	2	6
8:30 AM	0	0	0	0	0	6	0	6	5	7	0	12	18
Total Volume	3	2	0	5	0	13	0	13	12	12	0	24	42
% Approach Total	60.0	40.0	0.0		0.0	100.0	0.0		50.0	50.0	0.0		
PHF	0.375	0.500	0.000	0.625	0.000	0.542	0.000	0.542	0.600	0.429	0.000	0.500	0.583
Entering Leg	3	2	0	5	0	13	0	13	12	12	0	24	42
Exiting Leg	12				14				16				42
Total	17				27				40				84

PDI File #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	3	2	0	5	0	0	0	0	0	4	0	4	9
6:45 AM	3	1	0	4	1	0	0	1	0	1	0	1	6
Total	6	3	0	9	1	0	0	1	0	5	0	5	15
7:00 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
7:15 AM	1	0	0	1	1	0	0	1	1	3	0	4	6
7:30 AM	1	1	0	2	0	1	0	1	1	1	0	2	5
7:45 AM	3	1	0	4	0	1	0	1	1	4	0	5	10
Total	8	2	0	10	1	2	0	3	3	11	0	14	27
8:00 AM	0	1	0	1	0	0	0	0	0	2	0	2	3
8:15 AM	3	1	0	4	2	1	0	3	1	4	0	5	12
8:30 AM	2	0	0	2	1	2	0	3	0	0	0	0	5
8:45 AM	0	0	0	0	2	1	0	3	0	4	0	4	7
Total	5	2	0	7	5	4	0	9	1	10	0	11	27
Grand Total	19	7	0	26	7	6	0	13	4	26	0	30	69
Approach %	73.1	26.9	0.0		53.8	46.2	0.0		13.3	86.7	0.0		
Total %	27.5	10.1	0.0	37.7	10.1	8.7	0.0	18.8	5.8	37.7	0.0	43.5	
Exiting Leg Total	33				11				25				69

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:30 AM	1	1	0	2	0	1	0	1	1	1	0	2	5
7:45 AM	3	1	0	4	0	1	0	1	1	4	0	5	10
8:00 AM	0	1	0	1	0	0	0	0	0	2	0	2	3
8:15 AM	3	1	0	4	2	1	0	3	1	4	0	5	12
Total Volume	7	4	0	11	2	3	0	5	3	11	0	14	30
% Approach Total	63.6	36.4	0.0		40.0	60.0	0.0		21.4	78.6	0.0		
PHF	0.583	1.000	0.000	0.688	0.250	0.750	0.000	0.417	0.750	0.688	0.000	0.700	0.625
Entering Leg	7	4	0	11	2	3	0	5	3	11	0	14	30
Exiting Leg	13				7				10				30
Total	24				12				24				60

PDI File #: 197253 B  
 Location: S: FedEx Driveway  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 6:30 AM  
 End Time: 9:00 AM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
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	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	0.0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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	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 #: **197253 B**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Pedestrians**

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
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
Total %	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 06:30 AM to 09:00 AM begins at:

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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	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 #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	118	2	0	120	1	4	0	5	7	39	0	46	171
4:15 PM	114	3	0	117	7	3	0	10	6	47	0	53	180
4:30 PM	160	2	0	162	7	3	0	10	7	60	0	67	239
4:45 PM	172	2	0	174	7	2	0	9	2	58	0	60	243
<b>Total</b>	<b>564</b>	<b>9</b>	<b>0</b>	<b>573</b>	<b>22</b>	<b>12</b>	<b>0</b>	<b>34</b>	<b>22</b>	<b>204</b>	<b>0</b>	<b>226</b>	<b>833</b>
5:00 PM	211	3	0	214	4	7	0	11	2	64	0	66	291
5:15 PM	207	2	0	209	5	3	0	8	6	71	0	77	294
5:30 PM	185	5	0	190	2	7	0	9	1	35	0	36	235
5:45 PM	143	9	0	152	1	3	0	4	0	48	0	48	204
<b>Total</b>	<b>746</b>	<b>19</b>	<b>0</b>	<b>765</b>	<b>12</b>	<b>20</b>	<b>0</b>	<b>32</b>	<b>9</b>	<b>218</b>	<b>0</b>	<b>227</b>	<b>1024</b>
Grand Total	1310	28	0	1338	34	32	0	66	31	422	0	453	1857
Approach %	97.9	2.1	0.0		51.5	48.5	0.0		6.8	93.2	0.0		
Total %	70.5	1.5	0.0	72.1	1.8	1.7	0.0	3.6	1.7	22.7	0.0	24.4	
Exiting Leg Total				456				59				1342	1857
Cars	1272	9	0	1281	22	27	0	49	10	407	0	417	1747
% Cars	97.1	32.1	0.0	95.7	64.7	84.4	0.0	74.2	32.3	96.4	0.0	92.1	94.1
Exiting Leg Total				429				19				1299	1747
Heavy Vehicles	38	19	0	57	12	5	0	17	21	15	0	36	110
% Heavy Vehicles	2.9	67.9	0.0	4.3	35.3	15.6	0.0	25.8	67.7	3.6	0.0	7.9	5.9
Exiting Leg Total				27				40				43	110

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

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:30 PM	160	2	0	162	7	3	0	10	7	60	0	67	239
4:45 PM	172	2	0	174	7	2	0	9	2	58	0	60	243
5:00 PM	211	3	0	214	4	7	0	11	2	64	0	66	291
5:15 PM	207	2	0	209	5	3	0	8	6	71	0	77	294
Total Volume	750	9	0	759	23	15	0	38	17	253	0	270	1067
% Approach Total	98.8	1.2	0.0		60.5	39.5	0.0		6.3	93.7	0.0		
PHF	0.889	0.750	0.000	0.887	0.821	0.536	0.000	0.864	0.607	0.891	0.000	0.877	0.907
Cars	728	4	0	732	13	15	0	28	6	242	0	248	1008
Cars %	97.1	44.4	0.0	96.4	56.5	100.0	0.0	73.7	35.3	95.7	0.0	91.9	94.5
Heavy Vehicles	22	5	0	27	10	0	0	10	11	11	0	22	59
Heavy Vehicles %	2.9	55.6	0.0	3.6	43.5	0.0	0.0	26.3	64.7	4.3	0.0	8.1	5.5
Cars Enter Leg	728	4	0	732	13	15	0	28	6	242	0	248	1008
Heavy Enter Leg	22	5	0	27	10	0	0	10	11	11	0	22	59
Total Entering Leg	750	9	0	759	23	15	0	38	17	253	0	270	1067
Cars Exiting Leg				255				10				743	1008
Heavy Exiting Leg				21				16				22	59
Total Exiting Leg				276				26				765	1067



PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	116	1	0	117	0	0	0	0	3	39	0	42	159
4:15 PM	110	2	0	112	6	2	0	8	0	46	0	46	166
4:30 PM	154	1	0	155	1	3	0	4	3	53	0	56	215
4:45 PM	166	2	0	168	3	2	0	5	2	58	0	60	233
<b>Total</b>	<b>546</b>	<b>6</b>	<b>0</b>	<b>552</b>	<b>10</b>	<b>7</b>	<b>0</b>	<b>17</b>	<b>8</b>	<b>196</b>	<b>0</b>	<b>204</b>	<b>773</b>
5:00 PM	205	0	0	205	4	7	0	11	0	61	0	61	277
5:15 PM	203	1	0	204	5	3	0	8	1	70	0	71	283
5:30 PM	181	1	0	182	2	7	0	9	1	34	0	35	226
5:45 PM	137	1	0	138	1	3	0	4	0	46	0	46	188
<b>Total</b>	<b>726</b>	<b>3</b>	<b>0</b>	<b>729</b>	<b>12</b>	<b>20</b>	<b>0</b>	<b>32</b>	<b>2</b>	<b>211</b>	<b>0</b>	<b>213</b>	<b>974</b>
<b>Grand Total</b>	<b>1272</b>	<b>9</b>	<b>0</b>	<b>1281</b>	<b>22</b>	<b>27</b>	<b>0</b>	<b>49</b>	<b>10</b>	<b>407</b>	<b>0</b>	<b>417</b>	<b>1747</b>
Approach %	99.3	0.7	0.0		44.9	55.1	0.0		2.4	97.6	0.0		
Total %	72.8	0.5	0.0	73.3	1.3	1.5	0.0	2.8	0.6	23.3	0.0	23.9	
Exiting Leg Total				429				19				1299	1747

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

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	166	2	0	168	3	2	0	5	2	58	0	60	233
5:00 PM	205	0	0	205	4	7	0	11	0	61	0	61	277
5:15 PM	203	1	0	204	5	3	0	8	1	70	0	71	283
5:30 PM	181	1	0	182	2	7	0	9	1	34	0	35	226
<b>Total Volume</b>	<b>755</b>	<b>4</b>	<b>0</b>	<b>759</b>	<b>14</b>	<b>19</b>	<b>0</b>	<b>33</b>	<b>4</b>	<b>223</b>	<b>0</b>	<b>227</b>	<b>1019</b>
<b>% Approach Total</b>	<b>99.5</b>	<b>0.5</b>	<b>0.0</b>		<b>42.4</b>	<b>57.6</b>	<b>0.0</b>		<b>1.8</b>	<b>98.2</b>	<b>0.0</b>		
PHF	0.921	0.500	0.000	0.926	0.700	0.679	0.000	0.750	0.500	0.796	0.000	0.799	0.900
Entering Leg	755	4	0	759	14	19	0	33	4	223	0	227	1019
Exiting Leg				237				8				774	1019
<b>Total</b>				<b>996</b>				<b>41</b>				<b>1001</b>	<b>2038</b>

PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



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

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	2	1	0	3	1	4	0	5	4	0	0	4	12
4:15 PM	4	1	0	5	1	1	0	2	6	1	0	7	14
4:30 PM	6	1	0	7	6	0	0	6	4	7	0	11	24
4:45 PM	6	0	0	6	4	0	0	4	0	0	0	0	10
<b>Total</b>	<b>18</b>	<b>3</b>	<b>0</b>	<b>21</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>14</b>	<b>8</b>	<b>0</b>	<b>22</b>	<b>60</b>
5:00 PM	6	3	0	9	0	0	0	0	2	3	0	5	14
5:15 PM	4	1	0	5	0	0	0	0	5	1	0	6	11
5:30 PM	4	4	0	8	0	0	0	0	0	1	0	1	9
5:45 PM	6	8	0	14	0	0	0	0	0	2	0	2	16
<b>Total</b>	<b>20</b>	<b>16</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>7</b>	<b>0</b>	<b>14</b>	<b>50</b>
<b>Grand Total</b>	<b>38</b>	<b>19</b>	<b>0</b>	<b>57</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>21</b>	<b>15</b>	<b>0</b>	<b>36</b>	<b>110</b>
Approach %	66.7	33.3	0.0		70.6	29.4	0.0		58.3	41.7	0.0		
Total %	34.5	17.3	0.0	51.8	10.9	4.5	0.0	15.5	19.1	13.6	0.0	32.7	
Exiting Leg Total	27				40				43				110
Buses	1	0	0	1	0	0	0	0	0	2	0	2	3
% Buses	2.6	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	13.3	0.0	5.6	2.7
Exiting Leg Total	2				0				1				3
Single-Unit Trucks	18	2	0	20	12	4	0	16	14	7	0	21	57
% Single-Unit	47.4	10.5	0.0	35.1	100.0	80.0	0.0	94.1	66.7	46.7	0.0	58.3	51.8
Exiting Leg Total	19				16				22				57
Articulated Trucks	19	17	0	36	0	1	0	1	7	6	0	13	50
% Articulated	50.0	89.5	0.0	63.2	0.0	20.0	0.0	5.9	33.3	40.0	0.0	36.1	45.5
Exiting Leg Total	6				24				20				50

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

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:15 PM	4	1	0	5	1	1	0	2	6	1	0	7	14
4:30 PM	6	1	0	7	6	0	0	6	4	7	0	11	24
4:45 PM	6	0	0	6	4	0	0	4	0	0	0	0	10
5:00 PM	6	3	0	9	0	0	0	0	2	3	0	5	14
<b>Total Volume</b>	<b>22</b>	<b>5</b>	<b>0</b>	<b>27</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>0</b>	<b>23</b>	<b>62</b>
% Approach Total	81.5	18.5	0.0		91.7	8.3	0.0		52.2	47.8	0.0		
PHF	0.917	0.417	0.000	0.750	0.458	0.250	0.000	0.500	0.500	0.393	0.000	0.523	0.646
Buses	1	0	0	1	0	0	0	0	0	1	0	1	2
Buses %	4.5	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	9.1	0.0	4.3	3.2
Single-Unit Trucks	14	0	0	14	11	1	0	12	10	7	0	17	43
Single-Unit %	63.6	0.0	0.0	51.9	100.0	100.0	0.0	100.0	83.3	63.6	0.0	73.9	69.4
Articulated Trucks	7	5	0	12	0	0	0	0	2	3	0	5	17
Articulated %	31.8	100.0	0.0	44.4	0.0	0.0	0.0	0.0	16.7	27.3	0.0	21.7	27.4
Buses	1	0	0	1	0	0	0	0	0	1	0	1	2
Single-Unit Trucks	14	0	0	14	11	1	0	12	10	7	0	17	43
Articulated Trucks	7	5	0	12	0	0	0	0	2	3	0	5	17
<b>Total Entering Leg</b>	<b>22</b>	<b>5</b>	<b>0</b>	<b>27</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>0</b>	<b>23</b>	<b>62</b>
Buses	1				0				1				2
Single-Unit Trucks	18				10				15				43
Articulated Trucks	3				7				7				17
<b>Total Exiting Leg</b>	<b>22</b>				<b>17</b>				<b>23</b>				<b>62</b>

PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Buses**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	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	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
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	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	1	0	0	1	0	0	0	0	0	2	0	2	3
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	66.7	0.0	66.7	
Exiting Leg Total				2				0				1	3

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

4:00 PM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	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	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	0	0	0	0	1	0	1	2
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250
Entering Leg	1	0	0	1	0	0	0	0	0	1	0	1	2
Exiting Leg				1				0				1	2
Total				2				0				2	4

PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**Single-Unit Trucks**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	1	0	0	1	1	3	0	4	4	0	0	4	9
4:15 PM	0	0	0	0	1	1	0	2	6	1	0	7	9
4:30 PM	4	0	0	4	6	0	0	6	4	4	0	8	18
4:45 PM	5	0	0	5	4	0	0	4	0	0	0	0	9
<b>Total</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>16</b>	<b>14</b>	<b>5</b>	<b>0</b>	<b>19</b>	<b>45</b>
5:00 PM	5	0	0	5	0	0	0	0	0	2	0	2	7
5:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
5:45 PM	1	2	0	3	0	0	0	0	0	0	0	0	3
<b>Total</b>	<b>8</b>	<b>2</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>12</b>
<b>Grand Total</b>	<b>18</b>	<b>2</b>	<b>0</b>	<b>20</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>16</b>	<b>14</b>	<b>7</b>	<b>0</b>	<b>21</b>	<b>57</b>
Approach %	90.0	10.0	0.0		75.0	25.0	0.0		66.7	33.3	0.0		
Total %	31.6	3.5	0.0	35.1	21.1	7.0	0.0	28.1	24.6	12.3	0.0	36.8	
Exiting Leg Total				19				16				22	57

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

4:00 PM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	1	0	0	1	1	3	0	4	4	0	0	4	9
4:15 PM	0	0	0	0	1	1	0	2	6	1	0	7	9
4:30 PM	4	0	0	4	6	0	0	6	4	4	0	8	18
4:45 PM	5	0	0	5	4	0	0	4	0	0	0	0	9
<b>Total Volume</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>16</b>	<b>14</b>	<b>5</b>	<b>0</b>	<b>19</b>	<b>45</b>
<b>% Approach Total</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>		<b>75.0</b>	<b>25.0</b>	<b>0.0</b>		<b>73.7</b>	<b>26.3</b>	<b>0.0</b>		
PHF	0.500	0.000	0.000	0.500	0.500	0.333	0.000	0.667	0.583	0.313	0.000	0.594	0.625
Entering Leg	10	0	0	10	12	4	0	16	14	5	0	19	45
Exiting Leg				17				14				14	45
<b>Total</b>				<b>27</b>				<b>30</b>				<b>33</b>	<b>90</b>

PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**Articulated Trucks**

	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
4:15 PM	4	1	0	5	0	0	0	0	0	0	0	0	5
4:30 PM	1	1	0	2	0	0	0	0	0	2	0	2	4
4:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>7</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>13</b>
5:00 PM	1	3	0	4	0	0	0	0	2	1	0	3	7
5:15 PM	3	1	0	4	0	0	0	0	5	1	0	6	10
5:30 PM	3	4	0	7	0	0	0	0	0	1	0	1	8
5:45 PM	5	6	0	11	0	0	0	0	0	1	0	1	12
<b>Total</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>37</b>
Grand Total	19	17	0	36	0	1	0	1	7	6	0	13	50
Approach %	52.8	47.2	0.0		0.0	100.0	0.0		53.8	46.2	0.0		
Total %	38.0	34.0	0.0	72.0	0.0	2.0	0.0	2.0	14.0	12.0	0.0	26.0	
Exiting Leg Total				6				24				20	50

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

5:00 PM	Bartlett Street				FedEx Driveway				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
5:00 PM	1	3	0	4	0	0	0	0	2	1	0	3	7
5:15 PM	3	1	0	4	0	0	0	0	5	1	0	6	10
5:30 PM	3	4	0	7	0	0	0	0	0	1	0	1	8
5:45 PM	5	6	0	11	0	0	0	0	0	1	0	1	12
Total Volume	12	14	0	26	0	0	0	0	7	4	0	11	37
% Approach Total	46.2	53.8	0.0		0.0	0.0	0.0		63.6	36.4	0.0		
PHF	0.600	0.583	0.000	0.591	0.000	0.000	0.000	0.000	0.350	1.000	0.000	0.458	0.771
Entering Leg	12	14	0	26	0	0	0	0	7	4	0	11	37
Exiting Leg				4				21				12	37
Total				30				21				23	74

PDI File #: 197253 BB  
 Location: S: FedEx Driveway  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 4:00 PM  
 End Time: 6:00 PM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
Approach %	100.0	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 %	100.0	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	0.0	0.0	
Exiting Leg Total	0						0						0						1

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

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
% Approach Total	100.0	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	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg	0						0						0						1
<b>Total</b>	<b>1</b>						<b>0</b>						<b>0</b>						<b>2</b>

PDI File #: **197253 BB**  
 Location: **S: FedEx Driveway**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Pedestrians**

	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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
Total %	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	Bartlett Street						FedEx Driveway						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	0.0	0.0	0.0	0.000
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 #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	12	6	0	18	4	29	0	33	51	19	0	70	121
6:45 AM	24	16	0	40	4	54	0	58	78	31	0	109	207
<b>Total</b>	<b>36</b>	<b>22</b>	<b>0</b>	<b>58</b>	<b>8</b>	<b>83</b>	<b>0</b>	<b>91</b>	<b>129</b>	<b>50</b>	<b>0</b>	<b>179</b>	<b>328</b>
7:00 AM	25	18	0	43	6	72	0	78	76	29	0	105	226
7:15 AM	18	14	0	32	11	19	0	30	77	41	0	118	180
7:30 AM	18	14	0	32	5	22	0	27	93	68	0	161	220
7:45 AM	43	17	0	60	9	32	0	41	82	58	0	140	241
<b>Total</b>	<b>104</b>	<b>63</b>	<b>0</b>	<b>167</b>	<b>31</b>	<b>145</b>	<b>0</b>	<b>176</b>	<b>328</b>	<b>196</b>	<b>0</b>	<b>524</b>	<b>867</b>
8:00 AM	24	15	0	39	5	34	0	39	79	61	0	140	218
8:15 AM	23	15	0	38	5	33	0	38	85	65	0	150	226
8:30 AM	19	12	0	31	6	33	0	39	96	72	0	168	238
8:45 AM	14	15	0	29	5	21	0	26	96	65	0	161	216
<b>Total</b>	<b>80</b>	<b>57</b>	<b>0</b>	<b>137</b>	<b>21</b>	<b>121</b>	<b>0</b>	<b>142</b>	<b>356</b>	<b>263</b>	<b>0</b>	<b>619</b>	<b>898</b>
Grand Total	220	142	0	362	60	349	0	409	813	509	0	1322	2093
Approach %	60.8	39.2	0.0		14.7	85.3	0.0		61.5	38.5	0.0		
Total %	10.5	6.8	0.0	17.3	2.9	16.7	0.0	19.5	38.8	24.3	0.0	63.2	
Exiting Leg Total				569				955				569	2093
Cars	214	128	0	342	53	305	0	358	753	495	0	1248	1948
% Cars	97.3	90.1	0.0	94.5	88.3	87.4	0.0	87.5	92.6	97.2	0.0	94.4	93.1
Exiting Leg Total				548				881				519	1948
Heavy Vehicles	6	14	0	20	7	44	0	51	60	14	0	74	145
% Heavy Vehicles	2.7	9.9	0.0	5.5	11.7	12.6	0.0	12.5	7.4	2.8	0.0	5.6	6.9
Exiting Leg Total				21				74				50	145

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	43	17	0	60	9	32	0	41	82	58	0	140	241
8:00 AM	24	15	0	39	5	34	0	39	79	61	0	140	218
8:15 AM	23	15	0	38	5	33	0	38	85	65	0	150	226
8:30 AM	19	12	0	31	6	33	0	39	96	72	0	168	238
Total Volume	109	59	0	168	25	132	0	157	342	256	0	598	923
% Approach Total	64.9	35.1	0.0		15.9	84.1	0.0		57.2	42.8	0.0		
PHF	0.634	0.868	0.000	0.700	0.694	0.971	0.000	0.957	0.891	0.889	0.000	0.890	0.957
Cars	107	58	0	165	22	113	0	135	324	250	0	574	874
Cars %	98.2	98.3	0.0	98.2	88.0	85.6	0.0	86.0	94.7	97.7	0.0	96.0	94.7
Heavy Vehicles	2	1	0	3	3	19	0	22	18	6	0	24	49
Heavy Vehicles %	1.8	1.7	0.0	1.8	12.0	14.4	0.0	14.0	5.3	2.3	0.0	4.0	5.3
Cars Enter Leg	107	58	0	165	22	113	0	135	324	250	0	574	874
Heavy Enter Leg	2	1	0	3	3	19	0	22	18	6	0	24	49
Total Entering Leg	109	59	0	168	25	132	0	157	342	256	0	598	923
Cars Exiting Leg				272				382				220	874
Heavy Exiting Leg				9				19				21	49
Total Exiting Leg				281				401				241	923



PDI File #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Cars**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	12	4	0	16	4	20	0	24	45	19	0	64	104
6:45 AM	23	15	0	38	4	46	0	50	70	30	0	100	188
Total	35	19	0	54	8	66	0	74	115	49	0	164	292
7:00 AM	24	17	0	41	4	69	0	73	65	29	0	94	208
7:15 AM	18	10	0	28	11	18	0	29	70	38	0	108	165
7:30 AM	16	13	0	29	4	19	0	23	91	68	0	159	211
7:45 AM	42	16	0	58	8	27	0	35	77	57	0	134	227
Total	100	56	0	156	27	133	0	160	303	192	0	495	811
8:00 AM	23	15	0	38	4	30	0	34	76	59	0	135	207
8:15 AM	23	15	0	38	5	27	0	32	79	65	0	144	214
8:30 AM	19	12	0	31	5	29	0	34	92	69	0	161	226
8:45 AM	14	11	0	25	4	20	0	24	88	61	0	149	198
Total	79	53	0	132	18	106	0	124	335	254	0	589	845
Grand Total	214	128	0	342	53	305	0	358	753	495	0	1248	1948
Approach %	62.6	37.4	0.0		14.8	85.2	0.0		60.3	39.7	0.0		
Total %	11.0	6.6	0.0	17.6	2.7	15.7	0.0	18.4	38.7	25.4	0.0	64.1	
Exiting Leg Total	548				881				519				1948

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

7:45 AM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	42	16	0	58	8	27	0	35	77	57	0	134	227
8:00 AM	23	15	0	38	4	30	0	34	76	59	0	135	207
8:15 AM	23	15	0	38	5	27	0	32	79	65	0	144	214
8:30 AM	19	12	0	31	5	29	0	34	92	69	0	161	226
Total Volume	107	58	0	165	22	113	0	135	324	250	0	574	874
% Approach Total	64.8	35.2	0.0		16.3	83.7	0.0		56.4	43.6	0.0		
PHF	0.637	0.906	0.000	0.711	0.688	0.942	0.000	0.964	0.880	0.906	0.000	0.891	0.963
Entering Leg	107	58	0	165	22	113	0	135	324	250	0	574	874
Exiting Leg	272				382				220				874
Total	437				517				794				1748

PDI File #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**



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

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	2	0	2	0	9	0	9	6	0	0	6	17
6:45 AM	1	1	0	2	0	8	0	8	8	1	0	9	19
Total	1	3	0	4	0	17	0	17	14	1	0	15	36
7:00 AM	1	1	0	2	2	3	0	5	11	0	0	11	18
7:15 AM	0	4	0	4	0	1	0	1	7	3	0	10	15
7:30 AM	2	1	0	3	1	3	0	4	2	0	0	2	9
7:45 AM	1	1	0	2	1	5	0	6	5	1	0	6	14
Total	4	7	0	11	4	12	0	16	25	4	0	29	56
8:00 AM	1	0	0	1	1	4	0	5	3	2	0	5	11
8:15 AM	0	0	0	0	0	6	0	6	6	0	0	6	12
8:30 AM	0	0	0	0	1	4	0	5	4	3	0	7	12
8:45 AM	0	4	0	4	1	1	0	2	8	4	0	12	18
Total	1	4	0	5	3	15	0	18	21	9	0	30	53
Grand Total	6	14	0	20	7	44	0	51	60	14	0	74	145
Approach %	30.0	70.0	0.0		13.7	86.3	0.0		81.1	18.9	0.0		
Total %	4.1	9.7	0.0	13.8	4.8	30.3	0.0	35.2	41.4	9.7	0.0	51.0	
Exiting Leg Total	21				74				50				145
Buses	1	1	0	2	1	8	0	9	10	1	0	11	22
% Buses	16.7	7.1	0.0	10.0	14.3	18.2	0.0	17.6	16.7	7.1	0.0	14.9	15.2
Exiting Leg Total	2				11				9				22
Single-Unit Trucks	3	11	0	14	5	12	0	17	18	11	0	29	60
% Single-Unit	50.0	78.6	0.0	70.0	71.4	27.3	0.0	33.3	30.0	78.6	0.0	39.2	41.4
Exiting Leg Total	16				29				15				60
Articulated Trucks	2	2	0	4	1	24	0	25	32	2	0	34	63
% Articulated	33.3	14.3	0.0	20.0	14.3	54.5	0.0	49.0	53.3	14.3	0.0	45.9	43.4
Exiting Leg Total	3				34				26				63

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	2	0	2	0	9	0	9	6	0	0	6	17
6:45 AM	1	1	0	2	0	8	0	8	8	1	0	9	19
7:00 AM	1	1	0	2	2	3	0	5	11	0	0	11	18
7:15 AM	0	4	0	4	0	1	0	1	7	3	0	10	15
Total Volume	2	8	0	10	2	21	0	23	32	4	0	36	69
% Approach Total	20.0	80.0	0.0		8.7	91.3	0.0		88.9	11.1	0.0		
PHF	0.500	0.500	0.000	0.625	0.250	0.583	0.000	0.639	0.727	0.333	0.000	0.818	0.908
Buses	1	1	0	2	0	8	0	8	10	1	0	11	21
Buses %	50.0	12.5	0.0	20.0	0.0	38.1	0.0	34.8	31.3	25.0	0.0	30.6	30.4
Single-Unit Trucks	1	5	0	6	2	2	0	4	9	2	0	11	21
Single-Unit %	50.0	62.5	0.0	60.0	100.0	9.5	0.0	17.4	28.1	50.0	0.0	30.6	30.4
Articulated Trucks	0	2	0	2	0	11	0	11	13	1	0	14	27
Articulated %	0.0	25.0	0.0	20.0	0.0	52.4	0.0	47.8	40.6	25.0	0.0	38.9	39.1
Buses	1	1	0	2	0	8	0	8	10	1	0	11	21
Single-Unit Trucks	1	5	0	6	2	2	0	4	9	2	0	11	21
Articulated Trucks	0	2	0	2	0	11	0	11	13	1	0	14	27
Total Entering Leg	2	8	0	10	2	21	0	23	32	4	0	36	69
Buses	1				11				9				21
Single-Unit Trucks	4				14				3				21
Articulated Trucks	1				15				11				27
Total Exiting Leg	6				40				23				69

PDI File #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	1	0	1	0	3	0	3	1	0	0	1	5
6:45 AM	1	0	0	1	0	5	0	5	3	1	0	4	10
Total	1	1	0	2	0	8	0	8	4	1	0	5	15
7:00 AM	0	0	0	0	0	0	0	0	6	0	0	6	6
7:15 AM	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
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	6	0	0	6	6
8:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
8:15 AM	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
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
Grand Total	1	1	0	2	1	8	0	9	10	1	0	11	22
Approach %	50.0	50.0	0.0		11.1	88.9	0.0		90.9	9.1	0.0		
Total %	4.5	4.5	0.0	9.1	4.5	36.4	0.0	40.9	45.5	4.5	0.0	50.0	
Exiting Leg Total	2				11				9				22

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	1	0	1	0	3	0	3	1	0	0	1	5
6:45 AM	1	0	0	1	0	5	0	5	3	1	0	4	10
7:00 AM	0	0	0	0	0	0	0	0	6	0	0	6	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	1	0	2	0	8	0	8	10	1	0	11	21
% Approach Total	50.0	50.0	0.0		0.0	100.0	0.0		90.9	9.1	0.0		
PHF	0.250	0.250	0.000	0.500	0.000	0.400	0.000	0.400	0.417	0.250	0.000	0.458	0.525
Entering Leg	1	1	0	2	0	8	0	8	10	1	0	11	21
Exiting Leg	1				11				9				21
Total	3				19				20				42

PDI File #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Single-Unit Trucks**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
6:45 AM	0	1	0	1	0	0	0	0	3	0	0	3	4
Total	0	1	0	1	0	1	0	1	4	0	0	4	6
7:00 AM	1	1	0	2	2	1	0	3	2	0	0	2	7
7:15 AM	0	3	0	3	0	0	0	0	3	2	0	5	8
7:30 AM	1	1	0	2	1	1	0	2	1	0	0	1	5
7:45 AM	0	1	0	1	1	2	0	3	1	1	0	2	6
Total	2	6	0	8	4	4	0	8	7	3	0	10	26
8:00 AM	1	0	0	1	0	1	0	1	1	2	0	3	5
8:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
8:30 AM	0	0	0	0	1	2	0	3	3	3	0	6	9
8:45 AM	0	4	0	4	0	1	0	1	3	3	0	6	11
Total	1	4	0	5	1	7	0	8	7	8	0	15	28
Grand Total	3	11	0	14	5	12	0	17	18	11	0	29	60
Approach %	21.4	78.6	0.0		29.4	70.6	0.0		62.1	37.9	0.0		
Total %	5.0	18.3	0.0	23.3	8.3	20.0	0.0	28.3	30.0	18.3	0.0	48.3	
Exiting Leg Total	16				29				15				60

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

8:00 AM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
8:00 AM	1	0	0	1	0	1	0	1	1	2	0	3	5
8:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
8:30 AM	0	0	0	0	1	2	0	3	3	3	0	6	9
8:45 AM	0	4	0	4	0	1	0	1	3	3	0	6	11
Total Volume	1	4	0	5	1	7	0	8	7	8	0	15	28
% Approach Total	20.0	80.0	0.0		12.5	87.5	0.0		46.7	53.3	0.0		
PHF	0.250	0.250	0.000	0.313	0.250	0.583	0.000	0.667	0.583	0.667	0.000	0.625	0.636
Entering Leg	1	4	0	5	1	7	0	8	7	8	0	15	28
Exiting Leg	9				11				8				28
Total	14				19				23				56

PDI File #: **197253 C**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **6:30 AM**  
 End Time: **9:00 AM**  
 Class:



**Articulated Trucks**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	1	0	1	0	5	0	5	4	0	0	4	10
6:45 AM	0	0	0	0	0	3	0	3	2	0	0	2	5
Total	0	1	0	1	0	8	0	8	6	0	0	6	15
7:00 AM	0	0	0	0	0	2	0	2	3	0	0	3	5
7:15 AM	0	1	0	1	0	1	0	1	4	1	0	5	7
7:30 AM	1	0	0	1	0	2	0	2	1	0	0	1	4
7:45 AM	1	0	0	1	0	3	0	3	4	0	0	4	8
Total	2	1	0	3	0	8	0	8	12	1	0	13	24
8:00 AM	0	0	0	0	0	3	0	3	2	0	0	2	5
8:15 AM	0	0	0	0	0	3	0	3	6	0	0	6	9
8:30 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
8:45 AM	0	0	0	0	1	0	0	1	5	1	0	6	7
Total	0	0	0	0	1	8	0	9	14	1	0	15	24
Grand Total	2	2	0	4	1	24	0	25	32	2	0	34	63
Approach %	50.0	50.0	0.0		4.0	96.0	0.0		94.1	5.9	0.0		
Total %	3.2	3.2	0.0	6.3	1.6	38.1	0.0	39.7	50.8	3.2	0.0	54.0	
Exiting Leg Total	3				34				26				63

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
6:30 AM	0	1	0	1	0	5	0	5	4	0	0	4	10
6:45 AM	0	0	0	0	0	3	0	3	2	0	0	2	5
7:00 AM	0	0	0	0	0	2	0	2	3	0	0	3	5
7:15 AM	0	1	0	1	0	1	0	1	4	1	0	5	7
Total Volume	0	2	0	2	0	11	0	11	13	1	0	14	27
% Approach Total	0.0	100.0	0.0		0.0	100.0	0.0		92.9	7.1	0.0		
PHF	0.000	0.500	0.000	0.500	0.000	0.550	0.000	0.550	0.813	0.250	0.000	0.700	0.675
Entering Leg	0	2	0	2	0	11	0	11	13	1	0	14	27
Exiting Leg	1				15				11				27
Total	3				26				25				54

PDI File #: 197253 C  
 Location: S: Cedar Hill Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 6:30 AM  
 End Time: 9:00 AM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	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	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	1	0	0	0	1	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	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Approach %	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	0.0
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0						0						0						1

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

6:30 AM	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	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	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
% Approach Total	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	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	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0						0						0						1
Exiting Leg	0						0						0						1
Total	0						1						1						2

PDI File #: 197253 C  
 Location: S: Cedar Hill Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 6:30 AM  
 End Time: 9:00 AM  
 Class:



**Pedestrians**

	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 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
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	1	0	1	0	0	0	0	0	0	1
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	1	0	1	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	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Approach %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0
Exiting Leg Total	0						1						0						1

Peak Hour Analysis from 06:30 AM to 09:00 AM begins at:

	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
% Approach Total	0.0	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
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Exiting Leg	0						1						0						1
Total	0						2						0						2

PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	63	7	1	71	21	54	0	75	21	24	0	45	191
4:15 PM	58	9	0	67	9	59	0	68	30	21	0	51	186
4:30 PM	99	11	0	110	14	66	0	80	46	22	0	68	258
4:45 PM	94	9	0	103	17	79	0	96	49	19	0	68	267
<b>Total</b>	<b>314</b>	<b>36</b>	<b>1</b>	<b>351</b>	<b>61</b>	<b>258</b>	<b>0</b>	<b>319</b>	<b>146</b>	<b>86</b>	<b>0</b>	<b>232</b>	<b>902</b>
5:00 PM	122	13	0	135	16	93	0	109	38	28	0	66	310
5:15 PM	103	21	0	124	13	100	0	113	52	23	0	75	312
5:30 PM	99	14	0	113	7	92	0	99	23	13	0	36	248
5:45 PM	69	9	0	78	15	83	0	98	25	23	0	48	224
<b>Total</b>	<b>393</b>	<b>57</b>	<b>0</b>	<b>450</b>	<b>51</b>	<b>368</b>	<b>0</b>	<b>419</b>	<b>138</b>	<b>87</b>	<b>0</b>	<b>225</b>	<b>1094</b>
Grand Total	707	93	1	801	112	626	0	738	284	173	0	457	1996
Approach %	88.3	11.6	0.1		15.2	84.8	0.0		62.1	37.9	0.0		
Total %	35.4	4.7	0.1	40.1	5.6	31.4	0.0	37.0	14.2	8.7	0.0	22.9	
Exiting Leg Total				286				377				1333	1996
Cars	691	85	1	777	103	585	0	688	264	169	0	433	1898
% Cars	97.7	91.4	100.0	97.0	92.0	93.5	0.0	93.2	93.0	97.7	0.0	94.7	95.1
Exiting Leg Total				273				349				1276	1898
Heavy Vehicles	16	8	0	24	9	41	0	50	20	4	0	24	98
% Heavy Vehicles	2.3	8.6	0.0	3.0	8.0	6.5	0.0	6.8	7.0	2.3	0.0	5.3	4.9
Exiting Leg Total				13				28				57	98

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

4:30 PM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:30 PM	99	11	0	110	14	66	0	80	46	22	0	68	258
4:45 PM	94	9	0	103	17	79	0	96	49	19	0	68	267
5:00 PM	122	13	0	135	16	93	0	109	38	28	0	66	310
5:15 PM	103	21	0	124	13	100	0	113	52	23	0	75	312
Total Volume	418	54	0	472	60	338	0	398	185	92	0	277	1147
% Approach Total	88.6	11.4	0.0		15.1	84.9	0.0		66.8	33.2	0.0		
PHF	0.857	0.643	0.000	0.874	0.882	0.845	0.000	0.881	0.889	0.821	0.000	0.923	0.919
Cars	407	50	0	457	56	321	0	377	169	90	0	259	1093
Cars %	97.4	92.6	0.0	96.8	93.3	95.0	0.0	94.7	91.4	97.8	0.0	93.5	95.3
Heavy Vehicles	11	4	0	15	4	17	0	21	16	2	0	18	54
Heavy Vehicles %	2.6	7.4	0.0	3.2	6.7	5.0	0.0	5.3	8.6	2.2	0.0	6.5	4.7
Cars Enter Leg	407	50	0	457	56	321	0	377	169	90	0	259	1093
Heavy Enter Leg	11	4	0	15	4	17	0	21	16	2	0	18	54
Total Entering Leg	418	54	0	472	60	338	0	398	185	92	0	277	1147
Cars Exiting Leg				146				219				728	1093
Heavy Exiting Leg				6				20				28	54
Total Exiting Leg				152				239				756	1147



PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	63	6	1	70	18	52	0	70	19	24	0	43	183
4:15 PM	56	7	0	63	8	56	0	64	29	20	0	49	176
4:30 PM	94	10	0	104	13	64	0	77	36	20	0	56	237
4:45 PM	90	7	0	97	16	77	0	93	45	19	0	64	254
<b>Total</b>	<b>303</b>	<b>30</b>	<b>1</b>	<b>334</b>	<b>55</b>	<b>249</b>	<b>0</b>	<b>304</b>	<b>129</b>	<b>83</b>	<b>0</b>	<b>212</b>	<b>850</b>
5:00 PM	120	13	0	133	15	86	0	101	37	28	0	65	299
5:15 PM	103	20	0	123	12	94	0	106	51	23	0	74	303
5:30 PM	97	14	0	111	6	86	0	92	22	13	0	35	238
5:45 PM	68	8	0	76	15	70	0	85	25	22	0	47	208
<b>Total</b>	<b>388</b>	<b>55</b>	<b>0</b>	<b>443</b>	<b>48</b>	<b>336</b>	<b>0</b>	<b>384</b>	<b>135</b>	<b>86</b>	<b>0</b>	<b>221</b>	<b>1048</b>
Grand Total	691	85	1	777	103	585	0	688	264	169	0	433	1898
Approach %	88.9	10.9	0.1		15.0	85.0	0.0		61.0	39.0	0.0		
Total %	36.4	4.5	0.1	40.9	5.4	30.8	0.0	36.2	13.9	8.9	0.0	22.8	
Exiting Leg Total				273				349				1276	1898

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

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	90	7	0	97	16	77	0	93	45	19	0	64	254
5:00 PM	120	13	0	133	15	86	0	101	37	28	0	65	299
5:15 PM	103	20	0	123	12	94	0	106	51	23	0	74	303
5:30 PM	97	14	0	111	6	86	0	92	22	13	0	35	238
Total Volume	410	54	0	464	49	343	0	392	155	83	0	238	1094
% Approach Total	88.4	11.6	0.0		12.5	87.5	0.0		65.1	34.9	0.0		
PHF	0.854	0.675	0.000	0.872	0.766	0.912	0.000	0.925	0.760	0.741	0.000	0.804	0.903
Entering Leg	410	54	0	464	49	343	0	392	155	83	0	238	1094
Exiting Leg				132				209				753	1094
Total				596				601				991	2188

PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



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

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	0	1	0	1	3	2	0	5	2	0	0	2	8
4:15 PM	2	2	0	4	1	3	0	4	1	1	0	2	10
4:30 PM	5	1	0	6	1	2	0	3	10	2	0	12	21
4:45 PM	4	2	0	6	1	2	0	3	4	0	0	4	13
<b>Total</b>	<b>11</b>	<b>6</b>	<b>0</b>	<b>17</b>	<b>6</b>	<b>9</b>	<b>0</b>	<b>15</b>	<b>17</b>	<b>3</b>	<b>0</b>	<b>20</b>	<b>52</b>
5:00 PM	2	0	0	2	1	7	0	8	1	0	0	1	11
5:15 PM	0	1	0	1	1	6	0	7	1	0	0	1	9
5:30 PM	2	0	0	2	1	6	0	7	1	0	0	1	10
5:45 PM	1	1	0	2	0	13	0	13	0	1	0	1	16
<b>Total</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>3</b>	<b>32</b>	<b>0</b>	<b>35</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>46</b>
Grand Total	16	8	0	24	9	41	0	50	20	4	0	24	98
Approach %	66.7	33.3	0.0		18.0	82.0	0.0		83.3	16.7	0.0		
Total %	16.3	8.2	0.0	24.5	9.2	41.8	0.0	51.0	20.4	4.1	0.0	24.5	
Exiting Leg Total	13				28				57				98
Buses	1	0	0	1	0	0	0	0	0	1	0	1	2
% Buses	6.3	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	25.0	0.0	4.2	2.0
Exiting Leg Total	1				0				1				2
Single-Unit Trucks	11	6	0	17	7	8	0	15	15	3	0	18	50
% Single-Unit	68.8	75.0	0.0	70.8	77.8	19.5	0.0	30.0	75.0	75.0	0.0	75.0	51.0
Exiting Leg Total	10				21				19				50
Articulated Trucks	4	2	0	6	2	33	0	35	5	0	0	5	46
% Articulated	25.0	25.0	0.0	25.0	22.2	80.5	0.0	70.0	25.0	0.0	0.0	20.8	46.9
Exiting Leg Total	2				7				37				46

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

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:15 PM	2	2	0	4	1	3	0	4	1	1	0	2	10
4:30 PM	5	1	0	6	1	2	0	3	10	2	0	12	21
4:45 PM	4	2	0	6	1	2	0	3	4	0	0	4	13
5:00 PM	2	0	0	2	1	7	0	8	1	0	0	1	11
Total Volume	13	5	0	18	4	14	0	18	16	3	0	19	55
% Approach Total	72.2	27.8	0.0		22.2	77.8	0.0		84.2	15.8	0.0		
PHF	0.650	0.625	0.000	0.750	1.000	0.500	0.000	0.563	0.400	0.375	0.000	0.396	0.655
Buses	1	0	0	1	0	0	0	0	0	1	0	1	2
Buses %	7.7	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	33.3	0.0	5.3	3.6
Single-Unit Trucks	10	3	0	13	3	5	0	8	13	2	0	15	36
Single-Unit %	76.9	60.0	0.0	72.2	75.0	35.7	0.0	44.4	81.3	66.7	0.0	78.9	65.5
Articulated Trucks	2	2	0	4	1	9	0	10	3	0	0	3	17
Articulated %	15.4	40.0	0.0	22.2	25.0	64.3	0.0	55.6	18.8	0.0	0.0	15.8	30.9
Buses	1	0	0	1	0	0	0	0	0	1	0	1	2
Single-Unit Trucks	10	3	0	13	3	5	0	8	13	2	0	15	36
Articulated Trucks	2	2	0	4	1	9	0	10	3	0	0	3	17
Total Entering Leg	13	5	0	18	4	14	0	18	16	3	0	19	55
Buses	1				0				1				2
Single-Unit Trucks	5				16				15				36
Articulated Trucks	1				5				11				17
Total Exiting Leg	7				21				27				55

PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Buses**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	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	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
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	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	
Exiting Leg Total				1				0				1	2

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

4:00 PM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	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	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>% Approach Total</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>		<b>0.0</b>	<b>100.0</b>	<b>0.0</b>		
PHF	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250
Entering Leg	1	0	0	1	0	0	0	0	0	1	0	1	2
Exiting Leg				1				0				1	2
<b>Total</b>				<b>2</b>				<b>0</b>				<b>2</b>	<b>4</b>

PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**Single-Unit Trucks**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:00 PM	0	1	0	1	2	0	0	2	2	0	0	2	5
4:15 PM	1	2	0	3	1	0	0	1	1	1	0	2	6
4:30 PM	3	0	0	3	0	0	0	0	8	1	0	9	12
4:45 PM	4	1	0	5	1	1	0	2	4	0	0	4	11
<b>Total</b>	<b>8</b>	<b>4</b>	<b>0</b>	<b>12</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>2</b>	<b>0</b>	<b>17</b>	<b>34</b>
5:00 PM	2	0	0	2	1	4	0	5	0	0	0	0	7
5:15 PM	0	1	0	1	1	1	0	2	0	0	0	0	3
5:30 PM	1	0	0	1	1	0	0	1	0	0	0	0	2
5:45 PM	0	1	0	1	0	2	0	2	0	1	0	1	4
<b>Total</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>16</b>
<b>Grand Total</b>	<b>11</b>	<b>6</b>	<b>0</b>	<b>17</b>	<b>7</b>	<b>8</b>	<b>0</b>	<b>15</b>	<b>15</b>	<b>3</b>	<b>0</b>	<b>18</b>	<b>50</b>
Approach %	64.7	35.3	0.0		46.7	53.3	0.0		83.3	16.7	0.0		
Total %	22.0	12.0	0.0	34.0	14.0	16.0	0.0	30.0	30.0	6.0	0.0	36.0	
Exiting Leg Total				10				21				19	50

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

4:15 PM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total
	from East				from South				from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:15 PM	1	2	0	3	1	0	0	1	1	1	0	2	6
4:30 PM	3	0	0	3	0	0	0	0	8	1	0	9	12
4:45 PM	4	1	0	5	1	1	0	2	4	0	0	4	11
5:00 PM	2	0	0	2	1	4	0	5	0	0	0	0	7
<b>Total Volume</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>13</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>36</b>
% Approach Total	76.9	23.1	0.0		37.5	62.5	0.0		86.7	13.3	0.0		
PHF	0.625	0.375	0.000	0.650	0.750	0.313	0.000	0.400	0.406	0.500	0.000	0.417	0.750
Entering Leg	10	3	0	13	3	5	0	8	13	2	0	15	36
Exiting Leg				5				16				15	36
<b>Total</b>				<b>18</b>				<b>24</b>				<b>30</b>	<b>72</b>

PDI File #: **197253 CC**  
 Location: **S: Cedar Hill Street**  
 Location: **E: Bartlett Street W: Bartlett Street**  
 City, State: **Northborough, MA**  
 Client: **VHB/ T. Benson**  
 Site Code: **83468.19**  
 Count Date: **Wednesday, October 16, 2019**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**Articulated Trucks**

	Bartlett Street				Cedar Hill Street				Bartlett Street				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
4:00 PM	0	0	0	0	1	2	0	3	0	0	0	0	3	
4:15 PM	1	0	0	1	0	3	0	3	0	0	0	0	4	
4:30 PM	1	1	0	2	1	2	0	3	2	0	0	2	7	
4:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	2	
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>16</b>	
5:00 PM	0	0	0	0	0	3	0	3	1	0	0	1	4	
5:15 PM	0	0	0	0	0	5	0	5	1	0	0	1	6	
5:30 PM	1	0	0	1	0	6	0	6	1	0	0	1	8	
5:45 PM	1	0	0	1	0	11	0	11	0	0	0	0	12	
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>25</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>30</b>	
Grand Total	4	2	0	6	2	33	0	35	5	0	0	5	46	
Approach %	66.7	33.3	0.0		5.7	94.3	0.0		100.0	0.0	0.0			
Total %	8.7	4.3	0.0	13.0	4.3	71.7	0.0	76.1	10.9	0.0	0.0	10.9		
Exiting Leg Total				2				7					37	46

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

5:00 PM	Bartlett Street				Cedar Hill Street				Bartlett Street				Total	
	from East				from South				from West					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
5:00 PM	0	0	0	0	0	3	0	3	1	0	0	1	4	
5:15 PM	0	0	0	0	0	5	0	5	1	0	0	1	6	
5:30 PM	1	0	0	1	0	6	0	6	1	0	0	1	8	
5:45 PM	1	0	0	1	0	11	0	11	0	0	0	0	12	
Total Volume	2	0	0	2	0	25	0	25	3	0	0	3	30	
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0			
PHF	0.500	0.000	0.000	0.500	0.000	0.568	0.000	0.568	0.750	0.000	0.000	0.750	0.625	
Entering Leg	2	0	0	2	0	25	0	25	3	0	0	3	30	
Exiting Leg				0				3					27	30
Total				2				28					30	60

PDI File #: 197253 CC  
 Location: S: Cedar Hill Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 4:00 PM  
 End Time: 6:00 PM  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
Approach %	100.0	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 %	100.0	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	0.0	0.0	
Exiting Leg Total	0						0						0						1

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

4:00 PM	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	1	0	0	0	0	1	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	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
% Approach Total	100.0	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	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg	0						0						0						1
<b>Total</b>	<b>1</b>						<b>0</b>						<b>0</b>						<b>2</b>

PDI File #: 197253 CC  
 Location: S: Cedar Hill Street  
 Location: E: Bartlett Street W: Bartlett Street  
 City, State: Northborough, MA  
 Client: VHB/ T. Benson  
 Site Code: 83468.19  
 Count Date: Wednesday, October 16, 2019  
 Start Time: 4:00 PM  
 End Time: 6:00 PM  
 Class:



**Pedestrians**

	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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
Total %	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	Bartlett Street						Cedar Hill Street						Bartlett Street						Total
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	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	0.0	0.0	0.0	0.000
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

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***MASSDOT SEASONAL ADJUSTMENT FACTORS AND  
HISTORICAL GROWTH***

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**GREEN INTERNATIONAL AFFILIATES, INC.**  
 Civil and Structural Engineers  
 200 Ames Pond Drive, Suite 200  
 TEWKSBURY, MA 01876

JOB Northborough J.R. Development  
 SHEET NO. 1 OF 2  
 CALCULATED BY AV DATE 1/13/2022  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 DESCRIPTION \_\_\_\_\_

**Daily Avg. Counts on Weekdays**

From MassDOT Interactive Transportation Data Management System

	<b>MassDOT spot count, Location ID 254103</b>	
<b>Main Street (Route 20)</b>		
<b>Year</b>	<b>2013</b>	<b>2019</b>
<b>Daily Traffic Volume</b>	12,150	13,137
<b>Average Annual Growth Rate</b>		1.31%

	<b>MassDOT spot count, Location ID 3122</b>	
<b>Hudson Street</b>		
<b>Year</b>	<b>2009</b>	<b>2019</b>
<b>Daily Traffic Volume</b>	6,400	7,015
<b>Average Annual Growth Rate</b>		0.92%

<b>Average Annual Growth:</b>	1.12%
<b>Say:</b>	1.0%

	<b>MassDOT spot count, Location ID RPA05- 215-4009</b>	
<b>Lyman Street</b>		
<b>Year</b>	<b>2019</b>	<b>2021</b>
<b>AM Peak Hour - Volumes</b>	391	307
<b>Average Rate</b>		-11.39%
<b>AM Peak - COVID-19 Adjustment</b>		11.00%

	<b>MassDOT spot count, Location ID RPA05- 215-4009</b>	
<b>Lyman Street</b>		
<b>Year</b>	<b>2019</b>	<b>2021</b>
<b>PM Peak Hour - Volumes</b>	372	375
<b>Average Rate</b>		0.40%
<b>PM Peak - COVID-19 Adjustment</b>		0.00%

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.

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## ***CRASH RATE CALCULATIONS***

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## INTERSECTION CRASH RATE WORKSHEET

TOWN : Northborough COUNT DATE : \_\_\_\_\_

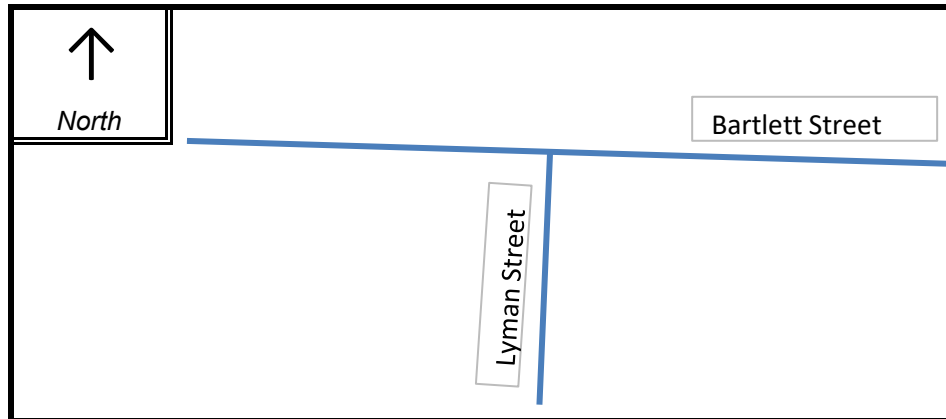
DISTRICT : 3 UNSIGNALIZED :  X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Bartlett Street

MINOR STREET(S) : Lyman Street

**INTERSECTION  
DIAGRAM**



**PEAK HOUR VOLUMES**

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	214		315	819		1,348

" K " FACTOR :  INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :  # OF YEARS :  AVERAGE # OF CRASHES PER YEAR ( A ) :

**CRASH RATE CALCULATION :**

**0.25**

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : The average crash rate for an unsignalized intersection in District 3 is 0.61

Project Title & Date: R.J. Devereaux Development



## ***TRIP GENERATION CALCULATIONS***



# Warehousing (150)

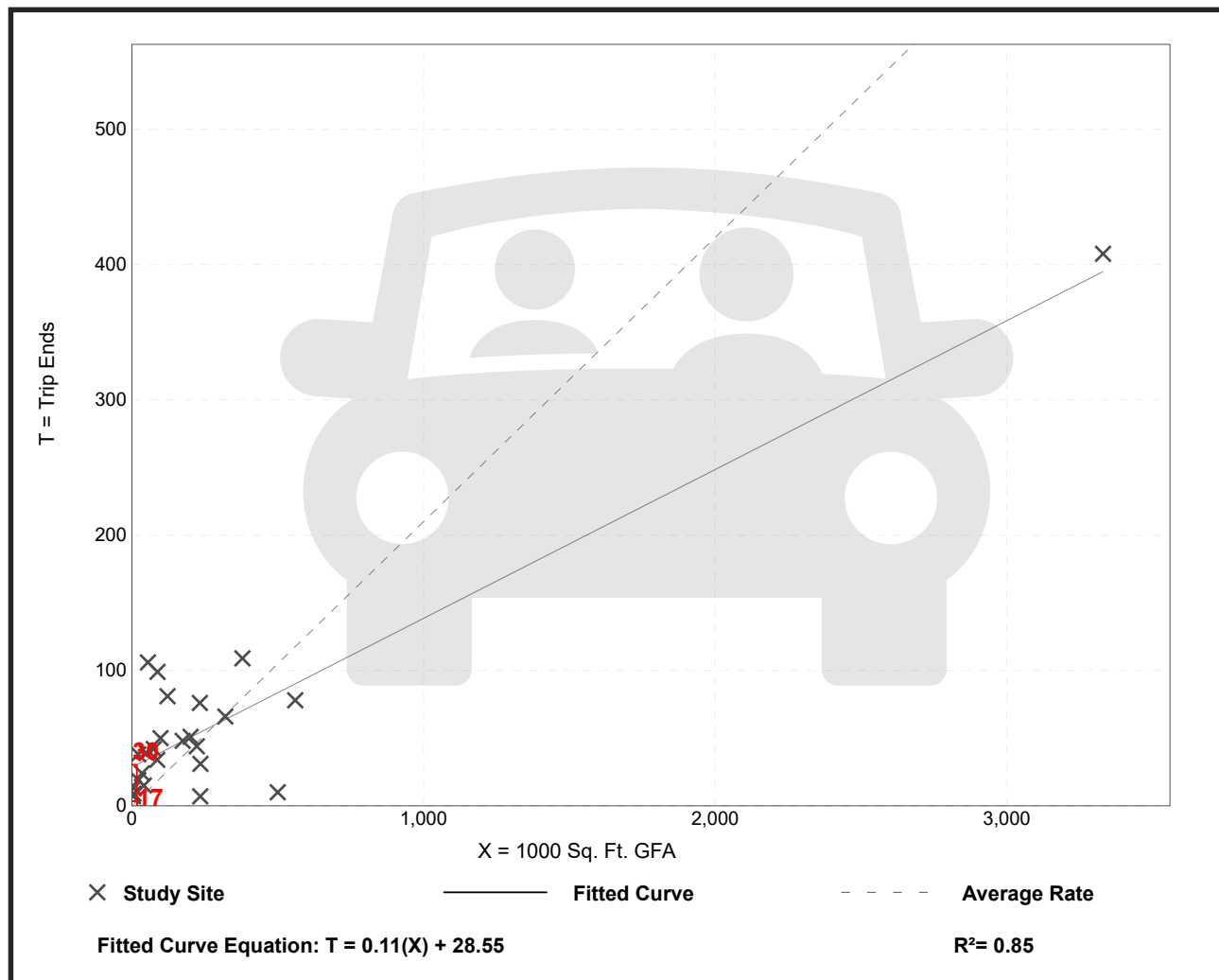
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 25  
 Avg. 1000 Sq. Ft. GFA: 284  
 Directional Distribution: 66% entering, 34% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.21	0.02 - 2.08	0.26

## Data Plot and Equation



# Warehousing (150)

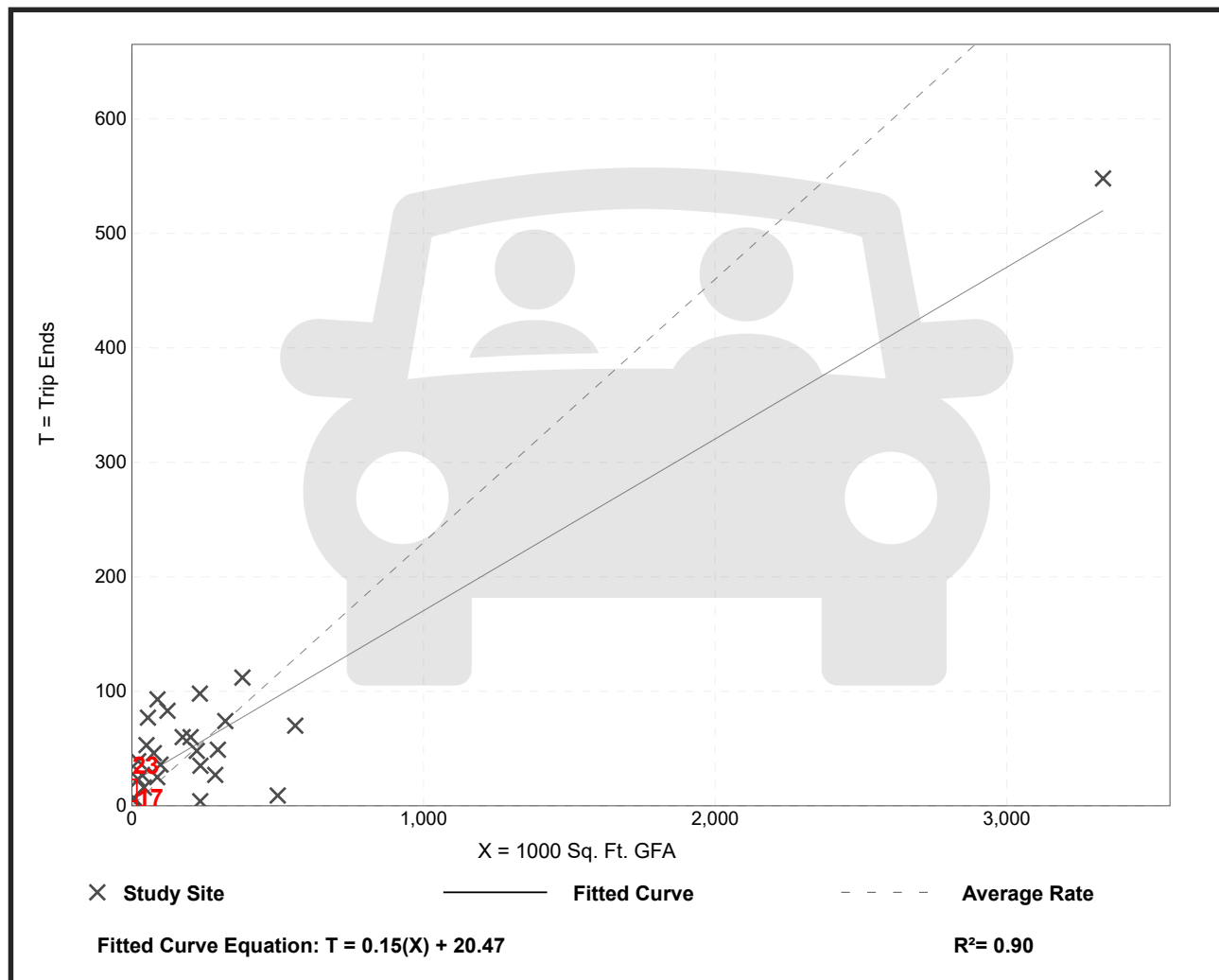
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 27  
 Avg. 1000 Sq. Ft. GFA: 284  
 Directional Distribution: 24% entering, 76% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.23	0.02 - 1.80	0.23

## Data Plot and Equation



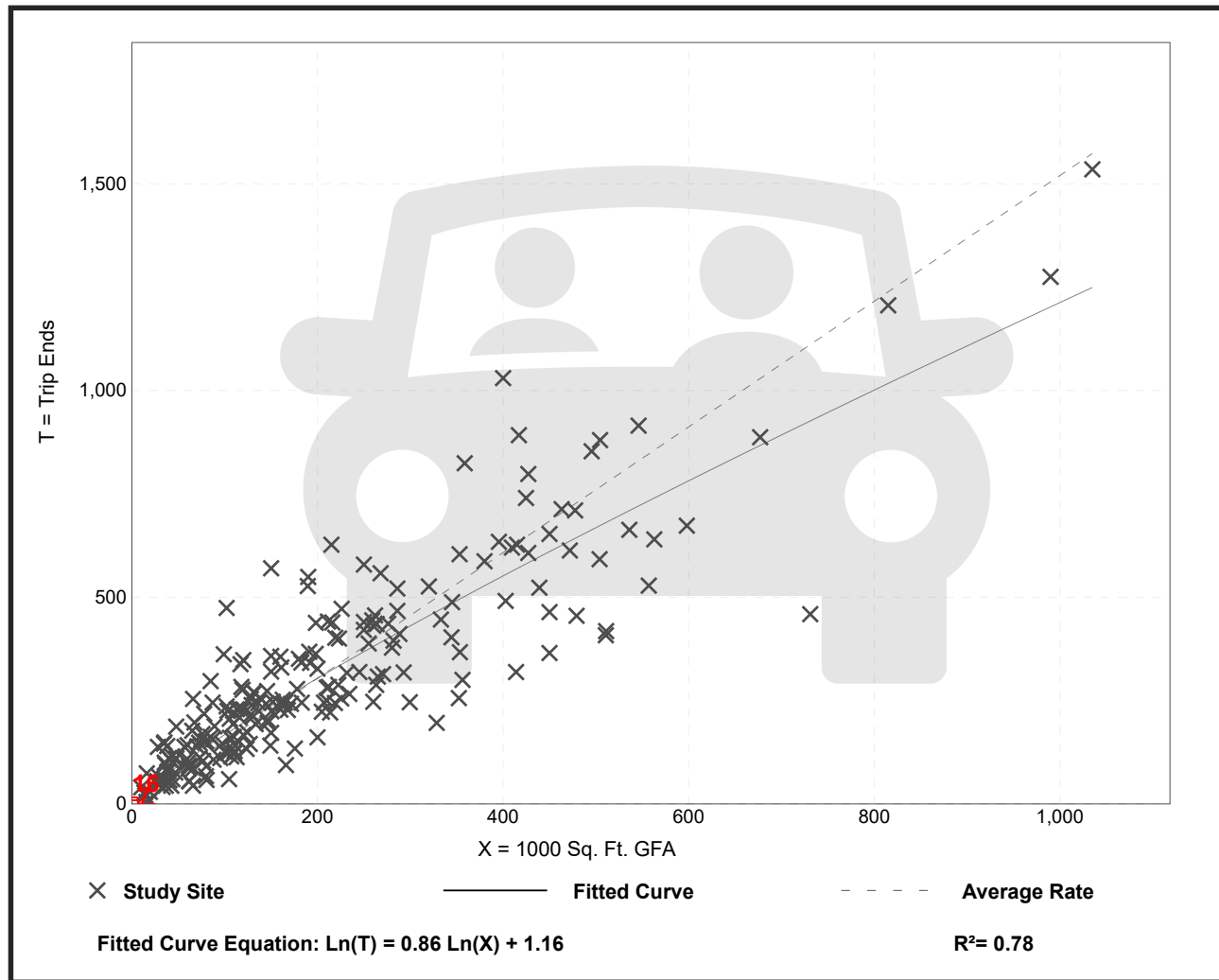
# General Office Building (710)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 221  
 Avg. 1000 Sq. Ft. GFA: 201  
 Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

## Data Plot and Equation





# General Office Building (710)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

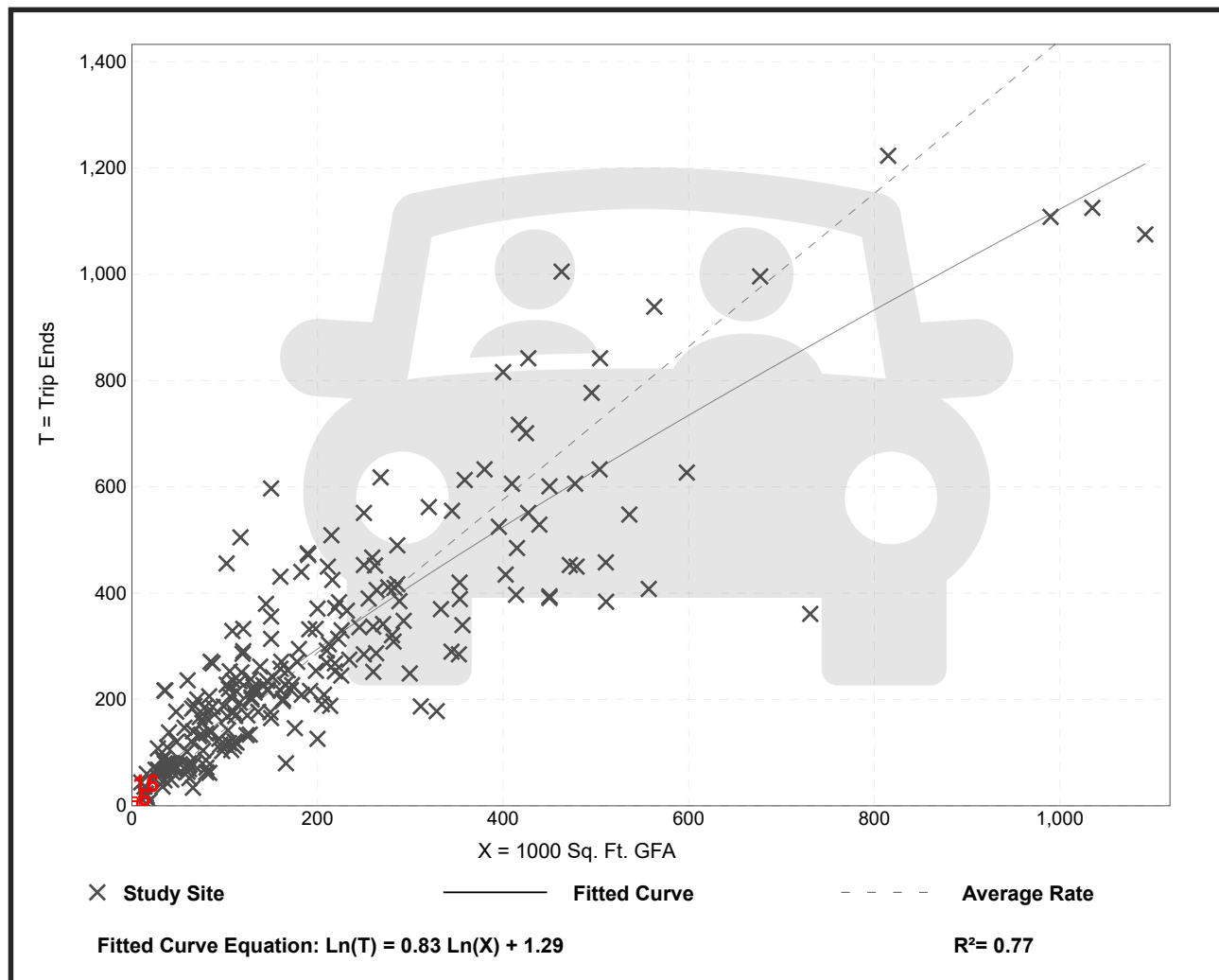
**Setting/Location: General Urban/Suburban**

Number of Studies: 232  
 Avg. 1000 Sq. Ft. GFA: 199  
 Directional Distribution: 17% entering, 83% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

## Data Plot and Equation



DEPARTMENT TITLE: **VEHICLES**

Departmental Representative: Rick Gates

First Issue Date: August 9, 2021

Revision Date: August 23, 2021

VEHICLE NAME	QUANTITY	VEHICLE SIZE DESCRIPTION WxLxH	AREA (SF)	SUBTOTAL AREA (SF)	GO HOME WITH USER	MAINTAINED	ON SITE 8 HRS	TYPICAL ON SITE	NOTES	
<b>Company Vehicles</b>										
Pickup trucks (F-150) - Managers/Supervisors	6	6'-8"x17'-6"x6'-5"	180	1,080	6	6	-	1	Most of the vehicles are at the job sites 9 months out of the year. A small amount of vehicles would be coming and going at random times throughout the day and only 3 vehicles would be on site for 8 hours in a typical work week most of the year. Maintenance for the vehicles would happen as needed.	
Rack trucks (F-550) - Runners	5	6'-8"x23'-3"x6'-10"	300	1,500	5	5	-	5		
Utility Body (F-350) - Yard Manager	1	6'-8"x17'-6"x6'-5"	180	180	1	1	1	1		
Utility Body (F-350) - Admin	5	6'-8"x19'-4"x6'-10"	180	900	5	5	-	1		
Utility Body (F-450) - Welders	4	6'-8"x19'-4"x6'-10"	180	720	4	4	-	-		
Box Truck (F-550) - Mechanics	2	6'-8"x23'-3"x6'-10"	300	600	2	2	2	2		
Personal Vehicle - Laborer	12	6'-8"x17'x6'	180	2,160	12	-	-	-		
Private Vehicle - Inspector	2	6'-8"x17'x6'	180	360	2	-	-	2		
Ramp Truck (2007 Freightliner, model M2 112)	1	8'-3"x23'-10"x9'-5"	400	400	-	-	-	1		
Tri-Axle Dump Truck	3	8'x27'-6"x10'-6"	400	1,200	-	-	-	1		
Vacuum Excavation Truck	2	8'x39'-6"x13'-2"	400	800	-	-	-	2		
<b>Subtotal</b>	<b>43</b>			<b>9,900</b>	<b>37</b>	<b>23</b>	<b>3</b>	<b>16</b>		
<b>Large Equipment</b>										
McCloskey R105 Screener	1	8'-3"x48'x10'-6"	2,000	2,000	-	-	1	1		Most of the equipment like the trailers are typically stored at the job sites 9 months out of the year. They would be stored on the parking lot when not at a job site. Maintenance for the trailers happens once a year typically in December during the off-season.
Articulating Front End Loader	1	9'-10"x28'x11'-2"	400	400	-	-	1	1		
Skid Steer	1	3'x8'-2"x6'	80	80	-	-	1	1		
Electric Forklift	1	5'x12'-4"x7'-2"	80	80	-	-	1	1		
Propane Forklift	1	5'x12'-4"x7'-2"	80	80	-	-	1	1		
Water Tank Trailer (dual axle)	5	8'-6"x19'-2"x6'-8"	300	1,500	-	-	1	1		
Shoring Box Trailer (single axle)	6	8'-6"x13'-2"x3'	180	1,080	-	-	1	1		
Box Trailer	12	8'-6"x26'x8'-5"	300	3,600	-	-	4	4		
Sign Trailer	3	8'x10'x11'-4"	180	540	-	-	-	-		
Flatbed Trailer	3	8'-6"x35'x5'	400	1,200	-	-	-	-		
Backhoes	2	7'-8"x24'-2"x11'-7"	400	800	-	-	2	2		
Dumpsters										
40 yard	1	7'-6"x22'x8'	400	400	-	-	1	1		
20 yard	1	8'x14'x5'-6"	400	400	-	-	1	1		
<b>Subtotal</b>	<b>38</b>			<b>12,160</b>			<b>15</b>	<b>15</b>		
<b>Small Equipment</b>										
Pitbull 14	20	1'-5"x1'-4"x2'-8"	12	240	-	-	-	-	Most of the equipment are typically stored at the job sites 9 months out of the year. They would be stored inside the Maintenance Facility when not at a job site. Maintenance for the equipment happens once a year typically in December during the off-season.	
Heating Unit	20	1'-6"x1'-6"x1'-6"	12	240	-	-	-	-		
Shaver	20	1'-6"x1'-6"x1'-6"	12	240	-	-	-	-		
TracStar 412	4	4'-6"x8'-1"x5'-1"	60	240	-	-	-	-		
Rolling 28	12	3'-2"x5'-6"x4'-2"	48	576	-	-	-	-		
Pitbull 26 DIPS	8	1'-8"x1'-4"x2'-7"	12	96	-	-	-	-		
MTX-70 ground compactors	40	1'-2"x2'-7"x3'-5"	12	480	-	-	-	-		
Honda 6500 generator	20	2'-4"x3'-6"x2'-6"	24	480	-	-	-	-		
Plate compactor	20	1'-8"x2'x3'-2"	12	240	-	-	-	-		
TS700 Road Saw w/cradle	20	1'-8"x2'x3'-2"	12	240	-	-	-	-		
Power Broom	20	3'x3'-6"x3'-2"	18	360	-	-	-	-		
FS400LV Concrete Saw	8	2'-2"x3'-10"x3'-1"	18	144	-	-	-	-		
<b>Subtotal</b>	<b>212</b>			<b>3,576</b>						
<b>Delivery</b>										
FedEx	4/week	7'-10"x22'x7'-1'	300	-	-	-	-	-	Tractor trailers only deliver once or twice a year when a large piece of equipment is ordered.	
UPS	4/week	7'-10"x25'x10'	300	-	-	-	-	-		
Freight/Tractor Trailer (w/53' trailer)	4/year	8'-7"x73'x13'-6"	800	-	-	-	-	-		
Dump Truck (if processor/screener is in operation)	20/day	8'x27'-6"x10'-6"	300	-	-	-	-	-		
<b>SUBTOTAL THIS PAGE</b>	<b>293</b>			<b>25,636</b>						



***CENSUS DATA***



<b>A302103 - Means of transportation (18) (Workers 16 years and over)</b>			
<b>Current date: 1/12/2022 4:01:29 PM (Eastern Standard Time)</b>			
<b>Measures - Workers 16 and Over</b>			
<b>Means of Transportation 18</b>		<b>Total, means of transportation</b>	
<b>Output</b>	<b>WORKPLACE</b>	<b>Estimate</b>	<b>Percentage</b>
Worcester city, Massachusetts	Northborough, Massachusetts	360	33.09%
Marlborough city, Massachusetts		170	15.63%
Framingham CDP, Massachusetts		85	7.81%
Newton city, Massachusetts		70	6.43%
Warren CDP, Massachusetts		70	6.43%
Waltham city, Massachusetts		60	5.51%
Hudson CDP, Massachusetts		55	5.06%
Milford CDP, Massachusetts		35	3.22%
Leominster city, Massachusetts		20	1.84%
Westborough CDP, Massachusetts		20	1.84%
Woburn city, Massachusetts		20	1.84%
Attleboro city, Massachusetts		15	1.38%
Fitchburg city, Massachusetts		15	1.38%
Franklin Town city, Massachusetts		15	1.38%
Webster CDP, Massachusetts		15	1.38%
Whitinsville CDP, Massachusetts		15	1.38%
Groton CDP, Massachusetts		10	0.92%
Littleton Common CDP, Massachusetts		10	0.92%
Orange CDP, Massachusetts		10	0.92%
Wellesley CDP, Massachusetts		10	0.92%
Brockton city, Massachusetts	4	0.37%	
Hopkinton CDP, Massachusetts	4	0.37%	



***INTERSECTION CAPACITY ANALYSIS WORKSHEETS***



HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	22.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	455	169	76	165	61	200
Future Vol, veh/h	455	169	76	165	61	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	80	80	67	67
Heavy Vehicles, %	4	3	8	12	14	5
Mvmt Flow	495	184	95	206	91	299

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	679	0	983
Stage 1	-	-	-	-	587
Stage 2	-	-	-	-	396
Critical Hdwy	-	-	4.18	-	6.54
Critical Hdwy Stg 1	-	-	-	-	5.54
Critical Hdwy Stg 2	-	-	-	-	5.54
Follow-up Hdwy	-	-	2.272	-	3.626
Pot Cap-1 Maneuver	-	-	886	-	262
Stage 1	-	-	-	-	533
Stage 2	-	-	-	-	655
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	886	-	230
Mov Cap-2 Maneuver	-	-	-	-	230
Stage 1	-	-	-	-	533
Stage 2	-	-	-	-	576

Approach	EB	WB	NB
HCM Control Delay, s	0	3	75.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	394	-	-	886	-
HCM Lane V/C Ratio	0.989	-	-	0.107	-
HCM Control Delay (s)	75.4	-	-	9.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	11.8	-	-	0.4	-

HCM 6th TWSC  
6: Site Drive 1 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	641	14	0	236	5	0
Future Vol, veh/h	641	14	0	236	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	697	15	0	257	5	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	712	0	962
Stage 1	-	-	-	-	705
Stage 2	-	-	-	-	257
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	888	-	284
Stage 1	-	-	-	-	490
Stage 2	-	-	-	-	786
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	888	-	284
Mov Cap-2 Maneuver	-	-	-	-	284
Stage 1	-	-	-	-	490
Stage 2	-	-	-	-	786

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	284	-	-	888	-
HCM Lane V/C Ratio	0.019	-	-	-	-
HCM Control Delay (s)	17.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	640	1	20	236	0	7
Future Vol, veh/h	640	1	20	236	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	696	1	22	257	0	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	697	0	998
Stage 1	-	-	-	-	697
Stage 2	-	-	-	-	301
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	899	-	270
Stage 1	-	-	-	-	494
Stage 2	-	-	-	-	751
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	899	-	262
Mov Cap-2 Maneuver	-	-	-	-	262
Stage 1	-	-	-	-	494
Stage 2	-	-	-	-	729

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	13.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	441	-	-	899	-
HCM Lane V/C Ratio	0.017	-	-	0.024	-
HCM Control Delay (s)	13.3	-	-	9.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-



HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	277.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	165	150	378	441	136	78
Future Vol, veh/h	165	150	378	441	136	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	82	82	81	81
Heavy Vehicles, %	4	1	3	1	2	9
Mvmt Flow	217	197	461	538	168	96

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	414	0	1776
Stage 1	-	-	-	-	316
Stage 2	-	-	-	-	1460
Critical Hdwy	-	-	4.13	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.227	-	3.518
Pot Cap-1 Maneuver	-	-	1140	-	~ 91
Stage 1	-	-	-	-	739
Stage 2	-	-	-	-	213
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1140	-	~ 38
Mov Cap-2 Maneuver	-	-	-	-	~ 38
Stage 1	-	-	-	-	739
Stage 2	-	-	-	-	~ 90

Approach	EB	WB	NB
HCM Control Delay, s	0	4.7	\$ 1742.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	58	-	-	1140	-
HCM Lane V/C Ratio	4.555	-	-	0.404	-
HCM Control Delay (s)	\$ 1742.8	-	-	10.3	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	29.2	-	-	2	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
6: Site Drive 1 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	240	3	0	804	15	0
Future Vol, veh/h	240	3	0	804	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	261	3	0	874	16	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	264	0	1137
Stage 1	-	-	-	-	263
Stage 2	-	-	-	-	874
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1300	-	223
Stage 1	-	-	-	-	781
Stage 2	-	-	-	-	408
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1300	-	223
Mov Cap-2 Maneuver	-	-	-	-	223
Stage 1	-	-	-	-	781
Stage 2	-	-	-	-	408

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	223	-	-	1300	-
HCM Lane V/C Ratio	0.073	-	-	-	-
HCM Control Delay (s)	22.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	240	0	5	804	0	18
Future Vol, veh/h	240	0	5	804	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	261	0	5	874	0	20

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	261	0	1145
Stage 1	-	-	-	-	261
Stage 2	-	-	-	-	884
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1303	-	221
Stage 1	-	-	-	-	783
Stage 2	-	-	-	-	404
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1303	-	219
Mov Cap-2 Maneuver	-	-	-	-	219
Stage 1	-	-	-	-	783
Stage 2	-	-	-	-	401

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	778	-	-	1303	-
HCM Lane V/C Ratio	0.025	-	-	0.004	-
HCM Control Delay (s)	9.7	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	39.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	502	181	82	181	65	215
Future Vol, veh/h	502	181	82	181	65	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	80	80	67	67
Heavy Vehicles, %	4	3	8	12	14	5
Mvmt Flow	546	197	103	226	97	321

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	743	0	1077 645
Stage 1	-	-	-	-	645 -
Stage 2	-	-	-	-	432 -
Critical Hdwy	-	-	4.18	-	6.54 6.25
Critical Hdwy Stg 1	-	-	-	-	5.54 -
Critical Hdwy Stg 2	-	-	-	-	5.54 -
Follow-up Hdwy	-	-	2.272	-	3.626 3.345
Pot Cap-1 Maneuver	-	-	838	-	230 467
Stage 1	-	-	-	-	500 -
Stage 2	-	-	-	-	630 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	838	-	198 467
Mov Cap-2 Maneuver	-	-	-	-	198 -
Stage 1	-	-	-	-	500 -
Stage 2	-	-	-	-	541 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	138.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	-	-	838	-
HCM Lane V/C Ratio	1.177	-	-	0.122	-
HCM Control Delay (s)	138.5	-	-	9.9	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	17.1	-	-	0.4	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	703	14	0	258	5	0
Future Vol, veh/h	703	14	0	258	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	764	15	0	280	5	0

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	779	0	1052	772
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	838	-	251	400
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	838	-	251	400
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	767	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	-	-	838	-
HCM Lane V/C Ratio	0.022	-	-	-	-
HCM Control Delay (s)	19.7	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	702	1	20	258	0	7
Future Vol, veh/h	702	1	20	258	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	763	1	22	280	0	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	764	0	1088
Stage 1	-	-	-	-	764
Stage 2	-	-	-	-	324
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	849	-	239
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	733
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	849	-	232
Mov Cap-2 Maneuver	-	-	-	-	232
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	710

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	14.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	849	-
HCM Lane V/C Ratio	0.019	-	-	0.026	-
HCM Control Delay (s)	14.1	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection

Int Delay, s/veh 507.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	191	161	406	478	146	85
Future Vol, veh/h	191	161	406	478	146	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	82	82	81	81
Heavy Vehicles, %	4	1	3	1	2	9
Mvmt Flow	251	212	495	583	180	105

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	463	0	1930
Stage 1	-	-	-	-	357
Stage 2	-	-	-	-	1573
Critical Hdwy	-	-	4.13	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.227	-	3.518
Pot Cap-1 Maneuver	-	-	1093	-	~ 73
Stage 1	-	-	-	-	708
Stage 2	-	-	-	-	188
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1093	-	~ 24
Mov Cap-2 Maneuver	-	-	-	-	~ 24
Stage 1	-	-	-	-	708
Stage 2	-	-	-	-	~ 62

Approach	EB	WB	NB
HCM Control Delay, s	0	5	\$ 3228.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	37	-	-	1093	-
HCM Lane V/C Ratio	7.708	-	-	0.453	-
HCM Control Delay (s)	\$ 3228.7	-	-	11	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	34.2	-	-	2.4	-

Notes  
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
6: Site Drive 1 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	273	3	0	869	15	0
Future Vol, veh/h	273	3	0	869	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	3	0	945	16	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	300	0	1244 299
Stage 1	-	-	-	-	299 -
Stage 2	-	-	-	-	945 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1261	-	192 741
Stage 1	-	-	-	-	752 -
Stage 2	-	-	-	-	378 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1261	-	192 741
Mov Cap-2 Maneuver	-	-	-	-	192 -
Stage 1	-	-	-	-	752 -
Stage 2	-	-	-	-	378 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	1261	-
HCM Lane V/C Ratio	0.085	-	-	-	-
HCM Control Delay (s)	25.5	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-



HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	273	0	5	869	0	18
Future Vol, veh/h	273	0	5	869	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	0	5	945	0	20

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	297	0	1252
Stage 1	-	-	-	-	297
Stage 2	-	-	-	-	955
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1264	-	190
Stage 1	-	-	-	-	754
Stage 2	-	-	-	-	374
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1264	-	188
Mov Cap-2 Maneuver	-	-	-	-	188
Stage 1	-	-	-	-	754
Stage 2	-	-	-	-	371

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	742	-	-	1264	-
HCM Lane V/C Ratio	0.026	-	-	0.004	-
HCM Control Delay (s)	10	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	39.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	502	181	82	183	65	215
Future Vol, veh/h	502	181	82	183	65	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	80	80	67	67
Heavy Vehicles, %	4	3	8	12	14	5
Mvmt Flow	546	197	103	229	97	321

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	743	0	1080
Stage 1	-	-	-	-	645
Stage 2	-	-	-	-	435
Critical Hdwy	-	-	4.18	-	6.54
Critical Hdwy Stg 1	-	-	-	-	5.54
Critical Hdwy Stg 2	-	-	-	-	5.54
Follow-up Hdwy	-	-	2.272	-	3.626
Pot Cap-1 Maneuver	-	-	838	-	229
Stage 1	-	-	-	-	500
Stage 2	-	-	-	-	628
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	838	-	197
Mov Cap-2 Maneuver	-	-	-	-	197
Stage 1	-	-	-	-	500
Stage 2	-	-	-	-	539

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	139.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	354	-	-	838	-
HCM Lane V/C Ratio	1.181	-	-	0.122	-
HCM Control Delay (s)	139.8	-	-	9.9	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	17.1	-	-	0.4	-

HCM 6th TWSC  
6: Site Drive 1 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	703	14	0	258	7	0
Future Vol, veh/h	703	14	0	258	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	764	15	0	280	8	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	779	0	1052
Stage 1	-	-	-	-	772
Stage 2	-	-	-	-	280
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	838	-	251
Stage 1	-	-	-	-	456
Stage 2	-	-	-	-	767
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	838	-	251
Mov Cap-2 Maneuver	-	-	-	-	251
Stage 1	-	-	-	-	456
Stage 2	-	-	-	-	767

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	-	-	838	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Control Delay (s)	19.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	702	1	20	258	0	9
Future Vol, veh/h	702	1	20	258	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	763	1	22	280	0	10

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	764	0	1088
Stage 1	-	-	-	-	764
Stage 2	-	-	-	-	324
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	849	-	239
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	733
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	849	-	232
Mov Cap-2 Maneuver	-	-	-	-	232
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	710

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	14.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	849	-
HCM Lane V/C Ratio	0.024	-	-	0.026	-
HCM Control Delay (s)	14.1	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 6th TWSC  
3: Lyman Street & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	506.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	192	161	406	479	146	85
Future Vol, veh/h	192	161	406	479	146	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	82	82	81	81
Heavy Vehicles, %	4	1	3	1	2	9
Mvmt Flow	253	212	495	584	180	105

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	465	0	1933
Stage 1	-	-	-	-	359
Stage 2	-	-	-	-	1574
Critical Hdwy	-	-	4.13	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.227	-	3.518
Pot Cap-1 Maneuver	-	-	1091	-	~ 73
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	187
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1091	-	~ 24
Mov Cap-2 Maneuver	-	-	-	-	~ 24
Stage 1	-	-	-	-	707
Stage 2	-	-	-	-	~ 61

Approach	EB	WB	NB
HCM Control Delay, s	0	5.1	\$ 3228.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	37	-	-	1091	-
HCM Lane V/C Ratio	7.708	-	-	0.454	-
HCM Control Delay (s)	\$ 3228.7	-	-	11	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	34.2	-	-	2.4	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
6: Site Drive 1 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	273	4	0	869	16	0
Future Vol, veh/h	273	4	0	869	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	4	0	945	17	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	301	0	1244
Stage 1	-	-	-	-	299
Stage 2	-	-	-	-	945
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1260	-	192
Stage 1	-	-	-	-	752
Stage 2	-	-	-	-	378
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1260	-	192
Mov Cap-2 Maneuver	-	-	-	-	192
Stage 1	-	-	-	-	752
Stage 2	-	-	-	-	378

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	1260	-
HCM Lane V/C Ratio	0.091	-	-	-	-
HCM Control Delay (s)	25.6	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC  
8: Site Drive 2 & Bartlett Street

01/26/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	273	0	7	869	0	20
Future Vol, veh/h	273	0	7	869	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	0	8	945	0	22

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	297	0	1258
Stage 1	-	-	-	-	297
Stage 2	-	-	-	-	961
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1264	-	189
Stage 1	-	-	-	-	754
Stage 2	-	-	-	-	371
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1264	-	187
Mov Cap-2 Maneuver	-	-	-	-	187
Stage 1	-	-	-	-	754
Stage 2	-	-	-	-	366

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	742	-	-	1264	-
HCM Lane V/C Ratio	0.029	-	-	0.006	-
HCM Control Delay (s)	10	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-