



Memorandum

To: Mr. Israel Lopez
Development Manager
The Gutierrez Company
One Wall Street
Burlington, MA 01803

Date: December 5, 2019
UPDATED August 17, 2020

Project #: 14767.00

From: Robert Nagi, PE, Principal
Tess Benson, EIT

Re: Bartlett Street Warehouse Development
Northborough, Massachusetts

VHB has been retained by The Gutierrez Company to provide transportation and permitting services for the development of an approximately 151,000 square foot (sf) warehousing facility (Facility). The Facility will be located along Bartlett Street in Northborough, Massachusetts.

This memorandum documents the existing and future transportation conditions within the study area based on the proposed warehouse development's impact. The evaluation is based on previous and current traffic volumes collected at the study area intersections, observations by VHB, and discussions with the Developer and the Town of Northborough.

Based on the findings of this memorandum, the proposed warehousing facility is not expected to have a significant impact on the surrounding roadway network, and the existing roadway infrastructure can adequately accommodate the amount of traffic that will be generated by the Facility with minor modifications to the existing site drive.

This memorandum has been updated based on a request from the Planning Board to include several additional background developments not previously considered in the overall development program. The findings of the memorandum remain unchanged through the addition of these developments, although additional recommendations are made based on discussions with the Planning Board. Major updates to the memorandum are listed in underlined italics or highlighted.

Project Description

The Project Site is located along Bartlett Street in the Town of Northborough, Massachusetts. Shown in Figure 1, the site is bordered by Bartlett Street to the south, wooded land to the north, and an existing warehouse facility to the southeast. The A. Duie Pyle and FedEx shipping facilities are located almost opposite the site across Bartlett Street. Access to the site will be via a proposed single driveway on Bartlett Street, to the west of the existing FedEx Driveway.

The proposed warehouse facility involves the construction of one contiguous warehouse building. A total of approximately 150 parking spaces will be provided to support the building program. The conceptual site plan is shown in Figure 2.

Existing Conditions

Based on VHB's knowledge of the area and expected operations of the warehousing Facility, the intersections that could potentially be impacted by the project were included in this study. Study area intersections are shown in Figure 3, and include:



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- Lyman Street at Bartlett Street
- Existing FedEx Site Driveway at Bartlett Street
- Cedar Hill Street at Bartlett Street

Bartlett Street

Bartlett Street is an east-west roadway that runs from the Marlborough municipal boundary to the east to Route 20 to the northwest. Within the study area, Bartlett Street is under the local Town of Northborough jurisdiction, and consists of one lane in each direction with varying 2- to 6-foot wide shoulders. Land uses along Bartlett Street are either undeveloped or of a generally industrial use. The speed limit within the vicinity of the site is posted at 45 miles per hour (mph).

Traffic Volumes

To understand the existing vehicular patterns at and near the proposed development site, daily traffic volumes and peak hour turning movement counts (TMC) were conducted during the weekday morning and evening peak hours in October 2019. Due to current nationwide conditions associated with the Covid-19 virus, collecting new traffic data is not feasible at this time. All traffic volumes collected in October 2019 were increased using a one-percent annual growth rate to reflect 2020 conditions.

Weekday daily traffic volumes were collected along Bartlett Street, using automatic traffic recorders (ATR) over a 48-hour period. Concurrent with the ATR counts, turning movement counts (TMCs) were conducted at the study area intersections in October 2019 during the weekday morning peak period from 6:30 AM to 9:00 AM and the weekday evening peak period from 4:00 PM to 6:00 PM. The TMC data indicates that, within the immediate area of the Project Site, the weekday morning peak hour generally occurs between 7:45 AM and 8:45 AM and the weekday evening peak hour occurs between 4:30 PM and 5:30 PM.

As shown in Table 1, approximately 8,600 vehicles travel along Bartlett Street on an average weekday. By way of comparison, this is a slight increase from the 7,900 trips observed in 2015. Peak hour traffic accounts for approximately 10 percent of the daily traffic during both the morning and evening peak hours. Observations noted that traffic volumes along Bartlett Street are heavily influenced by commuter traffic. The majority of the traffic during the morning peak hour is traveling eastbound, while the pattern is reversed in the evening peak hour, with the majority of the traffic traveling westbound.



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Table 1 Observed Traffic Volume Summary

Location	Daily ^a	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Weekday	Volume ^b	K Factor ^c	Dir. Dist. ^d	Volume	K Factor	Dir. Dist.
Bartlett Street, West of FedEx Site Driveway	8,600	855	10.0%	74% EB	970	11.3%	77% WB

Source: Vanasse Hangen Brustlin, Inc. Based on automatic traffic recorder (ATR) counts conducted in October 2019 and increased using a 1-percent annual growth rate to reflect October 2020 conditions.

a average daily traffic (ADT) volume expressed in vehicles per day

b peak period traffic volumes expressed in vehicles per hour (Note: In 2014, the AM volume was 780 vpd and the PM volume was 745 vpd)

c percent of daily traffic that occurs during the peak period

d directional distribution of peak period traffic

Seasonality of Count Data

The peak hour traffic data collected for the supplemental evaluation was obtained during the month of October. To quantify the seasonal variation of traffic volumes in the area, historic traffic data available from MassDOT was reviewed. Based on the MassDOT seasonal data, October traffic counts are generally higher than average month conditions. Therefore, to provide a conservative analysis, no seasonal adjustment factor was applied to the traffic counts to establish the 2020 Existing Conditions peak hour traffic volumes.

The 2020 Existing Conditions peak hour traffic volume networks are reflected in Figures 4 and 5 and provided in the Attachments.

Vehicular Crash History

To identify potential vehicle crash trends in the study area, vehicular crash data for the study area intersections were obtained from Massachusetts Department of Transportation (MassDOT) for the most recent five-year period (2013-2017) available. A summary of the MassDOT vehicle crash history is provided in Table 2 and the detailed crash data is provided in the Attachments.

In addition to summarizing the crash history, VHB also calculated crash rates for the study area intersections. Intersection crash rates are calculated based on the number of crashes at an intersection and the volume of traffic traveling through that intersection on a daily basis. The MassDOT average intersection crash rate for District 3 (the MassDOT district designation for the Town of Northborough) is 0.89 for signalized intersections and 0.61 for unsignalized intersections. In other words, on average, 0.89 crashes occurred per million vehicles entering signalized intersections and 0.61 crashes occurred per million vehicles entering unsignalized intersections throughout District 3. Any crash rate higher than these factors indicate a higher than average crash tendency for a given facility or intersection. The crash rate worksheets for the study area intersections are included in the Appendix.



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Table 2 Vehicular Crash Summary (2013 – 2017)

	Bartlett Street at Lynman Street	Bartlett Street at FedEx Driveway	Bartlett Street at Cedar Hill Street
Signalized?	No	No	No
MassDOT Average Crash Rate	0.61	0.61	0.61
Calculated Crash Rate	0.38	0.09	0.47
Year			
2013	1	1	1
2014	1	0	3
2015	4	0	3
2016	2	0	2
<u>2017</u>	<u>2</u>	<u>1</u>	<u>2</u>
Total	10	2	11
Collision Type			
Angle	4	1	4
Head-on	0	0	0
Rear-end	2	0	3
Rear-to-rear	0	0	0
Sideswipe, opposite direction	1	0	0
Sideswipe, same direction	0	0	0
Single Vehicle Crash	3	1	4
Not reported/Unknown	1	0	0
Severity			
Fatal Injury	0	0	0
Non-Fatal Injury	1	0	1
Property Damage Only	8	2	10
Not Reported	1	0	0
Time of day			
Weekday, 7:00 AM - 9:00 AM	3	0	2
Weekday, 4:00 – 6:00 PM	4	0	2
Saturday, 11:00 AM – 2:00 PM	1	0	0
Weekday, other time	1	1	7
Weekend, other time	1	1	0
Pavement Conditions			
Dry	6	1	5
Wet	2	1	3
Snow	2	0	3
Not reported	0	0	0
Non-Motorist (Bike, Pedestrian)	0	0	0

Source: MassDOT Crash Portal 2013-2017.



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As shown in Table 2, the study area intersections did not have calculated crash rates over the district average. Of particular note is that the location that demonstrated the highest crash tendencies, Cedar Hill Street at Bartlett Street, was recently upgraded by the Applicant as part of the mitigation for a separate project in the area. These improvements upgraded the channelization of intersection and provided improved guidance for drivers entering and driving through this location.

The crashes that occurred within the study area were primarily angle, rear-end, and single-vehicle crashes, resulting in property damage and non-fatal injuries. No crashes were reported involving fatal injuries. No crashes were reported involving a non-motorist (bike, pedestrian) within the study area. Additionally, as part of this effort, VHB reviewed the MassDOT Highway Safety Improvement Program (HSIP) listing and found that none of the study area intersections are listed as an HSIP-eligible cluster



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Future Conditions

To determine the impacts of the development on the surrounding roadway network, future conditions for the traffic assessment was conducted. The baseline traffic volumes in the study area were projected to year 2027, reflecting a seven-year traffic planning horizon. Background traffic growth based on known development projects that may affect traffic flow was then included in the traffic volumes under the 2027 No-Build Condition. Traffic generated by the project was added to the 2027 No-Build Condition to reflect the 2027 Build Condition.

Background Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. A frequently used procedure is to estimate traffic generated by planned new major developments that would be expected to affect the project study area roadways. Another procedure involves the estimation of annual percentage increase in traffic volumes and apply that increase to study-area traffic volumes. To provide a conservative analysis, both methods were utilized to assess the potential future traffic volumes.

Regional Traffic Growth

A review of available traffic data and prior traffic studies prepared for other projects in the area indicated that the use of 1 percent per year growth rate is appropriate. This is further supported by our observations of traffic volumes along Bartlett Street as shown in Table 1 above. As such, VHB has used this growth rate to account for general background growth for the 2027 No-Build Condition and to account for several developments that may impact this area as shown in Table 3 below.

Site Specific Growth

Based on a review of other recent traffic studies and discussions with the City of Marlborough and the Town of Northborough, it was determined that there are several planned development projects within the vicinity of the study area that would need to be considered as part of the future traffic conditions, independent of the Project. Table 3 summarizes the available information for the developments and Figure 6 presents the approximate location of the developments along with a number of other developments that are still in the planning/construction stage.



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■ **Table 3 Background Developments**

Project	Location	Land Use	Size	Status
Marlborough Corporate Place	Ames Street, between Route 20 and Nickerson Road	Office/R&D	235,000 sf	No construction recently
Devonshire at 495 Center	Hayes Memorial Drive	Office	204,000 ± ^a	Original project modified. No construction recently
Forest Park	Forest Street and Simarano Drive	R&D, Residential	300,000 ± 200 apartments	Apartments under construction, R&D space unbuilt
Crane Meadow Corporate Center	Simarano Drive, between Cedar Hill Street and I-495 Exit 23C ramps	Office	400,000 sf	Status unknown
The Campus at Marlborough – Phase II ^b	Campus Drive, between Forest Street and Simarano Drive	Office/R&D	650,000 sf	Status unknown
<i>One Lyman Street</i>	<i>Lyman Street</i>	<i>Office/Warehouse</i>	<i>3ksf office/17 ksf warehouse</i>	<i>Permitted</i>
<i>301 Bartlett Street</i>	<i>Bartlett Street</i>	<i>Warehouse</i>	<i>220,000 sf</i>	<i>Built, majority vacant</i>
<i>370 Bartlett Street</i>	<i>Bartlett Street</i>	<i>Warehouse</i>	<i>Two 300,000 sf warehouses</i>	<i>Permitted, seeking tenants</i>
<i>Parcel G</i>	<i>Hayes Memorial Drive</i>	<i>Warehouse</i>	<i>167,000 sf</i>	<i>permitted</i>

Note: Projects in italics and highlighted were added at the request of the Northborough Planning Board and were confirmed through discussions with Northborough staff

- a Original project was reviewed for a 600,000 sf office development. But approx. 50% of the Site was subsequently re-permitted for a data center. For analysis purposes, it was assumed that half of the full office development would be built at some point in the future on the remaining 50% of the Site. The current site plan approval provides for a 204,000 SF Office/ R&D Highway Facility.
- b The Campus at Marlborough – Phase II (permitted in 1996) has been mentioned for reference purpose only and was not included in the No Build analysis. Due to the large building program (650,000 sf of office) and the lack of activity on the site, it is expected that any development proposed on the site would need to evaluate its own project impacts.

It should be noted that not all the projects listed in Table 3 have a definitive construction timeline. In fact, several of the projects have been dormant for several years with an unknown implementation schedule. Some of the sites have undergone changes, such as sub-division, which renders the prior review of the development potential on those sites outdated. As a result, any new development plans for the sites, when pursued, would require additional filings/review by local and state agencies. In effect, it is possible that some of these projects may not come back in their currently known configuration, or not come back at all.



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While the projects listed in Table 3 are within the vicinity of the Site, only the newly added trips from the additional developments and the Devonshire at 495 Center and the Forest Park developments were included in the 2027 No-Build Conditions along with all the new projects listed in italics. The other developments are included for reference purposes only as they are not expected to generate traffic that will impact the Site.

Traffic volumes generated from the planned development projects were obtained from published traffic studies for use in the analysis or were generated using standardized ITE Trip Generation data based on their size and land use. All information is included in the Attachments to this memorandum.

No-Build Traffic Volumes

The 2027 No-Build Traffic Volumes were developed based on the annual growth rate and site-specific growth. First, the 1 percent annual growth over the seven-year study horizon was applied to the 2020 Existing Condition traffic volumes. The traffic volumes from site specific background projects were then added to the projected traffic volumes. Figures 7 and 8 reflects the 2027 No-Build morning and evening peak hour traffic volumes.

Trip Generation

Trip generation rates provided in the Trip Generation¹ manual, published by the Institute of Transportation Engineers were used to identify the number of vehicle trips that will be generated by the proposed project. After review, ITE land use code 150 (Warehousing), was determined to be the appropriate use for this warehouse development. To provide a conservative analysis, a 151,000 sf warehousing facility was assumed for trip generation estimation. Table 4 summarizes the projected trip generation associated with the development based on the standardized ITE rates. As shown, the project is expected to generate 43 morning peak hour trips, 46 evening peak hour trips and a total of 284 daily trips.

¹ Trip Generation (9th edition), Institute of Transportation Engineers, Washington DC, 2013



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Table 4 Trip Generation

Development Type ITE Land Use Code Size Type of Trips	Warehousing^a 150 151 ksf ITE Trips
Weekday Daily ^b	284
Weekday AM ^c	
Enter	33
Exit	<u>10</u>
Total	43
Weekday PM ^c	
Enter	12
Exit	<u>34</u>
Total	46

a – Institute of Transportation Engineers, Trip Generation, 9th Edition - Land Use Code 150 [Warehousing] 151 ksf; by regression for weekday, AM Peak and PM Peak (note: The actual development size is 150,900 sf, while insignificant, the results shown in Table 4 are slightly higher than ITE projections might suggest.)

b – expressed in vehicles per day

c – expressed in vehicles per hour

Trip Distribution and Assignment

The directional distribution of the vehicular traffic approaching and departing the site is a function of population densities, the location of employment, existing travel patterns, and the efficiency of the existing roadway system.

The localized trip distribution (i.e. site access) was developed based on both observing the traffic patterns along Bartlett Street as well as observing the arrival and departure patterns separately for trucks and passenger vehicles at the existing FedEx access driveway location. In this case, to provide a conservative analysis, the peak hour distributions represent the observed passenger vehicle distributions – later in this memorandum, recommendation for heavy vehicle distributions are made which will orient their impacts from and towards the major highways in the area. Table 5 and Figures 9 and 10 reflect the anticipated vehicular trip distribution pattern during the morning and evening peak periods for the proposed warehouse Facility.

Table 5 Trip Distribution

Roadway	Direction (to/from)	Peak Period	Trip Distribution	
			Entering	Exiting
Bartlett Street	East	AM	27%	12%
	West	AM	73%	88%
Bartlett Street	East	PM	44%	48%
	West	PM	<u>56%</u>	<u>52%</u>
Total			100%	100%

As with prior studies in this area, the Applicant will work with commercial shipping providers to focus their heavy vehicle arrival and departure patterns towards the I-495 interchange 23C or 23A&B in Marlborough so as to limit the impact of these vehicles on local streets in Northborough and Westborough.

Build Traffic Volumes

The site generated traffic volumes by the proposed warehouse Facility, as shown in Table 4, were distributed to the study area roadways based on the trip distribution under the 2020 Existing conditions for the nearby FedEx facility (southeast of the Site). The 2027 Build traffic volumes were then developed by adding the distributed trips to the 2027 No-Build Condition. Figures 11 and 12 reflect the 2027 Build morning and evening peak hour traffic volumes.

Traffic Operations Analysis

To assess the quality and flow of the existing and future traffic conditions, roadway capacity analyses were conducted for the 2020 Existing, 2027 No-Build and 2027 Build Conditions, which will provide an indication of the adequacy of the roadway facilities that will serve the anticipated traffic demands.

The roadway capacity analysis is based on the Highway Capacity Manual 6th Edition². The term 'level of service' (LOS) is used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. The level of service provides an index to the operational qualities of a roadway segment or an intersection. It is a qualitative measure of a number of factors including roadway geometrics, speed, travel delay and freedom to maneuver. Level-of-service ranges from LOS A, representing the least congested operating conditions, to LOS F, representing the most congested operating condition. Level of service designations are based on delay, which is dependent on various variables such as volume-to-capacity (v/c) ratios. Comparison of intersection capacity analysis requires that in addition to the level-of-service, as such, other measures of effectiveness were also be considered.

² Highway Capacity Manual 6th Edition (2016); Transportation Research Board.



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The level-of-service designations for unsignalized intersections (the three study area intersections) are for the critical movement exiting the minor street only, and is typically the left turn from the minor street or the site driveway. This is based on the assumption that the traffic on the mainline is not affected by traffic on the minor streets.

Intersection Capacity Analysis

Level of service analyses were conducted for the 2020 Existing, 2027 No-Build, and 2027 Build Conditions and are summarized in Table 6.

The analytical methodologies typically used for the analysis of unsignalized intersections use conservative analysis parameters, such as high critical gaps³. Actual field observations indicate that drivers on minor streets generally accept smaller gaps in traffic than those used in the analysis procedures and therefore experience less delay than reported by analysis software. Consequently, the analysis results tend to overstate the actual delays experienced in the field. For this reason, the results of the unsignalized intersection analyses should be considered highly conservative.

³ 'critical gap' is defined as the minimum time, in seconds, between successive major-stream vehicles, in which a minor-street vehicle can make a maneuver

■ **Table 6 Unsignalized Intersection Capacity Analysis**

Location / Movement	2020 Existing Conditions					2027 No-Build Conditions					2027 Build Conditions				
	D ^a	v/c ^b	Del ^c	LOS ^d	95 Q ^e	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
Bartlett Street at Lyman Street															
Weekday Morning															
WB L	75	0.09	9	A	8	85	0.13	11	B	10	85	0.13	11	B	13
NB L/R	255	0.81	41	E	183	280	1.12	>120	F	320	280	1.17	>120	F	343
Weekday Evening															
WB L	355	0.34	10	A	38	385	0.37	10	A	43	385	0.38	10	B	45
NB L/R	325	>1.20	>120	F	835	370	>1.20	>120	F	1105	370	>1.20	>120	F	1140
Bartlett Street at FedEx Driveway															
Weekday Morning															
WB L	10	0.02	11	B	3	30	0.06	12	B	5	30	0.06	12	B	5
NB L/R	30	0.24	29	D	23	55	0.44	51	F	50	55	0.45	52	F	50
Weekday Evening															
WB L	10	0.01	9	A	0	20	0.02	9	A	3	20	0.02	9	A	3
NB L/R	40	0.13	16	C	10	115	0.52	35	E	68	115	0.74	69	F	115
Bartlett Street at Cedar Hill Street															
Weekday Morning															
WB L	60	0.07	9	A	5	65	0.09	10	A	8	65	0.09	10	A	8
NB L	135	0.33	17	C	35	145	0.48	26	D	63	145	0.48	26	D	63
NB R	25	0.04	10	B	3	25	0.04	11	B	3	25	0.04	11	B	3
Weekday Evening															
WB L	55	0.05	8	A	5	60	0.06	8	A	5	60	0.06	8	A	5
NB L	345	>1.20	>120	F	1098	370	>1.20	>120	F	585	370	>1.20	>120	F	628
NB R	60	0.07	9	A	5	65	0.09	10	A	8	65	0.09	10	A	8
Bartlett Street at Proposed Bartlett Street Driveway															
Weekday Morning	Driveway does not exist under 2020 Existing Conditions					Driveway does not exist under 2027 No Build Conditions									
EB L											25	0.02	8	A	3
SB L/R											11	0.02	12	B	3
Weekday Evening															
EB L											5	0.01	11	B	0
SB L/R											35 0.20 28 D 18				

- a Demand, in vehicles
b Volume to capacity ratio.
c Average total delay, in seconds per vehicle.
d Level-of-service.
e 95th percentile queue, in feet.



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As shown, under the 2020 Existing Condition, the northbound left-turn movement at the intersection of Lyman Street at Bartlett Street currently operates at LOS E and LOS F during the morning and evening peak periods respectively. This movement will continue to be congested (LOS F) during the morning peak period under all 2027 future conditions with or without the proposed Facility. Operations during the evening peak period will continue to operate at LOS F under all future conditions. The westbound left-turn movement will continue to operate at an acceptable level of service under all conditions.

Under the 2020 Existing Condition, the northbound left-turn movement at the intersection of FedEx Driveway at Bartlett Street currently operates at LOS D and LOS C during the weekday morning and evening peak periods respectively. Under the 2027 No-Build conditions this movement will degrade to LOS F and LOS E respectively. This movement will continue to be congested (LOS F) during both peak periods with the addition of Project-related trips under the 2027 Build condition. The westbound left-turn movement will continue to operate at an acceptable level of service under all conditions.

Under the 2020 Existing Condition, the northbound left-turn movement at the intersection of Cedar Hill Street at Bartlett Street currently operates at LOS C and LOS F during the morning and evening peak periods respectively. This movement will degrade to LOS D and LOS F, respectively, under all 2027 future conditions with or without the proposed Facility. The westbound left-turn movement and northbound right-turn movement will continue to operate at an acceptable level of service under all conditions.

At the site driveway, the level of service is projected to operate at LOS B and LOS D under the 2027 Build Condition during the morning and evening peak hours respectively when the proposed Facility is operational. Even though the site driveway is expected to operate at a reasonable level of service during the evening peak period, any delays will be contained to the site driveway and will not impact any other mainline Bartlett Street movements within the intersection.

As noted in the recommendations section, project impacts associated with the proposed Warehouse will have a minimal impact on this intersection if the Town agrees with the turn restrictions at the driveway.

Recommendations

To minimize the potential impacts at the site driveway, VHB recommends the site driveway either consider a wide single exit lane or provide two separate turning lanes, an exclusive left-turn lane and an exclusive right-turn lane for vehicles exiting the site. Under either option, the left-turn movement is expected to operate at LOS B during the morning peak period and LOS D during the evening peak period. The left-turn volumes exiting the driveway are relatively low (1 during the morning peak hour and 15 during the evening peak hour). Separate turning lanes can help improve the operation of the right-turning traffic exiting the site driveway. In addition, the site driveway should be configured while taking into consideration the relatively high volume of heavy vehicles and such that adequate sight lines are provided to ensure safe operation at this location. Since the development of this recommendation, the site engineer has developed a wide 14-foot entry and exit lane from the site which provides clear sight lines and satisfies the recommendations made by VHB.

The existing trip distribution for heavy vehicles at the facility should continue to focus on making trips focused towards the I-495 interchanges in Marlborough. To reduce the number of heavy vehicles on the local roadway network in the Town of Northborough, VHB recommends the applicant work with their commercial drivers to orient



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truck traffic towards the I-495 interchanges and (unless specifically destined to local destinations within Northborough, Shrewsbury, or Westborough to the west). Since the development of this recommendation, the Applicant has agreed to post signage on their driveway that all commercial vehicles must turn left exiting the site and avoid the neighborhoods to the west of the site.

Signal Warrants

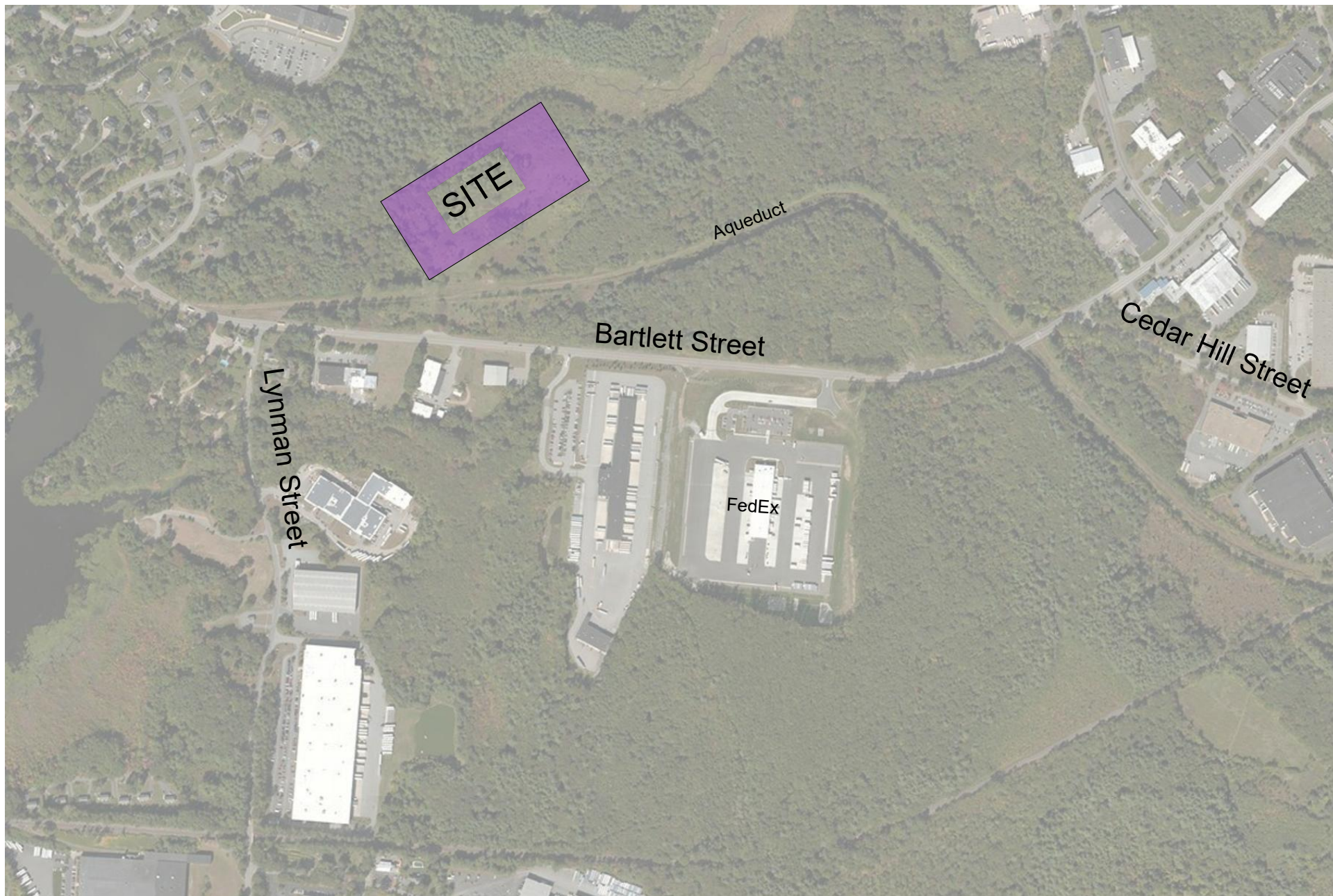
In considering the impact of the development on area intersections as well as considering the current volumes and delays experienced at both the Cedar Hill intersection as well as the Lyman Street intersection with Bartlett Street, VHB evaluated the need for improved traffic control at each location. The MUTCD outlines the volume-based thresholds needed to justify the placement of a traffic signal at a specific location. The resulting assessment prepared by VHB noted that there is not enough volume on a regular basis to justify the need for a traffic signal at either the site driveway, the intersection of Bartlett Street at Cedar Hill Street⁴, or the intersection of Bartlett Street at Lyman Street.

Conclusions

From the traffic study outlined above, the proposed warehouse Facility is not expected to have a significant traffic delay/impact on the surrounding area roadways. As described in the previous section it is recommended that the site driveway either provide for a wide exit lane or provide separate right- and left-turning traffic exiting the facility to improve the operations for all exiting drivers from the Facility.

VHB has also recommended to the applicant that they instruct all commercial drivers to arrive and exit the Facility to and from the east (towards the I-495 corridor) through signage that can be enforced by Northborough as needed. Only drivers who have destinations with local businesses will be instructed to arrive and depart from the west along Bartlett Street. The Applicant has agreed to this recommendation and it will be part of the overall plan.

⁴ The evening peak hour traffic volume at intersection of Bartlett Street at Cedar Hill Street does not consistently meet the MUTCD's Warrants #1 (daily) or #2 (four hour), although it marginally is projected to meet the volume based Warrant #3 (peak hour), but the projected average vehicle delays experienced do not definitively warrant the placement of a signal.

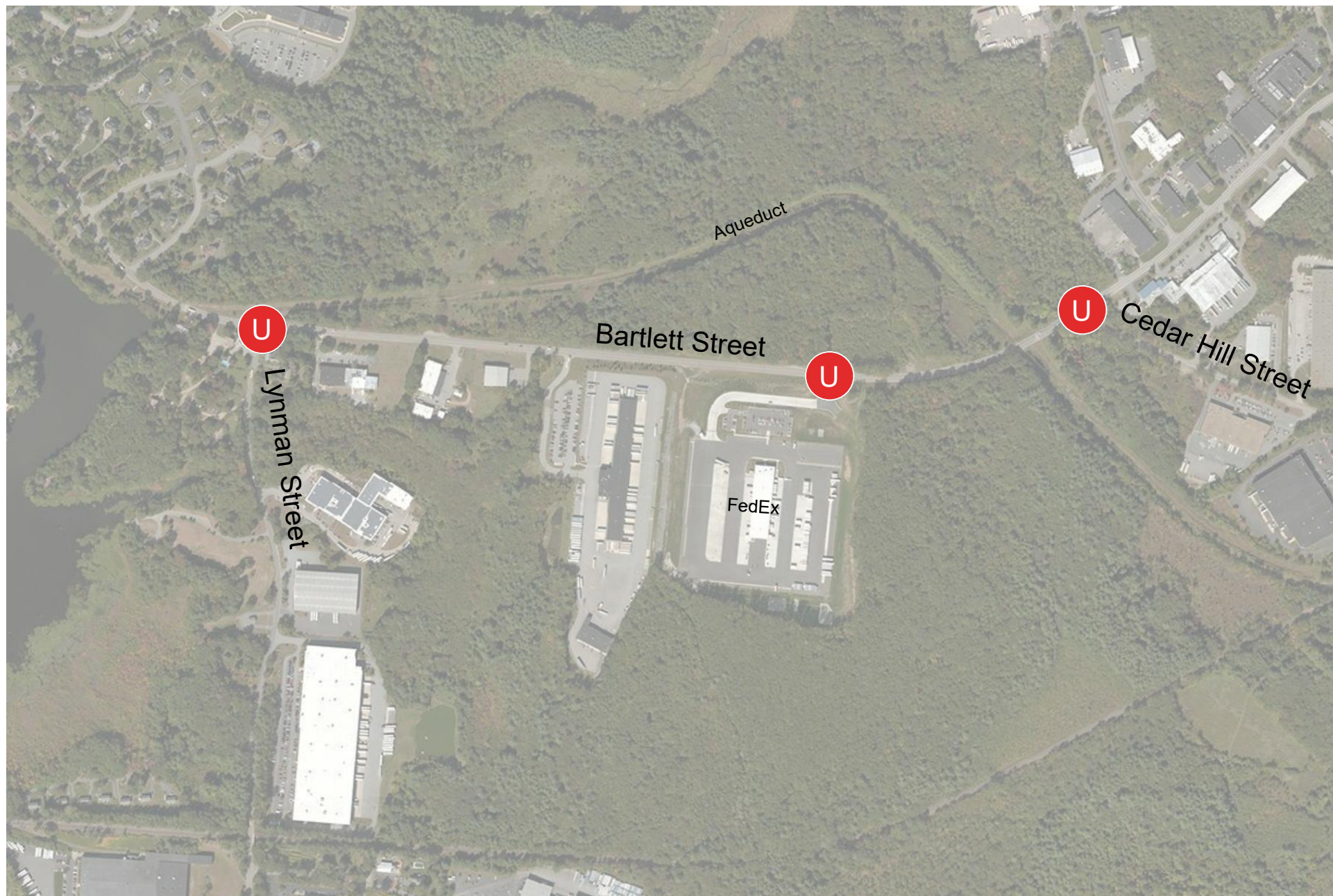


Not to Scale



Figure 1

**Site Location Map
Northborough, Massachusetts**



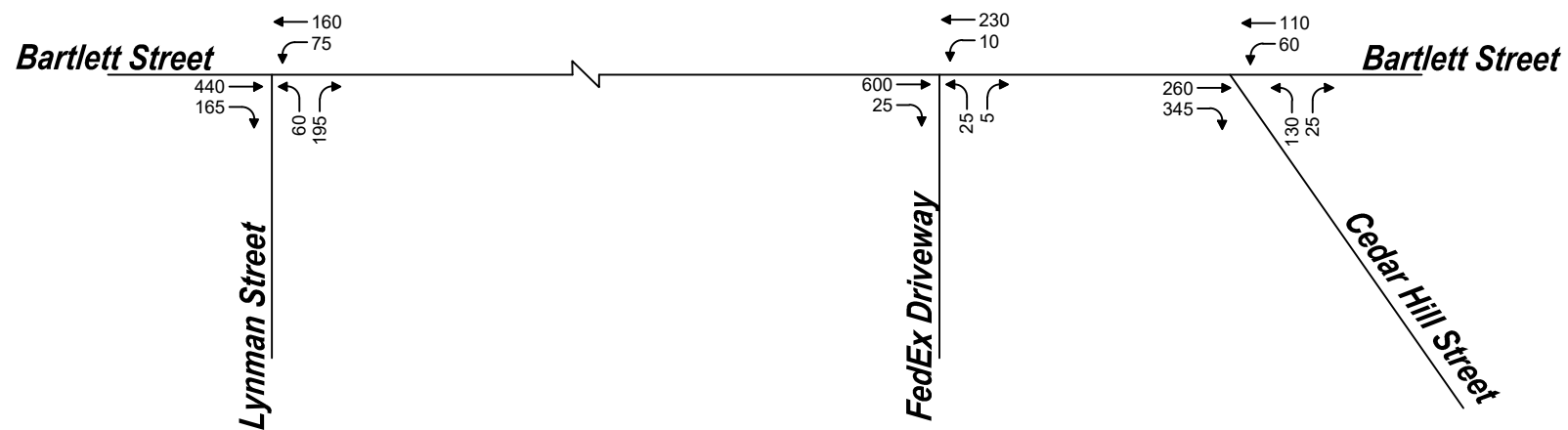
Not to Scale



Figure 3

**Study Area Intersections
Northborough, Massachusetts**

neg = Negligible



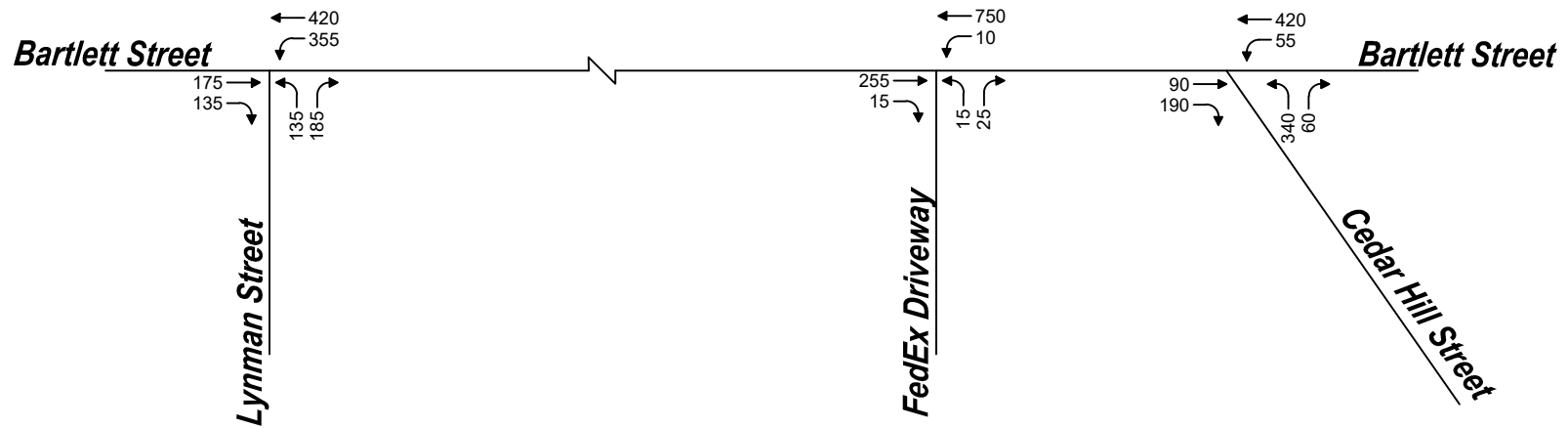
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Figure 4

2020 Existing Conditions
Weekday Morning Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts

neg = Negligible



Not to Scale



Figure 5

2020 Existing Conditions
Weekday Evening Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts



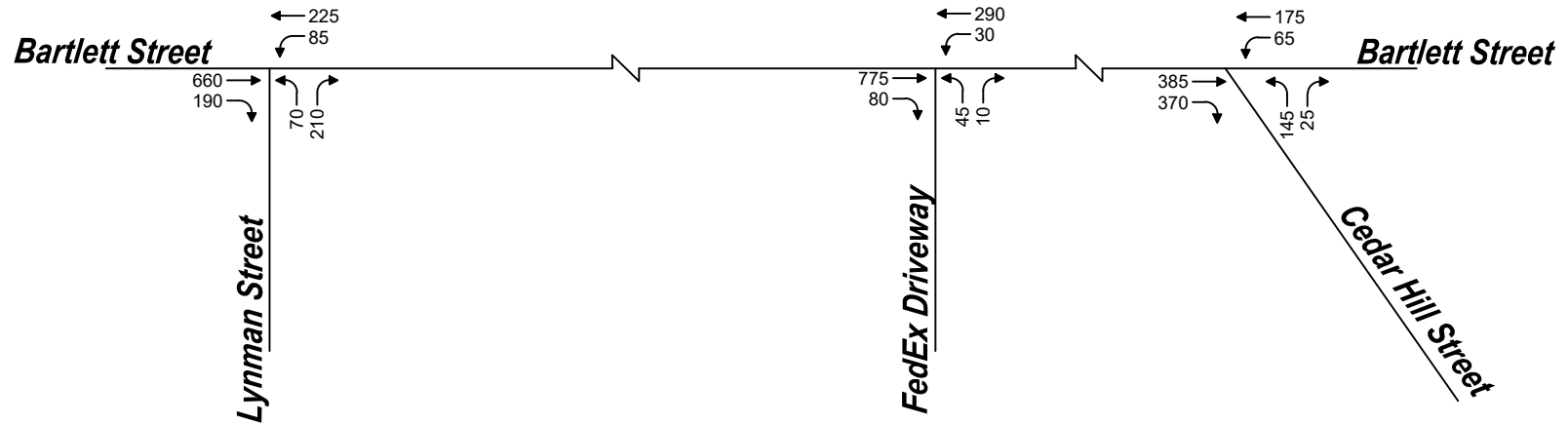
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Figure 6

**Development Locations
Northborough, Massachusetts**

neg = Negligible



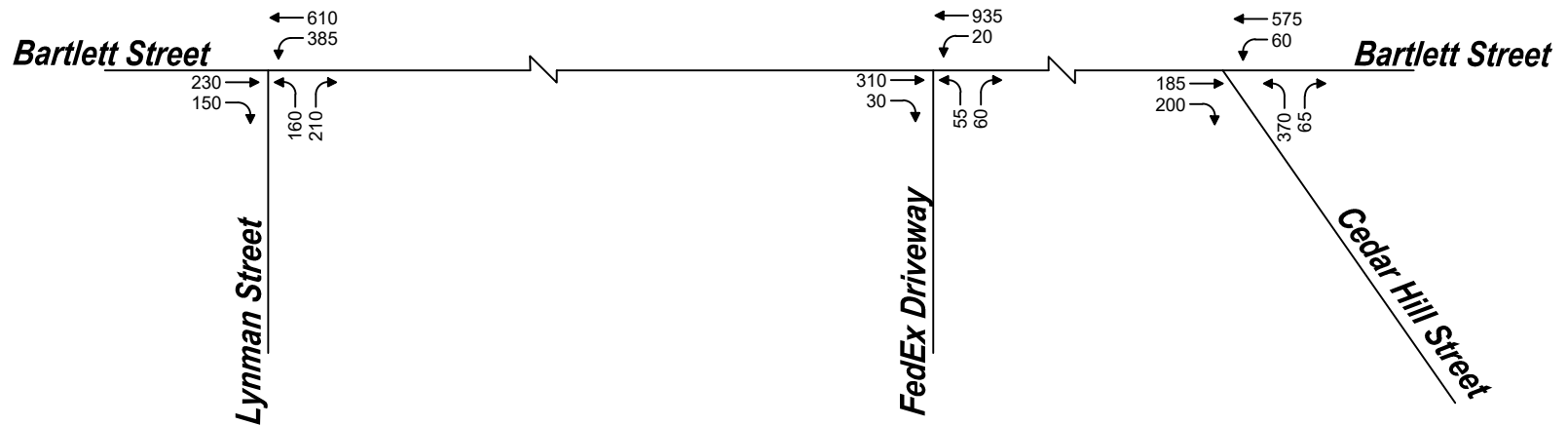
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Figure 7

2027 No-Build Conditions
Weekday Morning Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts

neg = Negligible



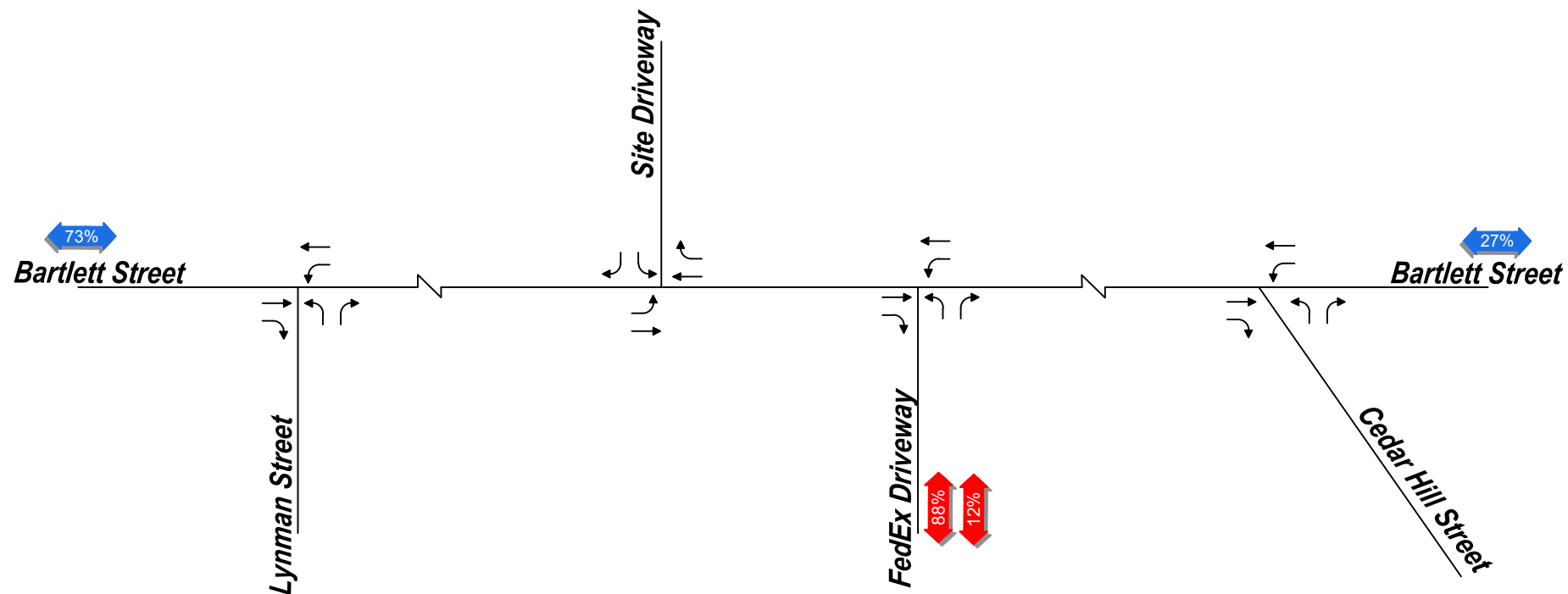
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Figure 8

2027 No-Build Conditions
Weekday Evening Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts

 Entering Trip Distribution
 Exiting Trip Distribution



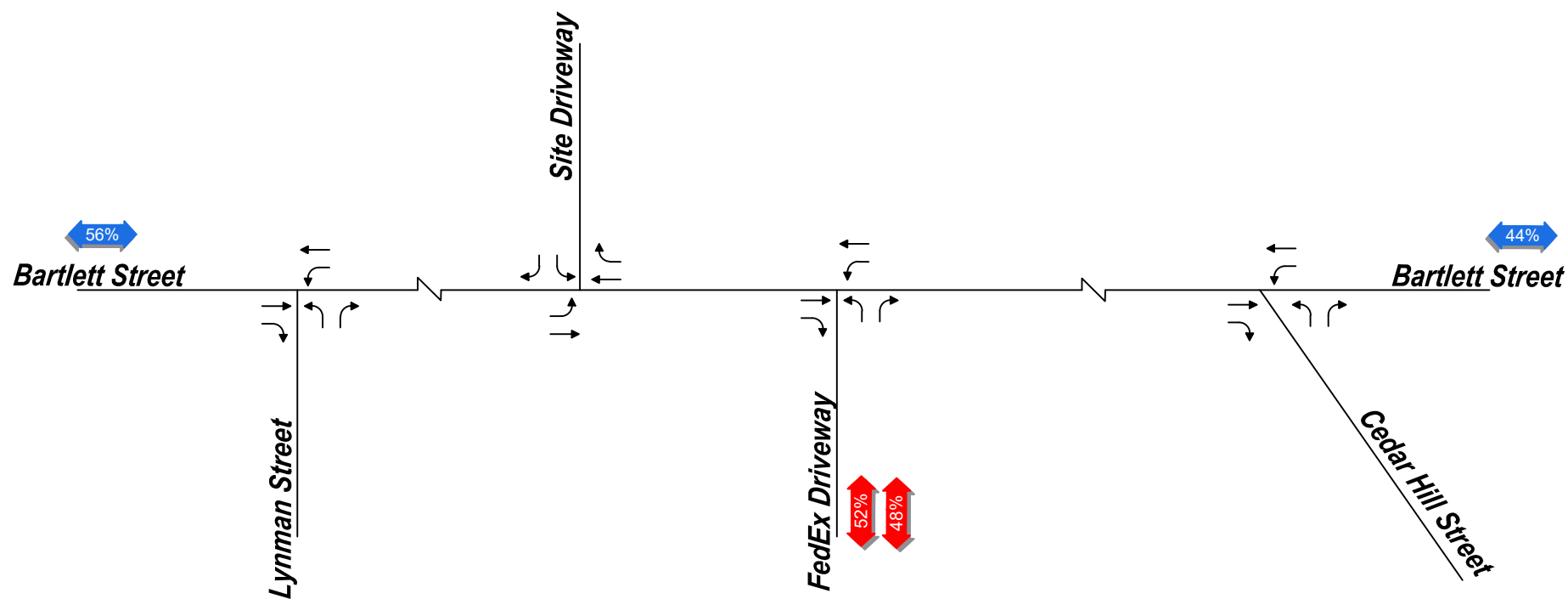
 Not to Scale



Figure 9
 AM Trip Distribution

Warehouse Facility
Northborough, Massachusetts

Entering Trip Distribution
 Exiting Trip Distribution



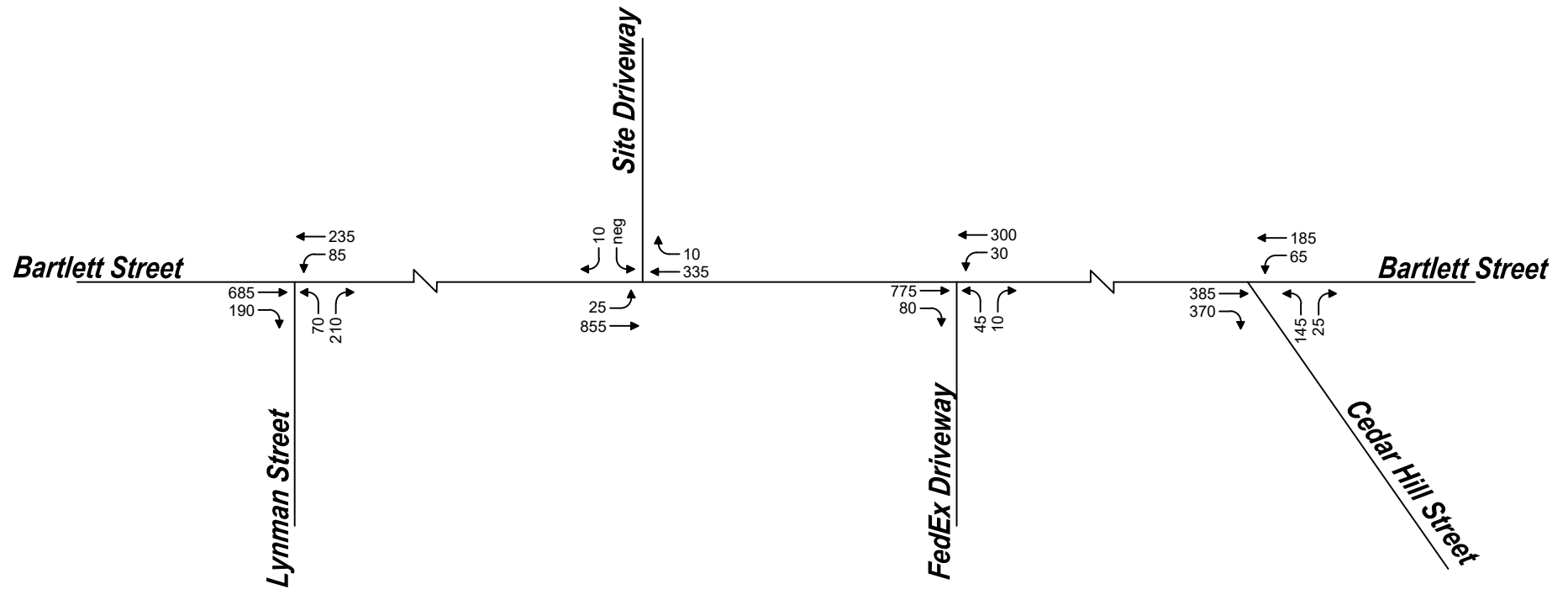
Not to Scale



Figure 10
 PM Trip Distribution

Warehouse Facility
Northborough, Massachusetts

neg = Negligible



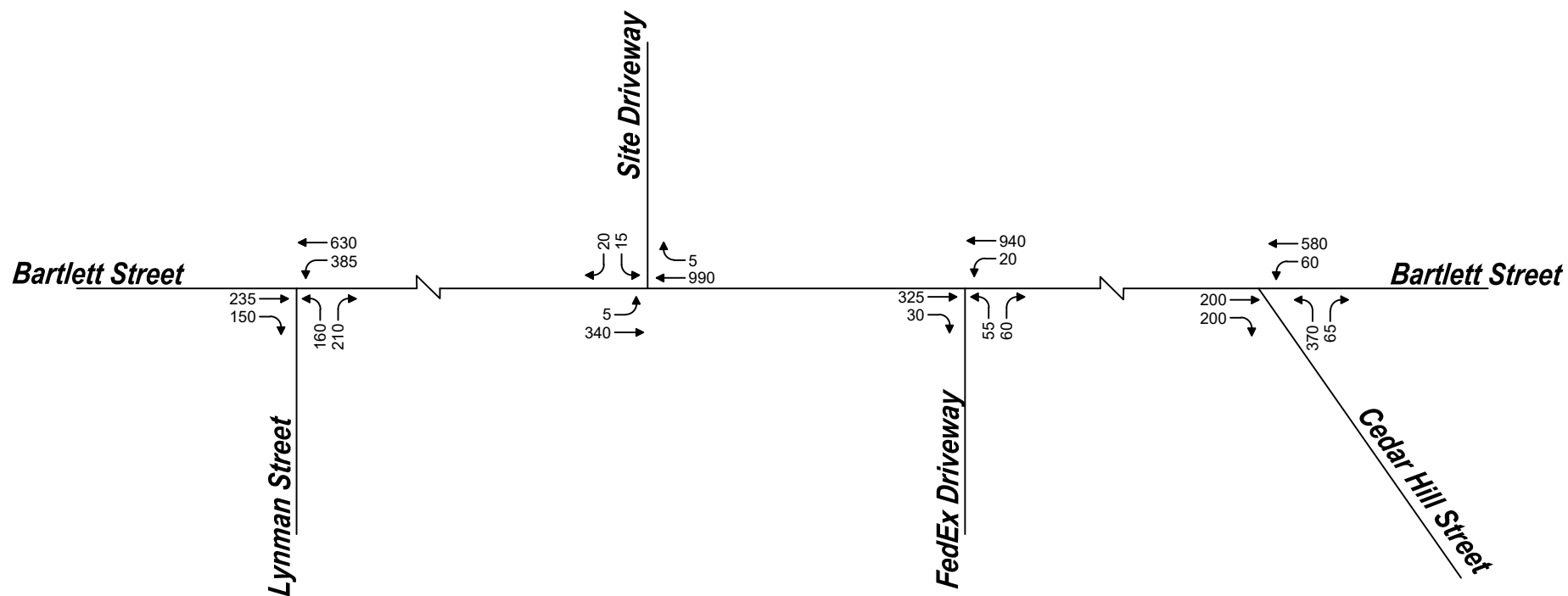
Not to Scale



Figure 11

2027 Build Conditions
Weekday Morning Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts

neg = Negligible



Not to Scale



Figure 12

2027 Build Conditions
Weekday Evening Peak Hour Traffic Volumes
Warehouse Facility
Northborough, Massachusetts



Attachments

- Traffic Volume Data
- Seasonal Adjustment Data
- Vehicular Crash Data
- Planned/Approved Developments
- Trip Generation
- Intersection Capacity Analyses



Traffic Volume Data



Location Map: 197253 Northborough, MA

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



Client:
VHB

Engineer:
T. Benson

Site Code:
83468.19

Date:
Wed 10/16 thru Thurs 10/17/2019

PDI Job #
197253

City, State:
Northborough, MA

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	EB		WB		Combin		ed		10/16/19	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Wed	
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	15	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	32	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	23	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	39	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	68	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	193	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	452	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	38	222	78	790	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	12	201	31	826	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	16	89	30	481	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	7	76	10	318	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	7	118	15	360	53		
Total	2353	1908	1244	3095	3597	5003				
Percent	65.4%	38.1%	34.6%	61.9%						
Day Total		4261		4339		8600				
Peak	08:00	-	02:30	-	06:30	-	07:45	-	04:30	-
Vol.	619	-	292	-	260	-	791	-	847	-
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	EB		WB		Combin		ed		10/17/19	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Thu	
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	1	49	2	113	17	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	5	34	6	76	19	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	9	76	13	145	30	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	13	121	19	170	47	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	5	150	23	188	77	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	23	131	66	191	176	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	81	64	183	82	449	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	56	32	212	61	782	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	22	48	17	218	39	855	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	20	41	11	111	31	501	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	4	31	5	69	9	292	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	4	79	7	125	11	383	62		
Total	2382	1816	1246	2992	3628	4808				
Percent	65.7%	37.8%	34.3%	62.2%						
Day Total		4198		4238		8436				
Peak	08:00	-	02:30	-	06:45	-	08:00	-	05:00	-
Vol.	667	-	258	-	282	-	697	-	855	-
P.H.F.	0.953	-	0.935	-	0.671	-	0.885	-	0.981	-

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

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
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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
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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
10/16/19														
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

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

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

Start Time	14	15	20	25	30	35	40	45	50	55	60	65	70	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%

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	1 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	1 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:

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	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**



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	
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:

6:30 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	
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:

6:30 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	
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
Total	1	0	0	1	2	3	0	5	0	1	0	1	7
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
Total	10	1	0	11	7	1	0	8	1	16	0	17	36
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
Total	14	4	0	18	8	6	0	14	4	12	0	16	48
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:

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	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:

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	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**



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				
6:30 AM	0	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	0		
Total	0	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	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	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		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Approach %	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0				
Total %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Exiting Leg Total	0							0							0							0

Peak Hour Analysis from 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	0	
6:45 AM	0	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	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0				
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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**



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	0		
6:45 AM	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		
7:00 AM	0	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	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	0	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	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	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		
Grand Total	0	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		
Total %	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		
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
Total	339	245	0	584	83	127	1	211	91	142	0	233	1028
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
Total	410	345	0	755	70	125	0	195	154	153	0	307	1257
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
Total	324	238	0	562		77	124	1	202		87	125	0	212		976
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
Total	407	337	0	744		63	123	0	186		151	146	0	297		1227
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:

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	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
Total				1003				699				850	2552

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
Total	15	7	0	22	6	3	0	9	4	17	0	21	52
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
Total	3	8	0	11	7	2	0	9	3	7	0	10	30
Grand Total	18	15	0	33	13	5	0	18	7	24	0	31	82
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:

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	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
Total Volume	15	7	0	22	6	3	0	9	4	17	0	21	52
% Approach Total	68.2	31.8	0.0		66.7	33.3	0.0		19.0	81.0	0.0		
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
Total Entering Leg	15	7	0	22	6	3	0	9	4	17	0	21	52
Buses				1				2				0	3
Single-Unit Trucks				20				6				12	38
Articulated Trucks				2				3				6	11
Total Exiting Leg				23				11				18	52

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	0	0	
4:15 PM	0	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		
Total	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		
Total	0	0	0	0		1	1	0	2	0	0	0	0	2		
Grand Total	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
Total Volume	0	1	0	1	1	0	0	1	1	0	0	1	3
% Approach Total	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
Total				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	0	5	1	0	0	0	1	0	4	0	0	4	10
4:15 PM	2	0	0	0	2	0	1	0	0	1	2	7	0	0	9	12
4:30 PM	1	2	0	0	3	2	0	0	0	2	0	6	0	0	6	11
4:45 PM	2	2	0	0	4	0	1	0	0	1	0	0	0	0	0	5
Total	10	4	0	0	14	3	2	0	0	5	2	17	0	0	19	38
5:00 PM	2	4	0	0	6	0	0	0	0	0	0	1	0	0	1	7
5:15 PM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
5:30 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	3	5	0	0	8	0	1	0	0	1	1	2	0	0	3	12
Grand Total	13	9	0	0	22	3	3	0	0	6	3	19	0	0	22	50
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
Total Volume	10	4	0	14	3	2	0	5	2	17	0	19	38
% Approach Total	71.4	28.6	0.0		60.0	40.0	0.0		10.5	89.5	0.0		
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
Total				34				11				31	76

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:

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
Total	5	2	0	7		2	1	0	3		1	0	0	1		11
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
Total	0	3	0	3		6	0	0	6		2	5	0	7		16
Grand Total	5	5	0	10		8	1	0	9		3	5	0	8		27
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	0
4:15 PM	0	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	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	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	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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						1						1	

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	0
4:15 PM	0	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	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% 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	0	1
Exiting Leg	0						0						1						1	
Total	1						0						1						2	

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						
	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	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **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
Total	100	15	0	115	5	1	0	6	5	179	0	184	305
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
Total	236	12	0	248	5	11	0	16	24	527	0	551	815
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
Total	182	11	0	193	6	22	0	28	23	612	0	635	856
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:

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	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:

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	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	1	0	1	2
6:45 AM	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	1	0	0	1	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:

7:30 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		
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	0		
6:45 AM	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		
7:00 AM	0	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	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	0	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	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	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		
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Exiting Leg Total	0							0							0							0

Peak Hour Analysis from 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	0
6:45 AM	0	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	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	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**



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	0		
6:45 AM	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		
7:00 AM	0	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	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	0	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	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	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		
Grand Total	0	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		
Total %	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	0	
6:45 AM	0	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	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0				
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
Total	564	9	0	573	22	12	0	34	22	204	0	226	833
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
Total	746	19	0	765	12	20	0	32	9	218	0	227	1024
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:

4:30 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	
4:30 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
Total	546	6	0	552		10	7	0	17		8	196	0	204		773
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
Total	726	3	0	729		12	20	0	32		2	211	0	213		974
Grand Total	1272	9	0	1281		22	27	0	49		10	407	0	417		1747
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:

4:45 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	
4:45 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
Total Volume	755	4	0	759	14	19	0	33	4	223	0	227	1019
% Approach Total	99.5	0.5	0.0		42.4	57.6	0.0		1.8	98.2	0.0		
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
Total				996				41				1001	2038

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
Total	18	3	0	21	12	5	0	17	14	8	0	22	60
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
Total	20	16	0	36	0	0	0	0	7	7	0	14	50
Grand Total	38	19	0	57	12	5	0	17	21	15	0	36	110
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:

4:15 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	
4:15 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
Total Volume	22	5	0	27	11	1	0	12	12	11	0	23	62
% 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
Total Entering Leg	22	5	0	27	11	1	0	12	12	11	0	23	62
Buses				1				0				1	2
Single-Unit Trucks				18				10				15	43
Articulated Trucks				3				7				7	17
Total Exiting Leg				22				17				23	62

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**
 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		
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
Total	10	0	0	10		12	4	0	16		14	5	0	19		45
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
Total	8	2	0	10		0	0	0	0		0	2	0	2		12
Grand Total	18	2	0	20		12	4	0	16		14	7	0	21		57
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
Total Volume	10	0	0	10	12	4	0	16	14	5	0	19	45
% Approach Total	100.0	0.0	0.0		75.0	25.0	0.0		73.7	26.3	0.0		
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
Total				27				30				33	90

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:



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
Total	7	3	0	10		0	1	0	1		0	2	0	2		13
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	12	14	0	26		0	0	0	0		7	4	0	11		37
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
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
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	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
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						1						1

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	0		
4:15 PM	0	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	0	1		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total Volume	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
% 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	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	0.000	0.250		
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
Exiting Leg						0						0							1	1		
Total	1						0						1						2			

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						
	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	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **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
Total	36	22	0	58	8	83	0	91	129	50	0	179	328
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
Total	104	63	0	167	31	145	0	176	328	196	0	524	867
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
Total	80	57	0	137	21	121	0	142	356	263	0	619	898
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:

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	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:

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	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	0		
6:45 AM	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		
7:00 AM	0	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	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total	0	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	0		
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:45 AM	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		
Grand Total	0	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	100.0	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			
Exiting Leg Total	0							0							1							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	0	
6:45 AM	0	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	0	1	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	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	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	
Exiting Leg	0						0							1							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:

6:45 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	
6:45 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	100.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	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
Total	314	36	1	351	61	258	0	319	146	86	0	232	902
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
Total	393	57	0	450	51	368	0	419	138	87	0	225	1094
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			
Total	303	30	1	334	55	249	0	304	129	83	0	212	850			
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			
Total	388	55	0	443	48	336	0	384	135	86	0	221	1048			
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:

4:45 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	
4:45 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
Total	11	6	0	17	6	9	0	15	17	3	0	20	52
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
Total	5	2	0	7	3	32	0	35	3	1	0	4	46
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:

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	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
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	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	1	0	0	0	0	0	1	0	1	2
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
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 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		
Total	8	4	0		12	4	1	0	5	15	2	0	17	34		
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		
Total	3	2	0		5	3	7	0	10	0	1	0	1	16		
Grand Total	11	6	0		17	7	8	0	15	15	3	0	18	50		
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
Total Volume	10	3	0	13	3	5	0	8	13	2	0	15	36
% 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
Total				18				24				30	72

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:



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
Total	2	2	0	4	2	8	0	10	2	0	0	2	16
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	2	0	0	2	0	25	0	25	3	0	0	3	30
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
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
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	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
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						1						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	0		
4:15 PM	0	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	0	1		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total Volume	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
% 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	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	0.000	0.250		
Entering Leg	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
Exiting Leg						0						0							1	1		
Total						1						0							1	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:



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

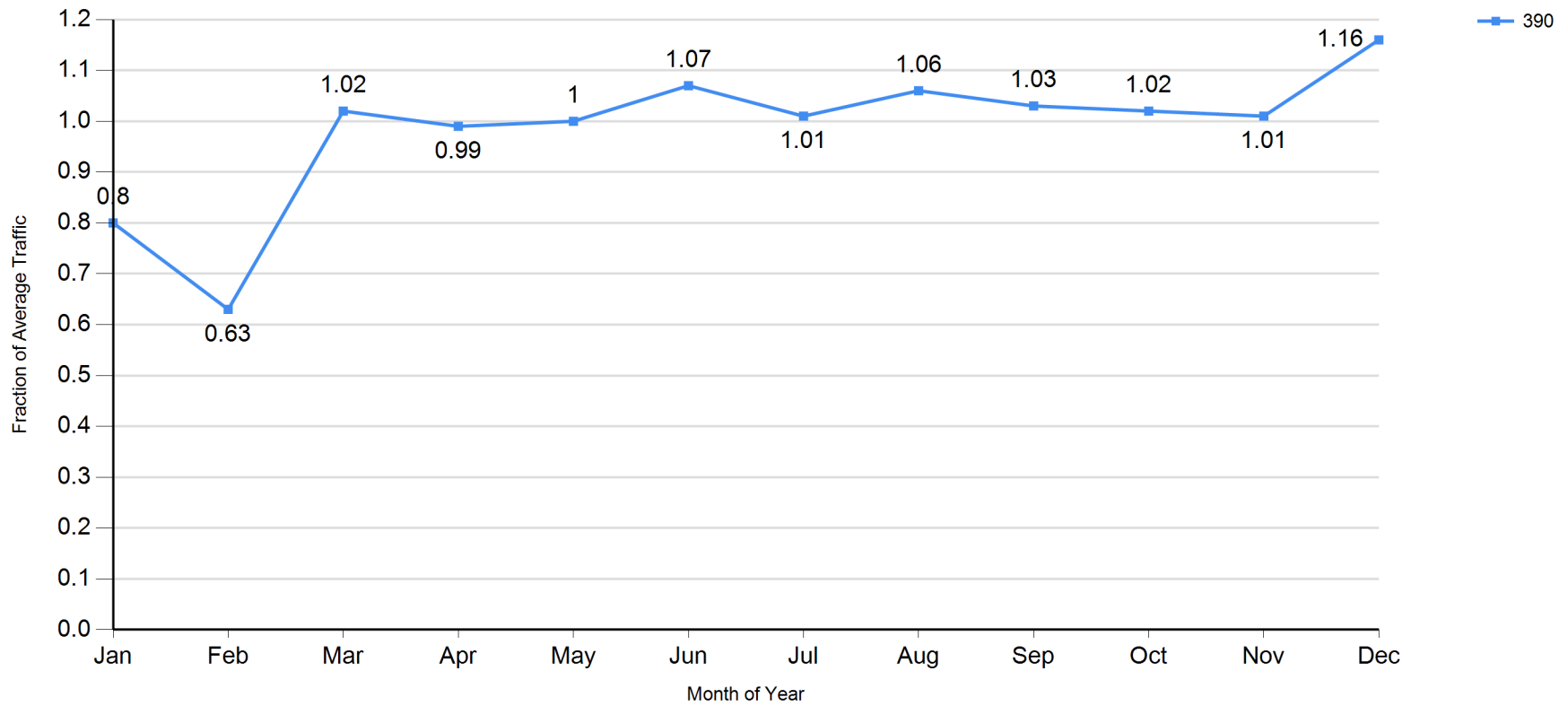
Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

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		
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



Seasonal Adjustment Data

Traffic Pattern by Month for 1/1/2016 - 12/31/2016



Massachusetts Highway Department

Traffic Pattern by Month for 1/1/2016 - 12/31/2016

Factor Group	Station	Weight	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
U1-Boston	390	0	0.804	0.626	1.020	0.994	0.999	1.072	1.012	1.058	1.033	1.016	1.012	1.159
	Average of Weighted Factors		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



Vehicular Crash Data

Bartlett Street at Cedar Hill Street

Crash Number	City, Town Name	Crash Date	Crash Severity	Crash Time	How Many Severity Reported	Number of Vehicles	Police Agency Type	Age of Driver - Teenager / Young Adult	Age of Driver - Oldster / Young	Driver Condition	Light Conditions	Number of Collisions	How/Out District	Non-Motorist Type and Person	BMW Document Number	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Action From N- Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Total Direction	Weather Conditions	Crash Report ID#	How Many Severe PM Vehicles	Event Number	roadway	How Intersection	roadway
32476	60017HARDING	01/16/2025	Property damage only	1:21 AM	No Injury	2	Local police	20-24	20-24	01: (No) improper driving / 02: Other improper driving	Daylight	Single			PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Traveling straight ahead	Y1: 8 light truck/truck, minivan pickup, sport utility / Y2: Passenger car	Y1: E / Y2: N	Overcast	201000000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic		64074271 026627		60017HARDING
37295	70001BENTLEY	01/13/2025	Property damage only	1:12 PM	No Injury	2	Local police	20-24	20-24	01: (No) improper driving / 02: Undersized / 02b: Undersized	Dark	Head-on, rear light-bar rear end			PD0100000000	Dry	0	0	Y1: Stopping or stopped in traffic / Y2: Stopping or stopped in traffic / Y3: Stopping or stopped in traffic	Y1: Passenger car / Y2: Passenger car / Y3: Passenger car	Y1: N / Y2: N / Y3: N	Clear	18-46-45	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic / Y3: Collision with motor vehicle in traffic		60017HARDING		70001BENTLEY
37835	60101HARDING	01/12/2025	Property damage only	1:01 AM	No Injury	2	Local police	20-24	20-24	01: (Driving too fast for conditions) / 02: Improper driving	Dark	Head-on, rear light-bar rear end			PD0100000000	Dry	0	0	Y1: Traveling straight ahead	Y1: Passenger car	Y1: W	Clear		Y1: Collision with utility vehicle in traffic		60017HARDING		60101HARDING
38870	60101HARDING	01/14/2025	Property damage only	1:10 PM	No Injury	2	Local police	20-24	20-24	01: (No) improper driving / 02: Stopped in path of traffic	Dark	Head-on			PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Traveling straight ahead	Y1: Passenger car / Y2: Passenger car	Y1: E / Y2: W	Clear	0000000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic		64074271 026627		60101HARDING
64432	60017HARDING	02/13/2025	Non-Fatal Injury	6:17 PM	Non-Fatal Injury - Possible	2	Local police	20-24	20-24	01: (Failure to keep in proper lane or wrong off road)	Daylight	Single vehicle crash			PD0101000000	Dry	0	0	Y1: Turning left	Y1: Passenger car	Y1: W	Clear	201000000000	Y1: Collision with embankment	146	64074271 026627		60017HARDING
41584	60101HARDING	02/05/2025	Property damage only	6:10 AM	No Injury	2	Local police	20-24	20-24	01: (No) improper driving / 02: (No) improper driving / 03: Improper driving	Daylight	Rear end			PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Stopping or stopped in traffic	Y1: Passenger car / Y2: Motorcycle rider	Y1: N / Y2: N	Dawn/Dusk, light shining sun or shadow	201000000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic		64074271 026627		60101HARDING
41626	60101HARDING	02/08/2025	Property damage only	1:14 AM	No Injury	2	Local police	20-24	20-24	01: (No) improper driving / 02: Stopped in path of traffic	Daylight	Head-on			PD0100000000 / PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Traveling straight ahead	Y1: Passenger car / Y2: Passenger car	Y1: S / Y2: S	Clear	1000000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic		64074271 026627		60101HARDING
43444	60017HARDING	02/23/2025	Property damage only	1:38 PM	No Injury	2	Local police	20-24	20-24	01: (Driving too fast for conditions)	Daylight	Single vehicle crash			PD0100000000 / PD0100000000	Dry	0	0	Y1: Traveling straight ahead	Y1: Passenger car	Y1: N	Cloudy	18-057832	Y1: Collision with tree		64074271 026627		60017HARDING
43662	60017HARDING	02/24/2025	Property damage only	9:25 PM	No Injury	2	Local police	20-24	20-24	01: (Undersized) / 02: (Undersized) / 03: (Failure to keep in proper lane or wrong off road)	Dark	Head-on, rear light-bar rear end			PD0100000000	Dry	0	0	Y1: Traveling straight ahead	Y1: Passenger car	Y1: S	Clear	0000000000	Y1: Collision with tree		60017HARDING		60017HARDING
43907	60101HARDING	01/12/2025	Property damage only	1:21 PM	No Injury	2	Local police	20-20	20-24	01: (No) improper driving / 02: Stopped in path of traffic / 03: Improper driving	Daylight	Head-on			PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Traveling straight ahead / Y3: Stopping or stopped in traffic	Y1: 8 light truck/truck, minivan pickup, sport utility / Y2: Passenger car / Y3: Passenger car	Y1: S / Y2: S / Y3: S	Cloudy	1700000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic / Y3: Collision with motor vehicle in traffic		64074271 026627		60101HARDING
44862	60101HARDING	01/10/2025	Property damage only	1:10 AM	No Injury	2	Local police	20-20	20-20	01: (No) improper driving / 02: Stopped in path of traffic	Daylight	Rear end			PD0100000000	Dry	0	0	Y1: Traveling straight ahead / Y2: Traveling straight ahead	Y1: 8 light truck/truck, minivan pickup, sport utility / Y2: Passenger car	Y1: W / Y2: W	Clear	0000000000	Y1: Collision with motor vehicle in traffic / Y2: Collision with motor vehicle in traffic		60017HARDING		60101HARDING

Data Level:	CRASH
Query Type:	Spatial
Criteria:	If you conducted an Advanced Query your SQL statement will be listed here

Bartlett Street at FedEx Driveway

Cash Number	City Team Name	Cash Date	Cash Severity	Cash Time	Was Injury Severity Reported?	Number of Vehicles Involved	Police Agency Type	Age of Driver - Injured Person	Age of Driver - Other Injured	Driver Contributing (All Drivers)	Light Conditions	Manner of Collision	Nearest District	Was Motorist Towed (All Persons)	RDM Document Number	Road Surface Condition	Total Fatalities	Total Non-Fatal Deaths	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Direction (All Vehicles)	Weather Conditions	Cash Report ID#	Was Harshid Event (All Harshid)	Crash Number	Highway	Real Intersection
73184	NORTHWOOD	10/12/2019	Property damage only none injured	7:10 PM	No injury	Local police	25-34	25-34	20- No improper driving	Right - roadway not opened	Angle			RD2010000046	Wet		0	0	V1: Travelling straight ahead	V1 Passenger car	V1 E	Clear	130800000007	0-Collision with animal-	200	BARTLETT STREET	COOK-HILL STREET
49686	NORTHWOOD	1/30/2017	Property damage only none injured	3:58 AM	No injury	Local police	25-34	21-24		Darlight	Straight vehicle crash			FZC1000003145 / RD2010000008	Dry		0	0	V1: Travelling straight ahead	V1 Passenger car	V1 E	Clear	17000000000009	0-Collision with animal-		BARTLETT STREET	BARTLETT STREET

Date Last Edited: CRASH

Entry Type: Initial

Source: If this information was obtained from your RDM statement will be listed here.

Bartlett Street at Lynman Street

Crash Number	City/Town Name	Crash Date	Crash Severity	Crash Time	Motor Vehicle Severity Reported	Number of Vehicles	Police Agency Type	Age of Driver - Youngest Driver	Age of Driver - Oldest Driver	Driver Contributing Circumstances (All Drivers)	Light Conditions	Number of Collisions	Non-DOT District	Non-Motorist Type (All Persons)	RMV Document Number	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Action Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Direction (All Vehicles)	Weather Conditions	Crash Report ID#	Most Lethal Event (All Vehicles)	Street Number	Roadway	Near Intersection Roadway
299001	Southampton	05/16/2021	Unknown	4:30 PM	Unknown		Local Police			D1: (unknown)(Unknown)	Daylight	Single vehicle crash			PS0100000001	Dry			V1: Turning right	V1 (light truck/minivan with pickup, sport utility)	E1: S	Clear/Cloudy	201700000000	V1 Collision with light truck or other vehicle in traffic			BARTLETT STREET / LYMAN STREET
299401	Southampton	11/11/2021	Property damage only (Vehicle damaged)	7:10 PM	No Injury		Local Police	22-54	22-54	D1: (No improper driving)	Dark - roadway not lit/illuminated	Single vehicle crash			PS010027000102	Wet			V1: Traveling straight ahead	V1 (Passenger car)	E1: E	Rain	10-14880	V1 Collision with animal	100		BARTLETT STREET / LYMAN STREET
401101	Southampton	01/05/2021	Property damage only (Vehicle damaged)	1:01 AM	No Injury		Local Police	22-34	22-34	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Single			PS010071000008	Wet			V1: Traveling straight ahead / V2: Traveling straight ahead	V1 (light truck/minivan with pickup, sport utility) / V2 (Passenger car)	E1: E / V2: N	Clear	13-1780	V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			LYMAN STREET / BARTLETT STREET
401401	Southampton	01/12/2021	Property damage only (Vehicle damaged)	1:27 PM	No Injury		Local Police	22-44	22-44	D1: (No improper driving)	Daylight	Intersection, approach			PS010071000009	Dry			V1: Traveling straight ahead	V1 (Passenger car)	E1: E	Clear	10-1488	V1 Collision with motor vehicle in traffic			BARTLETT STREET / LYMAN STREET
401601	Southampton	06/29/2021	Property damage only (Vehicle damaged)	4:07 PM	No Injury		Local Police	6-17	11-24	D1: (No improper driving) / D2: (Intersection)(Other improper action)	Daylight	Intersection			PS010117000100	Wet			V1: Turning right / V2: Traveling straight ahead	V1 (Passenger car) / V2 (light truck/minivan with pickup, sport utility)	E1: E / V2: E	Clear		V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			LYMAN STREET / BARTLETT STREET
414801	Southampton	03/17/2021	No Injury	5:01 PM	No Injury		Local Police	22-27	22-24	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lit/illuminated roadway	Single			PS010000000046	Wet			V1: Traveling straight ahead / V2: Traveling left	V1 (light truck/minivan with pickup, sport utility) / V2 (light truck/minivan with pickup, sport utility)	E1: E / V2: E	Rain	1000001780	V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			BARTLETT STREET / LYMAN STREET
419301	Southampton	04/01/2021	Property damage only (Vehicle damaged)	1:23 PM	No Injury		Local Police	22-54	22-54	D1: (No improper driving)	Daylight	Single vehicle crash			PS010120000106	Dry			V1: Slowing or stopped in traffic / V2: Not reported	V1 (Passenger car)	E1: W / V2: Not Reported	Clear		V1 Collision with motor vehicle in traffic			LYMAN STREET / BARTLETT STREET
432801	Southampton	10/17/2021	Property damage only (Vehicle damaged)	1:31 PM	No Injury		Local Police	28-33	22-44	D1: (No improper driving) / D2: (Made an improper turn)	Daylight	Single			PS010104000003	Wet			V1: Slowing or stopped in traffic / V2: Turning left	V1 (Passenger car) / V2 (light truck/minivan with pickup, sport utility)	E1: W / V2: E	Cloudy/Steam, hot (driving rain or shower)	1000000780	V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			LYMAN STREET / BARTLETT STREET
444001	Southampton	02/14/2021	Property damage only (Vehicle damaged)	7:48 AM	No Injury		Local Police	22-44	22-44	D1: (Intersection) / D2: (No improper driving)	Daylight	Intersection			PS010001000009	Wet			V1: Backing / V2: Slowing or stopped in traffic	V1 (Tractor/trailer) / V2 (light truck/minivan with pickup, sport utility)	E1: E / V2: E	Clear	201700000000	V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			LYMAN ST. / BARTLETT STREET
449201	Southampton	11/03/2021	Property damage only (Vehicle damaged)	4:27 AM	No Injury		Local Police	22-34	22-54		Daylight	Single			PS010027100040 / PS010104000002	Dry			V1: Traveling straight ahead / V2: Turning left	V1 (Passenger car) / V2 (Passenger car)	E1: E / V2: W	Clear	201700000000 / 1700000000	V1 Collision with motor vehicle in traffic / V2 Collision with motor vehicle in traffic			BARTLETT ST. / LYMAN STREET

Data Level: CASH
Query Type: Special
Query: If your computer has Advanced Query (SQL) statement will be listed here

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Northborough COUNT DATE : 10/16/2019

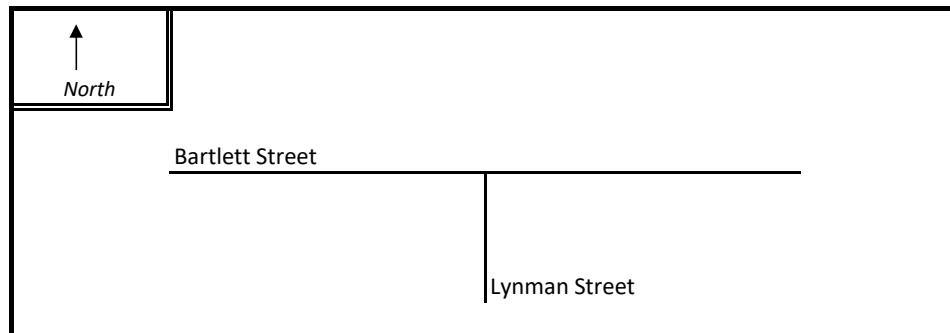
DISTRICT : 3 UNSIGNALIZED : ☒ 0.61 SIGNALIZED : ☐ 0.89

~ INTERSECTION DATA ~

MAJOR STREET : Bartlett Street

MINOR STREET(S) : Lynman Street

INTERSECTION
DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	308	775	222			1,305

" K " FACTOR :

0.090

INTERSECTION ADT (V) =
TOTAL DAILY APPROACH VOLUME :

14,500

TOTAL # OF CRASHES :

10

OF YEARS :

5

AVERAGE # OF CRASHES PER
YEAR (A) :

2.00

CRASH RATE CALCULATION :

0.38

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

Comments : MassDOT Accident Data (2013-2017)

Project Title & Date: 14767.00 Northborough (Portal accessed October 2019)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Northborough COUNT DATE : 10/16/2019

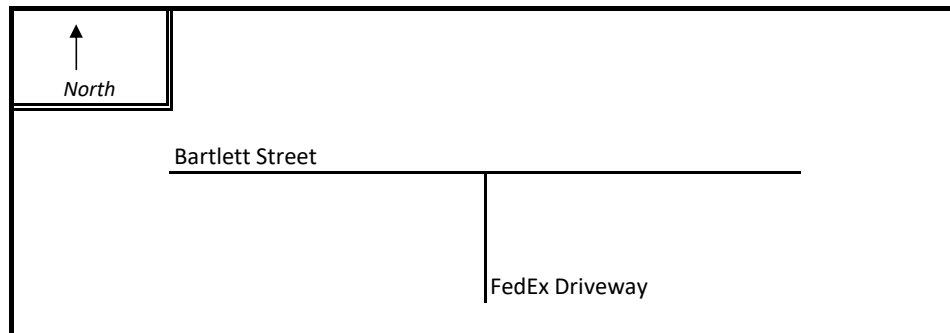
DISTRICT : 3 UNSIGNALIZED : ☒ 0.61 SIGNALIZED : ☐ 0.89

~ INTERSECTION DATA ~

MAJOR STREET : Bartlett Street

MINOR STREET(S) : FedEx Driveway

INTERSECTION
DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	270	759	38			1,067

" K " FACTOR :

0.090

INTERSECTION ADT (V) =
TOTAL DAILY APPROACH VOLUME :

11,856

TOTAL # OF CRASHES :

2

OF YEARS :

5

AVERAGE # OF CRASHES PER
YEAR (A) :

0.40

CRASH RATE CALCULATION :

0.09

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

Comments : MassDOT Accident Data (2013-2017)

Project Title & Date: 14767.00 Northborough (Portal accessed October 2019)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Northborough COUNT DATE : 10/16/2019

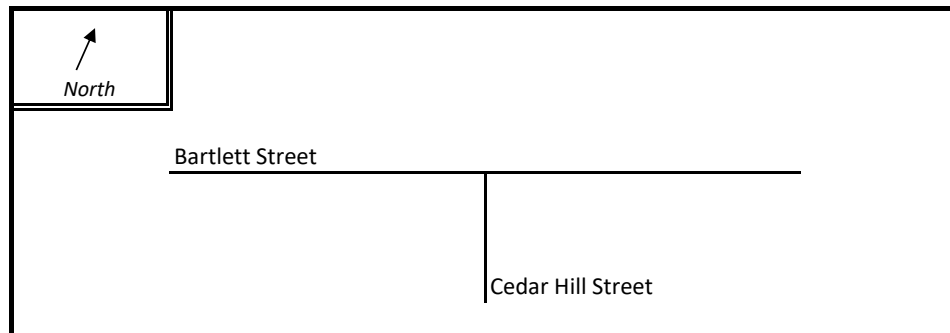
DISTRICT : 3 UNSIGNALIZED : X 0.61 SIGNALIZED : 0.89

~ INTERSECTION DATA ~

MAJOR STREET : Bartlett Street

MINOR STREET(S) : Cedar Hill Street

INTERSECTION
 DIAGRAM
 (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	277	472	398			1,147

" K " FACTOR :

0.090

INTERSECTION ADT (V) =
 TOTAL DAILY APPROACH VOLUME :

12,744

TOTAL # OF CRASHES :

11

OF YEARS :

5

AVERAGE # OF CRASHES PER
 YEAR (A) :

2.20

CRASH RATE CALCULATION :

0.47

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

Comments : MassDOT Accident Data (2013-2017)

Project Title & Date: 14767.00 Northborough (Portal accessed October 2019)



Planned/Approved Developments

Background Developments

Project Name: Northborough
Project No: 83468.19

Rate of Growth = 0.01
Future Conditions Years of Growth = 7
Existing Conditions Years of Growth 1

		BACKGROUND DEVELOPMENTS																			
INTERSECTION	MOVEMENT	Marlborough Corporate Place		Devonshire at 495 Center		Forest Park		Crane Meadow Corporate Center		The Campus at Marlborough		301 Bartlett St Warehouse		370 Bartlett Street Warehouses		Hayes Memorial Drive Warehouse		One Lynman Street Warehouse		TOTAL BACKGROUND DEVELOPMENTS	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. BARTLETT STREET AT LYNMAN STREET																					
Bartlett Street	EB T			71	13							29	8	55	15	26	7	15	4	181	43
	EB R																	6	4	15	4
Bartlett Street	WB L																	6	4	6	4
	WB T			12	79							11	21	19	38	9	18	51		51	156
Lynman Street	NB L																	5	11	5	11
	NB R																	1	11	1	11
2. BARTLETT STREET AT FEDEX DRIVEWAY																					
Bartlett Street	EB T			71	13							29	8			26	7	1	11	127	39
	EB R													55	15					55	15
Bartlett Street	WB L													20	12					20	12
	WB T			12	79							11	21			9	18	6	4	38	122
FedEx Driveway	NB L													19	38					19	38
	NB R													3	35					3	35
3. BARTLETT STREET AT CEDAR HILL STREET																					
Bartlett Street	EB T			71	13							1	19	3	35	26	7	1	11	102	85
	EB R																				
Bartlett Street	WB L																				
	WB T			12	79							11	7	20	12	9	18	6	4	58	120
Cedar Hill Street	NB L																				
	NB R																				
4. BARTLETT STREET AT SITE DRIVEWAY																					
Bartlett Street	EB L																				
	EB T			71	13							29	8	55	15	26	7	1	11	182	54
Bartlett Street	WB T			12	79							11	21	19	38	9	18	6	4	57	160
	WB R																				
Site Driveway	SB L																				
	SB R																				



Trip Generation

ITE TRIP GENERATION WORKSHEET

(10th Edition, Updated 2017)

LANDUSE: Warehousing
LANDUSE CODE: 150
LOCATION: General Urban / Suburban
JOB NAME:
JOB NUMBER:

Independent Variable --- 1,000 Sq. Feet Gross Floor Area

FLOOR AREA (KSF): 151.0

WEEKDAY

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	29	0.93	1.74	0.15	16.93	285	1	3,200	50%	50%
AM PEAK OF GENERATOR	23	0.85	0.22	0.02	2.08	274	1	3,200	65%	35%
PM PEAK OF GENERATOR	25	0.91	0.24	0.02	1.80	275	1	3,200	24%	76%
AM PEAK (ADJACENT ST)	34	0.69	0.17	0.02	1.93	451	1	3,200	77%	23%
PM PEAK (ADJACENT ST)	47	0.65	0.19	0.01	1.80	400	1	3,200	27%	73%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	263	131	131	284	142	142
AM PEAK OF GENERATOR	33	22	12	47	30	16
PM PEAK OF GENERATOR	36	9	28	45	11	34
AM PEAK (ADJACENT ST)	26	20	6	43	33	10
PM PEAK (ADJACENT ST)	29	8	21	46	12	34

SATURDAY

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	0.15	0.01	1.58	226	55	420	50%	50%
PEAK OF GENERATOR	2	--	0.05	0.01	0.22	129	55	202	64%	36%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	23	11	11	N/A	N/A	N/A
PEAK OF GENERATOR	8	5	3	N/A	N/A	N/A

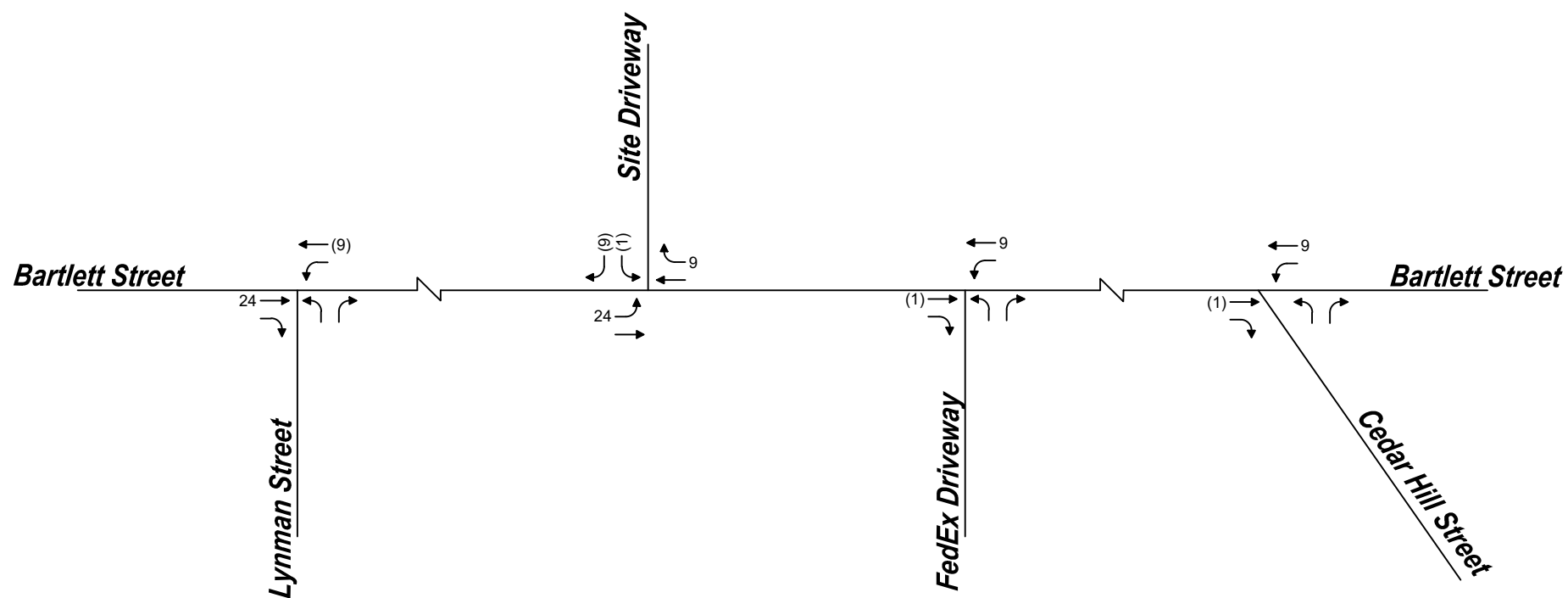
SUNDAY

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	3	--	0.06	0.03	0.32	226	55	420	50%	50%
PEAK OF GENERATOR	2	--	0.04	0.02	0.11	129	55	202	52%	48%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	9	5	5	N/A	N/A	N/A
PEAK OF GENERATOR	6	3	3	N/A	N/A	N/A

xx - Entering Trips
(xx) - Exiting Trips



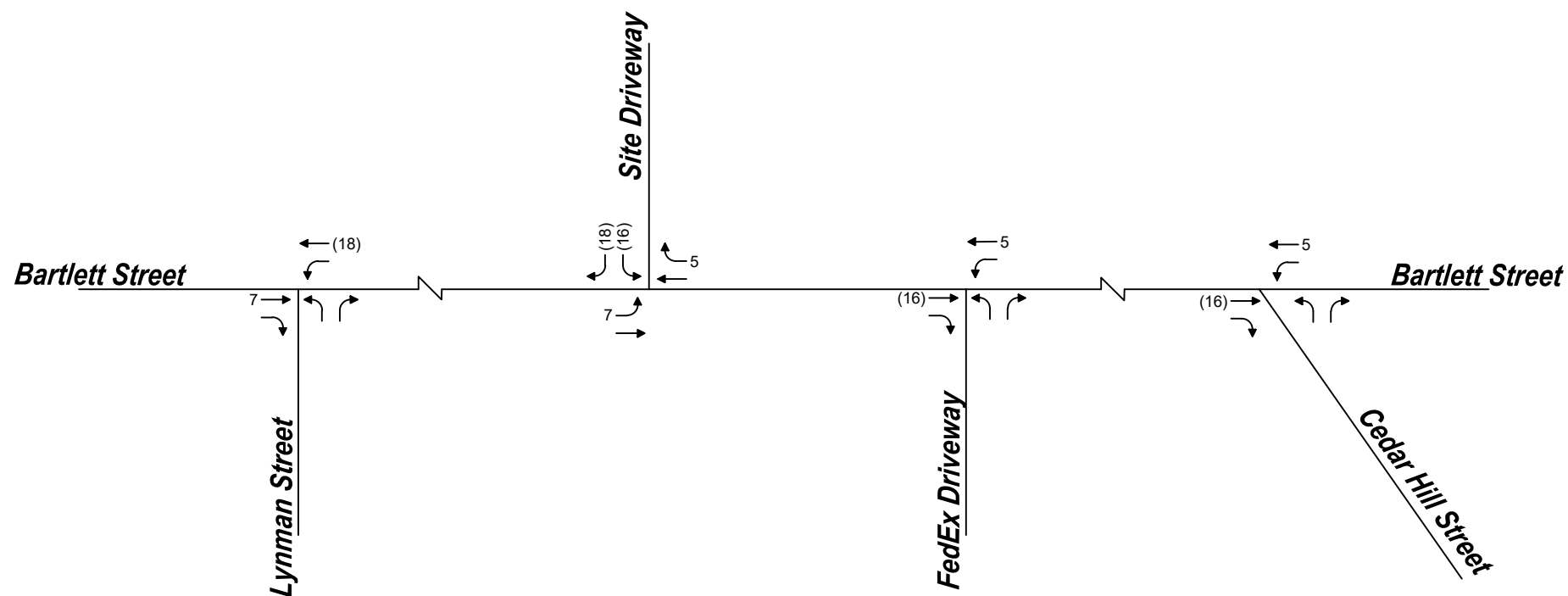
Not to Scale



Figure A-1

Site-Generated Traffic Volumes
Weekday Morning Peak Hour
Warehouse Facility
Northborough, Massachusetts

xx - Entering Trips
(xx) - Exiting Trips



Not to Scale



Figure A-2

Site-Generated Traffic Volumes
Weekday Evening Peak Hour
Warehouse Facility
Northborough, Massachusetts



Intersection Capacity Analyses

Intersection						
Int Delay, s/veh	11.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	445	165	75	160	60	195
Future Vol, veh/h	445	165	75	160	60	195
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	89	89	76	76
Heavy Vehicles, %	4	3	8	13	14	5
Mvmt Flow	484	179	84	180	79	257
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	663	0	922	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	348	-
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	-	-	898	-	286	513
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	898	-	256	513
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	617	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3		41.4	
HCM LOS					E	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	415		-	-	898	-
HCM Lane V/C Ratio	0.808		-	-	0.094	-
HCM Control Delay (s)	41.4		-	-	9.4	0
HCM Lane LOS	E		-	-	A	A
HCM 95th %tile Q(veh)	7.3		-	-	0.3	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	605	25	10	235	25	5
Future Vol, veh/h	605	25	10	235	25	5
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	88	88	78	78	61	61
Heavy Vehicles, %	4	56	63	5	74	75
Mvmt Flow	688	28	13	301	41	8
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	716	0	1029	702
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	4.73	-	7.14	6.95
Critical Hdwy Stg 1	-	-	-	-	6.14	-
Critical Hdwy Stg 2	-	-	-	-	6.14	-
Follow-up Hdwy	-	-	2.767	-	4.166	3.975
Pot Cap-1 Maneuver	-	-	660	-	192	336
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	660	-	187	336
Mov Cap-2 Maneuver	-	-	-	-	187	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	580	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.4		28.5	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	202	-	-	660	-	
HCM Lane V/C Ratio	0.243	-	-	0.019	-	
HCM Control Delay (s)	28.5	-	-	10.6	0	
HCM Lane LOS	D	-	-	B	A	
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-	

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	265	345	60	110	135	25
Future Vol, veh/h	265	345	60	110	135	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	180	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	14	12
Mvmt Flow	288	375	65	120	147	27
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	663	0	538	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	250	-
Critical Hdwy	-	-	4.12	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.218	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	926	-	484	728
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	764	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	926	-	450	728
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	711	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.2		15.8		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	450	728	-	-	926	-
HCM Lane V/C Ratio	0.326	0.037	-	-	0.07	-
HCM Control Delay (s)	16.8	10.1	-	-	9.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0.2	-

Intersection						
Int Delay, s/veh	192.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	135	355	425	140	185
Future Vol, veh/h	175	135	355	425	140	185
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	83	83	90	90	87	87
Heavy Vehicles, %	7	1	3	2	3	11
Mvmt Flow	211	163	394	472	161	213
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	374	0	1553	293
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	1260	-
Critical Hdwy	-	-	4.13	-	6.43	6.31
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.399
Pot Cap-1 Maneuver	-	-	1179	-	~ 124	725
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	266	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1179	-	~ 68	725
Mov Cap-2 Maneuver	-	-	-	-	~ 68	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	~ 146	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.4		\$ 820.5	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	140		-	-	1179	-
HCM Lane V/C Ratio	2.668		-	-	0.335	-
HCM Control Delay (s)	\$ 820.5		-	-	9.6	0
HCM Lane LOS	F		-	-	A	A
HCM 95th %tile Q(veh)	33.4		-	-	1.5	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↱	
Traffic Vol, veh/h	255	15	10	760	15	25
Future Vol, veh/h	255	15	10	760	15	25
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	88	88	89	89	86	86
Heavy Vehicles, %	4	65	56	3	0	43
Mvmt Flow	290	17	11	854	17	29
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	307	0	1175	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	-	-	4.66	-	6.4	6.63
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.704	-	3.5	3.687
Pot Cap-1 Maneuver	-	-	1002	-	214	654
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	411	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1002	-	210	654
Mov Cap-2 Maneuver	-	-	-	-	210	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	402	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.1		16.3		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	365	-	-	1002	-	
HCM Lane V/C Ratio	0.127	-	-	0.011	-	
HCM Control Delay (s)	16.3	-	-	8.6	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0	-	

Intersection								
Int Delay, s/veh	351.7							
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↘	↑	↘	↗		
Traffic Vol, veh/h	95	185	55	425	345	60		
Future Vol, veh/h	95	185	55	425	345	60		
Conflicting Peds, #/hr	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	350	180	-	0	50		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	92	92	87	25	88	88		
Heavy Vehicles, %	2	9	7	3	5	7		
Mvmt Flow	103	201	63	1700	392	68		
Major/Minor	Major1		Major2		Minor1			
Conflicting Flow All	0	0	304	0	1929	103		
Stage 1	-	-	-	-	103	-		
Stage 2	-	-	-	-	1826	-		
Critical Hdwy	-	-	4.17	-	6.45	6.27		
Critical Hdwy Stg 1	-	-	-	-	5.45	-		
Critical Hdwy Stg 2	-	-	-	-	5.45	-		
Follow-up Hdwy	-	-	2.263	-	3.545	3.363		
Pot Cap-1 Maneuver	-	-	1229	-	~ 72	938		
Stage 1	-	-	-	-	914	-		
Stage 2	-	-	-	-	~ 138	-		
Platoon blocked, %	-	-	-	-	-	-		
Mov Cap-1 Maneuver	-	-	1229	-	~ 68	938		
Mov Cap-2 Maneuver	-	-	-	-	~ 68	-		
Stage 1	-	-	-	-	914	-		
Stage 2	-	-	-	-	~ 131	-		
Approach	EB		WB		NB			
HCM Control Delay, s	0		0.3		\$ 1930.5			
HCM LOS					F			
Minor Lane/Major Mvmt	NBLn1		NBLn2		EBT	EBR	WBL	WBT
Capacity (veh/h)	68		938		-	-	1229	-
HCM Lane V/C Ratio	5.765		0.073		-	-	0.051	-
HCM Control Delay (s)	\$ 2264.6		9.1		-	-	8.1	-
HCM Lane LOS	F		A		-	-	A	-
HCM 95th %tile Q(veh)	43.9		0.2		-	-	0.2	-
Notes								
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon								

Intersection						
Int Delay, s/veh	25.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	660	190	85	225	70	210
Future Vol, veh/h	660	190	85	225	70	210
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, %	4	3	8	13	14	5
Mvmt Flow	717	207	92	245	76	228
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	924	0	1250	821
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	429	-
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	-	-	715	-	180	370
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	715	-	153	370
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	538	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3		129.4	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	273	-	-	715	-	
HCM Lane V/C Ratio	1.115	-	-	0.129	-	
HCM Control Delay (s)	129.4	-	-	10.8	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	12.8	-	-	0.4	-	

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	775	80	30	290	45	10
Future Vol, veh/h	775	80	30	290	45	10
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, %	4	56	63	5	74	75
Mvmt Flow	842	87	33	315	49	11
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	929	0	1267	886
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.73	-	7.14	6.95
Critical Hdwy Stg 1	-	-	-	-	6.14	-
Critical Hdwy Stg 2	-	-	-	-	6.14	-
Follow-up Hdwy	-	-	2.767	-	4.166	3.975
Pot Cap-1 Maneuver	-	-	537	-	133	257
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	558	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	537	-	123	257
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	517	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.1		50.8		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	136	-	-	537	-	
HCM Lane V/C Ratio	0.44	-	-	0.061	-	
HCM Control Delay (s)	50.8	-	-	12.1	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	2	-	-	0.2	-	

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	385	370	65	175	145	25
Future Vol, veh/h	385	370	65	175	145	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	180	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	14	12
Mvmt Flow	418	402	71	190	158	27
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	820	0	750	418
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	-	-	4.12	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.218	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	809	-	362	614
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	809	-	330	614
Mov Cap-2 Maneuver	-	-	-	-	330	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	639	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.7	23.4			
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	330	614	-	-	809	-
HCM Lane V/C Ratio	0.478	0.044	-	-	0.087	-
HCM Control Delay (s)	25.5	11.1	-	-	9.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0.3	-

Intersection						
Int Delay, s/veh	434.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	230	150	385	610	160	210
Future Vol, veh/h	230	150	385	610	160	210
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, %	7	1	3	2	3	11
Mvmt Flow	250	163	418	663	174	228
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	413	0	1831	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	1499	-
Critical Hdwy	-	-	4.13	-	6.43	6.31
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.399
Pot Cap-1 Maneuver	-	-	1141	-	~ 83	689
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	203	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1141	-	~ 35	689
Mov Cap-2 Maneuver	-	-	-	-	~ 35	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	~ 85	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.9		\$ 2040.4	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	76		-	-	1141	-
HCM Lane V/C Ratio	5.292		-	-	0.367	-
HCM Control Delay (s)	\$ 2040.4		-	-	10	0
HCM Lane LOS	F		-	-	A	A
HCM 95th %tile Q(veh)	44.2		-	-	1.7	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	310	30	20	935	55	60
Future Vol, veh/h	310	30	20	935	55	60
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, %	4	65	56	3	0	43
Mvmt Flow	337	33	22	1016	60	65
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	370	0	1414	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	1060	-
Critical Hdwy	-	-	4.66	-	6.4	6.63
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.704	-	3.5	3.687
Pot Cap-1 Maneuver	-	-	945	-	153	607
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	336	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	945	-	145	607
Mov Cap-2 Maneuver	-	-	-	-	145	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	318	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.2		35		
HCM LOS	E					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	241	-	-	945	-	
HCM Lane V/C Ratio	0.519	-	-	0.023	-	
HCM Control Delay (s)	35	-	-	8.9	0	
HCM Lane LOS	E	-	-	A	A	
HCM 95th %tile Q(veh)	2.7	-	-	0.1	-	

Intersection						
Int Delay, s/veh	72.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	185	200	60	575	370	65
Future Vol, veh/h	185	200	60	575	370	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	180	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	9	7	3	5	7
Mvmt Flow	201	217	65	625	402	71
Major/Minor	Major1		Major2	Minor1		
Conflicting Flow All	0	0	418	0	956	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	755	-
Critical Hdwy	-	-	4.17	-	6.45	6.27
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.263	-	3.545	3.363
Pot Cap-1 Maneuver	-	-	1115	-	~ 283	827
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1115	-	~ 267	827
Mov Cap-2 Maneuver	-	-	-	-	~ 267	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	432	-
Approach	EB		WB	NB		
HCM Control Delay, s	0		0.8	240.6		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	827	-	-	1115	-
HCM Lane V/C Ratio	1.506	0.085	-	-	0.058	-
HCM Control Delay (s)	281.1	9.8	-	-	8.4	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	23.4	0.3	-	-	0.2	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	28.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	685	190	85	235	70	210
Future Vol, veh/h	685	190	85	235	70	210
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, %	4	3	8	13	14	5
Mvmt Flow	745	207	92	255	76	228
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	952	0	1288	849
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	439	-
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	-	-	698	-	171	356
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	698	-	145	356
Mov Cap-2 Maneuver	-	-	-	-	145	-
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	529	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.9		149.1	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	261	-	-	698	-	
HCM Lane V/C Ratio	1.166	-	-	0.132	-	
HCM Control Delay (s)	149.1	-	-	10.9	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	13.7	-	-	0.5	-	

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	775	80	30	300	45	10
Future Vol, veh/h	775	80	30	300	45	10
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, %	4	56	63	5	74	75
Mvmt Flow	842	87	33	326	49	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	929	0	1278	886
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	392	-
Critical Hdwy	-	-	4.73	-	7.14	6.95
Critical Hdwy Stg 1	-	-	-	-	6.14	-
Critical Hdwy Stg 2	-	-	-	-	6.14	-
Follow-up Hdwy	-	-	2.767	-	4.166	3.975
Pot Cap-1 Maneuver	-	-	537	-	131	257
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	537	-	121	257
Mov Cap-2 Maneuver	-	-	-	-	121	-
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	510	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		51.9	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	134		-	-	537	-
HCM Lane V/C Ratio	0.446		-	-	0.061	-
HCM Control Delay (s)	51.9		-	-	12.1	0
HCM Lane LOS	F		-	-	B	A
HCM 95th %tile Q(veh)	2		-	-	0.2	-

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	385	370	65	185	145	25
Future Vol, veh/h	385	370	65	185	145	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	180	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	14	12
Mvmt Flow	418	402	71	201	158	27
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	820	0	761	418
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	343	-
Critical Hdwy	-	-	4.12	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.218	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	809	-	357	614
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	809	-	326	614
Mov Cap-2 Maneuver	-	-	-	-	326	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	632	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.6	23.8			
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	614	-	-	809	-
HCM Lane V/C Ratio	0.483	0.044	-	-	0.087	-
HCM Control Delay (s)	26	11.1	-	-	9.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0.3	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	855	335	10	1	10
Future Vol, veh/h	25	855	335	10	1	10
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	27	929	364	11	1	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	375	0	-	0	1353	370
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	983	-
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	1183	-	-	-	165	676
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	362	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1183	-	-	-	157	676
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	362	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		12.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1183	-	-	-	520	
HCM Lane V/C Ratio	0.023	-	-	-	0.023	
HCM Control Delay (s)	8.1	0	-	-	12.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	755	320	10	1	10
Future Vol, veh/h	30	755	320	10	1	10
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	33	821	348	11	1	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	359	0	-	0	1241	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	887	-
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	1200	-	-	-	193	690
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1200	-	-	-	183	690
Mov Cap-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	402	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		11.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1200	-	-	-	551	
HCM Lane V/C Ratio	0.027	-	-	-	0.022	
HCM Control Delay (s)	8.1	0	-	-	11.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	

Intersection						
Int Delay, s/veh	525.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↱	
Traffic Vol, veh/h	235	150	385	630	160	210
Future Vol, veh/h	235	150	385	630	160	210
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, %	4	3	8	13	14	5
Mvmt Flow	255	163	418	685	174	228
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	418	0	1858	337
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	1521	-
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	-	-	1110	-	~ 75	698
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	187	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1110	-	~ 29	698
Mov Cap-2 Maneuver	-	-	-	-	~ 29	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	~ 73	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.9		\$ 2504.1	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	64		-	-	1110	-
HCM Lane V/C Ratio	6.284		-	-	0.377	-
HCM Control Delay (s)	\$ 2504.1		-	-	10.2	0
HCM Lane LOS	F		-	-	B	A
HCM 95th %tile Q(veh)	45.6		-	-	1.8	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↱	
Traffic Vol, veh/h	325	30	20	940	55	60
Future Vol, veh/h	325	30	20	940	55	60
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, %	4	56	63	5	74	75
Mvmt Flow	353	33	22	1022	60	65
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	386	0	1436	370
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	1066	-
Critical Hdwy	-	-	4.73	-	7.14	6.95
Critical Hdwy Stg 1	-	-	-	-	6.14	-
Critical Hdwy Stg 2	-	-	-	-	6.14	-
Follow-up Hdwy	-	-	2.767	-	4.166	3.975
Pot Cap-1 Maneuver	-	-	905	-	103	540
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	244	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	905	-	97	540
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	230	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.2		69.4		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	170	-	-	905	-	
HCM Lane V/C Ratio	0.735	-	-	0.024	-	
HCM Control Delay (s)	69.4	-	-	9.1	0	
HCM Lane LOS	F	-	-	A	A	
HCM 95th %tile Q(veh)	4.6	-	-	0.1	-	

Intersection						
Int Delay, s/veh	83.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	200	200	60	580	370	65
Future Vol, veh/h	200	200	60	580	370	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	180	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	2	2	14	12
Mvmt Flow	217	217	65	630	402	71
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	434	0	977	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	760	-
Critical Hdwy	-	-	4.12	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.218	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	1126	-	~ 264	798
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1126	-	~ 249	798
Mov Cap-2 Maneuver	-	-	-	-	~ 249	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	415	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		282.3	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	798	-	-	1126	-
HCM Lane V/C Ratio	1.615	0.089	-	-	0.058	-
HCM Control Delay (s)	\$ 330.1	9.9	-	-	8.4	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	25.1	0.3	-	-	0.2	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	340	990	5	15	20
Future Vol, veh/h	5	340	990	5	15	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	5	370	1076	5	16	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1081	0	-	0	1459	1079
Stage 1	-	-	-	-	1079	-
Stage 2	-	-	-	-	380	-
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	645	-	-	-	142	265
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	645	-	-	-	141	265
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	691	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		28.3		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	645	-	-	-	192	
HCM Lane V/C Ratio	0.008	-	-	-	0.198	
HCM Control Delay (s)	10.6	0	-	-	28.3	
HCM Lane LOS	B	A	-	-	D	
HCM 95th %tile Q(veh)	0	-	-	-	0.7	