

TOWN-WIDE PEDESTRIAN SAFETY AUDIT



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PRELIMINARY PEDESTRIAN AUDIT
Needham, Massachusetts

EXECUTIVE SUMMARY

“A town that values the health and safety of its citizens can take small but important steps for pedestrians and the community as a whole.”

-Needham Resident

The Town of Needham recognizes the value of pedestrian safety and walking in general and has thus developed this Town-wide Pedestrian Safety Audit to improve upon the pedestrian environment and establish itself as a more walkable, livable and healthy town. This executive summary highlights the audit's goals as well as briefly discusses the recommendations intended for implementation.

PURPOSE OF THE PEDESTRIAN SAFETY AUDIT

As residents continue to voice concern over pedestrian safety throughout town, the Town of Needham has taken important steps to address such concerns. This Town-wide Pedestrian Safety Audit highlights high-risk pedestrian crossing locations in Needham, provides recommendations for potential pedestrian crossing treatments, and develops an implementation plan for enhancements as additional funding becomes available.

To accelerate the implementation of potential safety solutions, GPI completed an initial assessment to identify the critical crosswalk locations based on several criteria, including; roadway classification, traffic speeds, proximity to schools, transit, religious centers, parks, and civic destinations, adequacy of existing street lighting, the occurrence of pedestrian related collisions and community referenced locations. Based on these initial recommendations, the following nine (9) locations were identified, and construction has been advertised:

- Webster Street at May Street
- Webster Street at Southern H.S. Drive
- Great Plain Avenue at Hillcrest Road
- Great Plain Avenue at Wilshire Park
- Central Avenue at Cedar Street (Add Alternate 2)
- Webster Street at Northern H.S. Drive
- Central Avenue at Newman Elementary School
- Great Plain Avenue at North Hill Road (Add Alternate 1)
- Great Plain Avenue at Broad Meadow Road

The Town-wide Pedestrian Safety Audit Report provides an inventory of all crosswalks in town, identifies locations for improvements and provides potential implementation projects. The report also explores implementing Safety Speed Zones in areas where vulnerable users may be present, reviews the value of adopting a town-wide 25 mph prima facie speed limit, and establishes criteria for installing new pedestrian crossings.

GOAL #1: SAFETY

Reduce the number/severity of pedestrian related collisions and decrease vehicle speeds within high priority locations.



GOAL #2: HEALTH

Promote walking and thus an increase in mobility and health especially within young children and the elderly community.



GOAL #3: EQUITY

Improve walkability and accessibility throughout Town for all users regardless of age, race, or socioeconomic status.



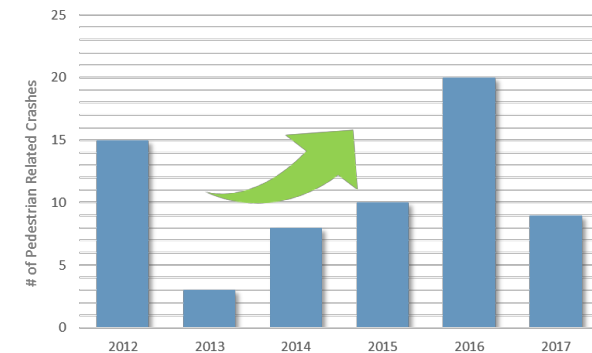
GOAL #4: COMMUNITY

Foster a sustainable community by increasing alternative transportation modes, stimulating human interaction and supporting the economy.



THE NEED FOR IMPROVEMENTS AT PEDESTRIAN CROSSINGS

Speed can have a detrimental effect on pedestrian safety. The faster a vehicle strikes a pedestrian, the more likely that pedestrian will sustain a severe injury, or the collision will result in fatality. Statistics highlighted in “Impact Speed and Pedestrian’s Risk of Severe Injury or Death”, published by Brian Tefft with the AAA Foundation for Traffic Safety, indicates that if a vehicle were to strike a pedestrian at 40 mph, there is a 77% likelihood that a pedestrian will suffer from a severe injury or death. Conversely, if a vehicle were to strike a pedestrian traveling at 25 mph, there would be an 18% likelihood that the pedestrian would suffer from a severe injury or death. As such pedestrians face disproportionately higher injury risks than motorists. Pedestrian related collisions in Needham doubled from 2015 to 2016 and have been rising steadily since 2013. These statistics combined, depict the importance of slowing down motor vehicles, specifically in the vicinity of pedestrian crossings.



See **SECTION 3.0** for more information regarding Needham demographics, commuting trends and the existing roadway and pedestrian context.

POLICY RECOMMENDATIONS – TOWNWIDE SPEED LIMIT CHANGE

Given the passage of new legislation that allows municipalities to reduce the statutory speed limit from 30 to 25 miles per hour on any or all local, non-state roadways in a thickly settled or business district, the Town of Needham expressed interest in exploring the possibility of implementing a lower 25 mph speed limit. Supporting factors include community level support, adjacent city opt-in and increased pedestrian survival rates at lower speeds in the event of vehicle-pedestrian crashes. According to the research, opposing factors include very minor effects on vehicle speeds and a decrease in driver compliance. Studies show that there is little change in driving speeds after a lower speed limit sign is posted mostly because drivers are generally influenced by the roadway conditions and typically travel at a rate of speed they perceive to fit the context of the road. Therefore, simply lowering the speed limit, without other physical changes to the roadways, could result in a greater disparity in vehicle travel speeds, increased driver compliance and a false sense of safety for bikes and pedestrians, all of which could result in

SECTION 4.1 - IS 25 THE NEW 30?

GPI recommends no change to the town-wide statutory speed limit of 30 miles per hour but rather to focus on implementing 20-mph speed safety zones in areas where vulnerable users may be present and enforcement efforts can be targeted. See Section 4.1 to review case studies from other cities across America and their findings following speed changes.

additional conflicts. A major component in combating speeds is to change the context of the roadway through traffic calming efforts where the physical characteristics of the roadway alter the motorist’s perception of what is a reasonable speed to travel and enforcement. In the current funding environment, it would likely be difficult for local police to effectively enforce a 25-mph statutory speed limit town wide. At this time, GPI recommends no change to the town-wide statutory speed limit of 30 miles per hour but rather to focus on implementing 20-mph speed safety zones in areas where vulnerable users may be present and enforcement efforts can be targeted.

POLICY RECOMMENDATIONS – IMPLEMENTING SAFETY ZONES

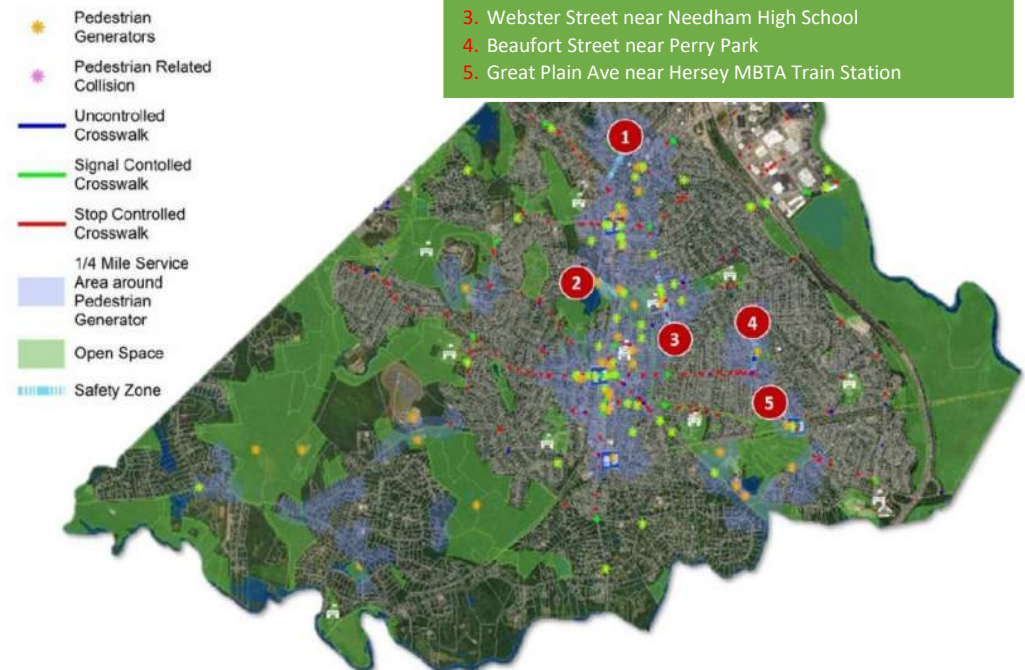
Per Massachusetts State Law, Safety Zones are regulatory speed limits set at 20 miles per hour intended to be used in areas where vulnerable road users are likely to be present, such as parks and playgrounds, senior citizen housing and centers, hospitals or other medical facilities, high school and higher education centers, transit centers and daycare facilities. Vulnerable road users include pedestrian and bicyclists especially children, people with disabilities, and the elderly. Following a spatial assessment of pedestrian generators in relation to the existing roadway and pedestrian network, GPI identified 5 roadway segments that warrant further evaluation for the implementation of safety zones. These are graphically depicted in the top right image and explained in further detail in Section 4.2. To promote the multi-modal nature of the Safety Zones and provide contrast to motorists that they are entering a “sensitive” roadway context, GPI recommends the following be incorporated at each Safety Zone:

- Appropriate signage to lawfully designate the safety zone
- Uncontrolled crosswalks falling within a safety zone be enhanced with a Rectangular Rapid Flashing Beacon and be marked with a continental style crosswalk for greater visibility
- Stripe roadway segments within Safety Zones to provide green-colored pavement shoulders which can be used to designate bicycle travel

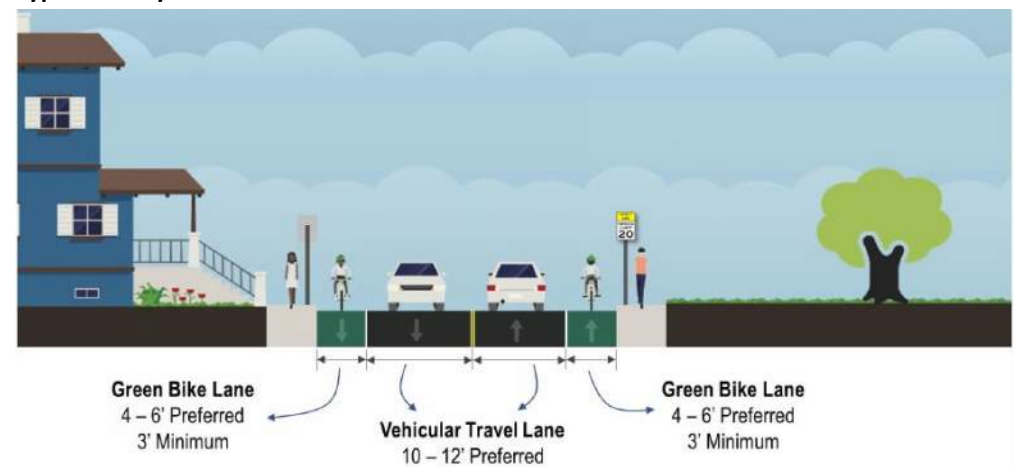
SECTION 4.2 – SAFETY ZONES

In total, GPI identified 5 roadway segments that warranted further evaluation for the implementation of a safety zone based on adjacent land use, number of access points along a given segment (including crosswalks, driveways and side streets), and segment length. See Section 4.2 to learn more about safety zones and for conceptual cross sections and price breakdowns for each proposed zone.

PROPOSED SAFETY ZONE LOCATIONS



Typical Safety Zone Cross Section



POLICY RECOMMENDATIONS – CROSSWALK INSTALLATIONS

A critical component of pedestrian safety is implementing crossing treatments that foster sustainable safety and are appropriate for a location given the roadway context and surrounding land use. It is recommended that the Town of Needham adopt a crosswalk installation policy to ensure that crosswalks are implemented in locations where it is safe to establish a crossing, and comply to Federal and State standards. Section 4.3 proposes a crosswalk evaluation process and installation policy based on pedestrian activity, vehicular speeds and volumes, existing street lighting and roadway characteristics. A flowchart is provided with recommendations as to whether or not a crosswalk is warranted at a specific location and typical crosswalk details are provided for a number of different case scenarios.

SECTION 4.3 – CROSSWALK POLICY

GPI recommends the Town adopt a crosswalk installation policy to ensure crosswalks are installed in safe locations where they are warranted and in compliance with Federal and State regulations. See Section 4.3 to learn more about where crosswalks should be installed and to review a proposed crosswalk policy as developed by GPI.

CROSSWALK AUDIT – DATA COLLECTION METHODOLOGY AND RESULTS

In early spring of 2019, GPI conducted an inventory of all of Needham's crosswalks as provided by the Town. In total, there are 431 crosswalks with the following control breakdown: 69 uncontrolled, marked crossings, 230 Stop controlled crossings, 76 Signalized crossings and 56 Parking Lot (Private). Prior to the field inventory, all crosswalks were mapped in a GIS database, provided a unique identifier, and populated with a brief location description. To streamline the data collection process, ESRI mobile applications, Collector and Survey123, were utilized, allowing mass data collection within an organized platform. Further detail as to the attributes collected in the field can be reviewed in Section 5.1. Following the collection, GPI reported findings on several measures including pavement marking condition, sign condition (where applicable), wheelchair ramp presence, sight distance availability, and street lighting presence. These findings can be reviewed in Section 5.2.

SECTION 5.0 – CROSSWALK AUDIT

GPI conducted a crosswalk inventory in Spring 2019 to identify areas throughout town where improvements to the pedestrian network were needed. Section 5.1 outlines the data collection methodology while Section 5.2 reports the findings of the inventory.



IMPLEMENTATION EFFORTS

Following an in-depth analysis of the data collected during the crosswalk inventory as well as taking into consideration pedestrian related crashes, community feedback and high demand areas within the pedestrian network, GPI identified and recommended several pedestrian safety enhancement projects throughout the Town of Needham. They are as follows:

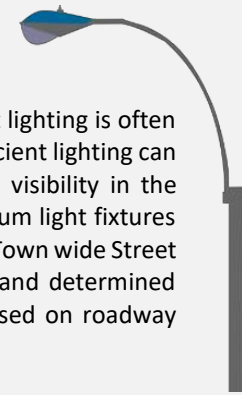
PROJECT	WORK DESCRIPTION	SECTION
High Risk Crosswalk Locations	Eight high risk crosswalk locations were selected for accelerated safety improvements based on several criteria. Construction documents have been developed to provide Rectangular Rapid Flashing Beacons and other supplemental crossing enhancements at each of the eight locations.	6.1
Safety Zone Implementation	GPI identified 5 roadways segments that warranted further evaluation for the implementation of a safety zones. Safety zones are recommended to be implemented with appropriate signage, pedestrian crossing enhancements (RRFBs and continental crosswalks), and dedicated bicycle lanes.	6.2
Webster Street Safety Corridor	In an effort to slow traffic speeds and provide safer and more comfortable accommodations for pedestrian and bicyclists, it is recommended that a complete streets project along Webster Street be implemented.	6.3
Pavement Marking Annual Program	The Town of Needham should continue its practice of regular pavement marking updates. As crosswalks are refreshed, GPI recommends the Town transition to continental style crosswalks as they provide additional visibility to drivers.	6.4
Wheelchair Ramp Accessibility	Although ramp dimensions were not taken as part of this project to assess ADA compliancy, the availability of wheelchair ramps was documented. It is recommended to install wheelchair ramps at crosswalk locations currently lacking ramps to ensure accessibility throughout the pedestrian network (30 locations).	6.5
Traffic Sign Upgrade	It is recommended that the Town update traffic signs in poor condition or in non-conformance with MUTCD standards (total 23 signs). It is also recommended that pedestrian warning signage be installed at uncontrolled crossings lacking any signage to provide enhance visibility (38 at crosswalk sign assemblies and 50 advance warning sign assemblies).	6.6
Street Lighting at Uncontrolled Crosswalks	It is recommended that the Town install street lighting at uncontrolled crosswalks currently lacking any street lighting to enhance visibility during nighttime conditions (12 locations). It is recommended that future lighting installed at these locations be installed using the preferred FHWA lighting layout. In the future, should funding become available, it is recommended that the Town modify/add lighting at locations where existing lighting does not align with the preferred FHWA street lighting recommendations.	6.7
Crosswalk Installation along Highland Avenue	It is recommended that the Town of Needham consider installation of a marked crosswalk along Highland Avenue to service the pedestrian demand at this location. It is recommended that one high visibility crosswalk, centrally located between the two stairways, be installed in conjunction with curb extensions and an RRFB system. It should be noted that while the pedestrian volumes do not meet MUTCD pedestrian thresholds, the thresholds described in Section 4.3 would allow for the installation of a crosswalks at this location.	6.8
Dedham Avenue at Harris Avenue	Given the complex nature of this intersection, it is recommended that the Town implement short term improvements to enhance pedestrian access at this location. It is recommended that the Town consider a long term reconstruction project to address geometry issues.	6.9

SECTION 6.0 – IMPLEMENTATION

GPI identified and recommended several pedestrian safety enhancement projects throughout the Town of Needham. Section 6.0 describes each proposed implementation project in detail and provides spatial mapping for each topic. It is intended that each project improve upon the pedestrian network throughout the Town of Needham for years to come.

IMPORTANT NOTE: STREET LIGHTING

Adequate street lighting is critical to the effectiveness of a crossing location. Street lighting is often installed with the focus on motorists rather than the safety of the pedestrians. Sufficient lighting can drastically improve the pedestrian safety at a crosswalk by providing enhanced visibility in the nighttime context. The Town of Needham recently replaced all High Pressure Sodium light fixtures to LEDs. Following the completion of the LED replacement project GPI developed a Town wide Street Lighting Assessment which evaluated lighting levels along the Town's roadways and determined locations that may need additional lighting to fit the context of the roadway based on roadway classification and pedestrian activity levels.



PEDESTRIAN CROSSING DESIGN GUIDANCE

GPI developed a toolbox as a reference for the Town when designing pedestrian crossings in the future. The toolbox describes several pedestrian enhancement treatments in terms of each treatment's objectives, advantages, disadvantages and approximate costs. Good engineering judgment shall be applied to all crosswalk enhancements and future installations. Some of the treatments include pavement markings, traffic signs, traffic calming devices, crossing beacons and pedestrian signals, accessibility treatments, street lighting, education and enforcement.

See **SECTION 7.0** to learn more about potential pedestrian crossing enhancement treatments the Town can implement at crosswalks.

It is our hope, that by utilizing this Report as a guideline to enhance and install crosswalk locations that the Town of Needham see a reduction in the number/severity of pedestrian related crashes, an increase in mobility and health amongst its residents, an improvement in walkability and accessibility for all its residents regardless of age, race, or socioeconomic status, and lastly, a sense of community.

1.0

INTRODUCTION



1.1 INTRODUCTION TO THE PEDESTRIAN SAFETY AUDIT

As residents continue to voice concern over pedestrian safety throughout town, the Town of Needham has taken important steps to address such concerns. One of those important steps includes the development of a Town-wide Pedestrian Safety Audit to highlight high-risk pedestrian crossing locations in Needham, provide recommendations for potential pedestrian crossing treatments, and develop an implementation plan for future use as additional funding becomes available.

To accelerate the implementation of potential safety solutions, GPI completed an initial abbreviated Pedestrian Safety Audit to highlight the top 10 critical crosswalk locations in the Town of Needham based off several criteria such as roadway classification, traffic speeds, proximity to schools, transit, religious centers, parks, and civic destinations, adequacy of existing street lighting, the occurrence of pedestrian related collisions and community referenced locations. The abbreviated Pedestrian Safety Audit was completed in Fall 2018 and is included in the Appendix of this report. Based on the initial recommendations, 8 locations have been selected and GPI is currently developing construction documents for the installation of several Rectangular Rapid Flashing Beacons (RRFBs) and other supplemental crossing treatments.

This report builds on those efforts, provides a town-wide crosswalk inventory, identifies locations for improvement and provides potential implementation projects. The report also explores implementing Safety Speed Zones in areas where vulnerable users may be present, reviews the value of adopting a town-wide 25 mph prima facie speed limit, and establishes criteria for installing new pedestrian crossings.



1.2 AUDIT GOALS

SAFETY

The main goal of the pedestrian safety audit is to identify top priority crossing locations throughout town and implement safety related measures to **reduce the number/severity of pedestrian related collisions**. The recommended improvements will also strive to decrease vehicle speeds within high priority locations. Providing pedestrians with safe walking facilities increases the level of comfort and ensures a high quality of life for both residents and visitors of Needham.

HEALTH

By providing safe pedestrian facilities the Town is promoting **walking and thus an increase in mobility and health**. This is important for young children to develop healthy lifestyle habits as well as for the older community for which walking is a valuable, low impact form of exercise.

EQUITY

Improving pedestrian facilities improves the walkability and accessibility of the Town **for all users regardless of age, race, or socioeconomic status**. An inclusive pedestrian network factors in underlying socioeconomic (income and automobile availability) and health (disabilities) factors to provide facilities where they may be needed most. Providing a more robust, safe pedestrian network throughout town can increase mobility not only through walking but will also allow for greater access to public transportation via multiple MBTA commuter rail

stations. Public transportation provides a low-cost travel method that allows for personal economic opportunity and protects mobility in heavily congested areas.

COMMUNITY

A safe and connected pedestrian network **fosters a sustainable community by increasing alternative transportation modes, stimulating human interaction and supporting the economy**. Safe walking access to schools, downtown retail areas, recreation and parks fosters a more livable community by bringing people together and creating a sense of place.

1.3 REPORT CONTENTS

Section 2.0 – The Planning Process: Briefly discusses project management and breaks down data received from the community engagement efforts.

Section 3.0 – Existing Conditions: This section describes existing demographics, commuting trends, the roadway/transit network, traffic speeds/volumes, pedestrian related crashes, pedestrian generators, and street lighting.

Section 4.0 – Policy Recommendations: This section provides recommendations regarding lowering the town wide prima facie speed limit in thickly settled areas from 30 miles per hour to 25 miles per hour as well as identifying roadway segments that would benefit from the implementation of Safety Speed Zones (20 mph). This section also provides a framework for establishing a crosswalk implementation policy.

Section 5.0 – Pedestrian Network Assessment and Needs: This section breaks down the methodology and findings from a town-wide crosswalk inventory. It identifies crucial areas where pedestrian crossing treatments are needed most as well as identifies town wide improvement efforts that can be implemented over time as funding becomes available.

Section 6.0 – Implementation: This section identifies several potential implementation projects based on the findings from the crosswalk inventory.

Section 7.0 – Pedestrian Crossing Design Guidance: This section acts as a toolkit and briefly identifies advantages/disadvantages of several pedestrian crossing treatments that can be implemented at crosswalks throughout town.



2.0

THE PLANNING PROCESS

2.1 PROJECT MANAGEMENT

The project management team consisted of representatives from the Town of Needham's Public Works Department, and the consulting team, Greenman-Pedersen, Inc. (GPI). The project management team worked together throughout the 6-month project to guide the technical work and review project deliverables.

2.2 COMMUNITY ENGAGEMENT

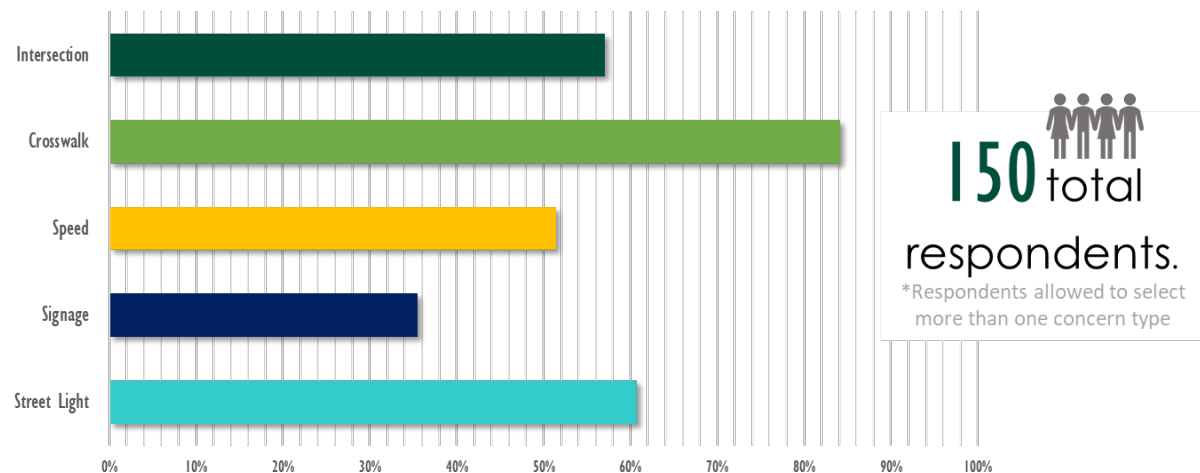
The most successful planning and design efforts result from an open and engaging public process. Involving the public early in the planning process encourages participation and develops a sense of engagement and cooperation not found in a traditional linear design approach. Public acceptance is critical to project success and facilitates approvals by governing bodies.

Preceding the engineering and design efforts, the Town's Traffic Management Advisory Committee (TMAC) heard many community members voice concerns related to pedestrian safety. Citizens had the ability to submit traffic concerns to the TMAC via an online form. These submittals have been reviewed, summarized and tabulated to

develop a database of public concerns and help prioritize safety improvement efforts. Based on approximately 150 completed forms, approximately 85% of respondents indicated that safety at crosswalks was the primary concern, followed by 60% of respondents indicating that street lighting was an issue in Needham. Many respondents indicated that pedestrian safety risk is increased during school arrival and dismissal times when children are walking to and from school as well as night-time hours, specifically in inclement weather (rain/snow/ice).

A high density of concerns focused around the high school as well as along walking routes to other Needham Public Schools including Newman Elementary, Pollard Middle, and Broadmeadow Elementary. Locations identified by concerned citizens were identified as top priority during the preliminary pedestrian safety audit.

Citizens also provided insight to potential safety measures they'd like to see implemented. Many referenced high-visibility crosswalks, rectangular rapid flashing beacons, and increased street lighting- all of which will be included in a pedestrian crossing toolbox which the Town can utilize to implement safety improvement efforts over time.



“A town that values the health and safety of its citizens can take small but important steps for pedestrians and the community as a whole.”

“No marked crosswalk, never mind a pedestrian light. No one EVER descends those stairs and doubles back to cross at the light at Highland and Rosemary. All day long students dart across Highland to get to Sudbury Farms or Dunkin Donuts during school hours. Also an issue during sporting events at the field. **The stairs LEAD you directly to a spot to cross the street with no protection whatsoever.** This is as dangerous as the dark crosswalks on Webster where the accident occurred.”

“There are many pedestrians of all ages that cross Webster Street outside of the morning and afternoon school hours since it is the dividing line between many of the Heights neighborhoods and the downtown region. Webster is a well-traveled cut-through street in town and despite the posted speed limits, cars travel at an excessive rate of speed in both directions because there are no stop signs between Great Plain Ave and West Street. I witness it as I am pulling out of my driveway each day and **I am in fear when my kids have to cross the street to visit their friends.**”

“Cars speed around the sharp curve on GPA prior to Wilshire Park. There is a crosswalk there, but **you can't see the cars come around the bend unless you take a step or two into the road.** The crosswalk is dangerous not only for pedestrians, but also cars exiting Wilshire Park onto GPA.”

“There is **not sufficient lighting** of the streets around town, including poor visibility around the crosswalk by Hersey train station.”

Low density community concerns



High density community concerns

3.0

EXISTING CONDITIONS



NEEDHAM BY THE NUMBERS

Needham, Massachusetts, conveniently located just 10 miles southwest of Boston is a lively community comprised of approximately 30,000 residents according to the latest 2010 census data.

Needham is a predominately white community (approximately 91%). The remaining racial makeup of the town is 1% African American, 0.04% American Indian and Alaska Native, 6.1% Asian, 0.03% Native Hawaiian and Other Pacific Islander, 0.44% Other Races, and 1.62% Two or More Races.

The median age in Needham is 43 years old. Needham has a significant percentage of youth (under 18 years old) and senior citizens (65 years and older), comprising approximately 30% and 16% of the community, respectively. Pedestrian safety improvements should be focused on providing safe and essential connections for people of all ages.

According to the American Community Survey 2012-2016 5-Year Estimates, the median

household income in Needham is \$139,477 compared to a median household income of \$70,954 for the Commonwealth of Massachusetts and a U.S. median household income of \$55,322. Approximately 3.2% of the population in Needham lives below the poverty line. All improvements should be implemented with equity in mind, prioritizing efforts in locations where citizens rely most on sidewalks and crosswalks as well as public transportation and commuter rail stations, allowing broadened opportunities for economic growth.

Approximately 7.0% of the Needham population has a reported disability. As such, pedestrian related safety improvements must meet accessibility standards and be well-maintained to facilitate movement for those who rely on wheelchairs and other mobility devices.

7%

of population is disabled



30%

of population is 18 years old or younger

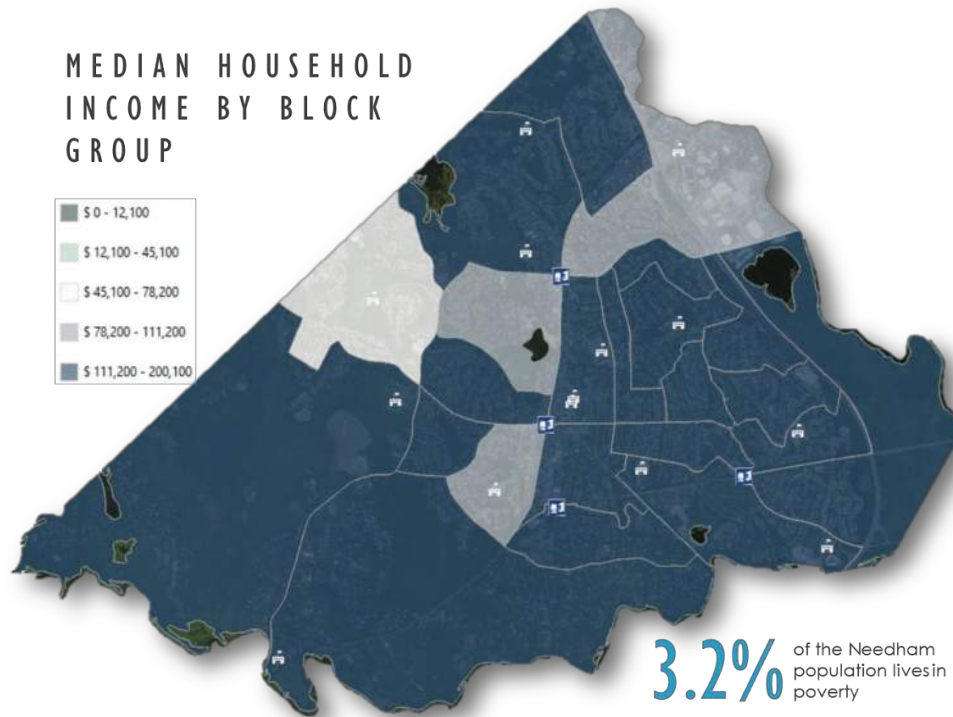
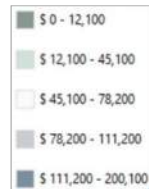


16%

of population is 65+ years old



MEDIAN HOUSEHOLD INCOME BY BLOCK GROUP

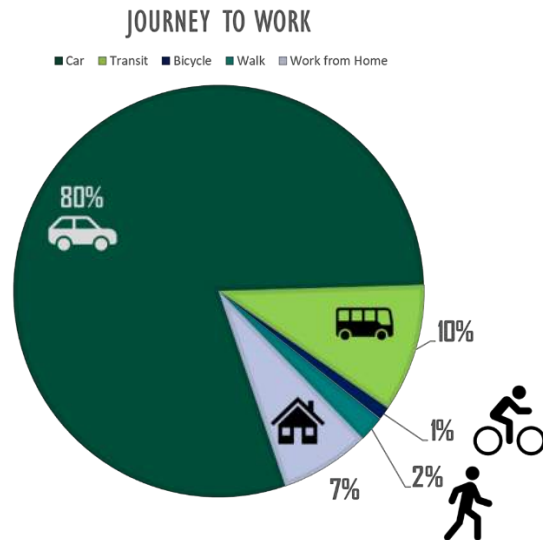


3.2%

of the Needham population lives in poverty

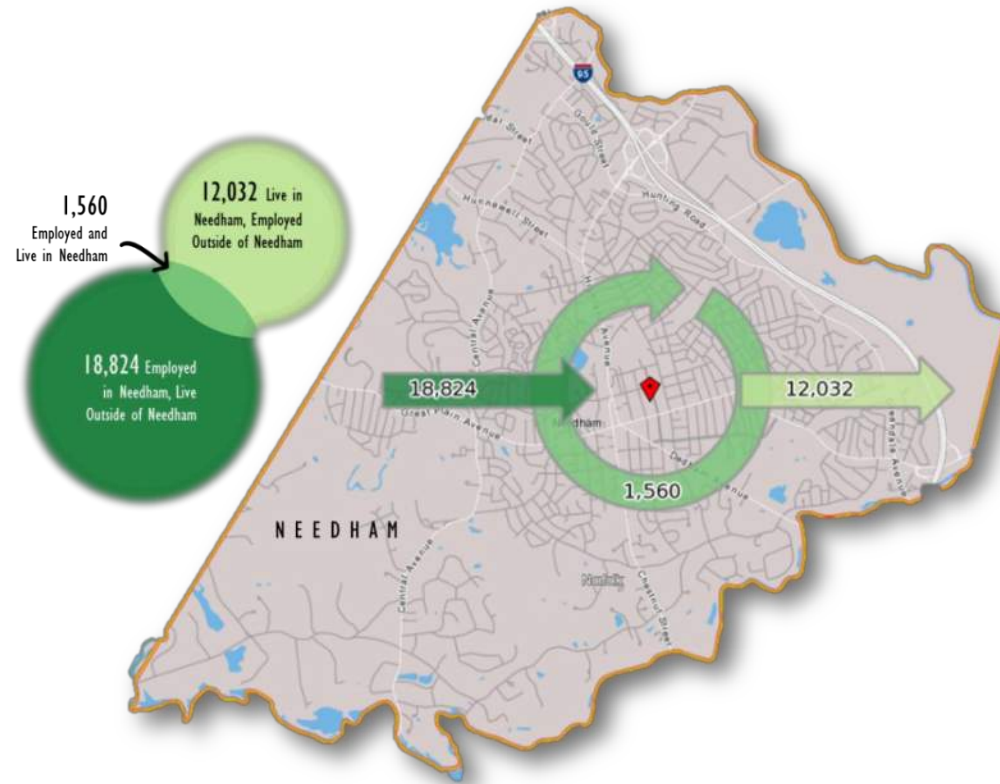
Walking has always been an affordable means of commuting to and from work/school and offers many benefits to a community including health, safety, environmental, and economic benefits.

Travel by residents in Needham is currently auto dominated, with approximately 80% of residents traveling to work by means of a car, truck, or van, according to commuting data presented in the 2012-2016 American Community Survey 5-Year Estimate. About 10% of residents utilize public transportation, most of which are likely commuters using the MBTA commuter rail service to and from Boston. Approximately 2% of residents walk to work and another 1% bike to work, while about 7% of residents in Needham work from home.



WalkScore is a private company that provides walkability and apartment search tools through a website and mobile applications. Its flagship product is a large scale, public access walkability index that assigns a numerical walkability score to any address in the United States. The tool measures walkability on a rating from 0 to 100 (100 being optimal) based on walking routes to destinations such as grocery stores, schools, parks, restaurants and retail. According to WalkScore ratings, the Town of Needham has a WalkScore rating of 41, a TransitScore rating of 22 and a BikeScore rating of 38. For reference, Boston has a WalkScore rating of 82 while surrounding communities such as Wellesley, Dedham and Newton have WalkScore ratings of 40, 37, and 53 respectively. The average WalkScore rating in Massachusetts is 48.

OnTheMap data from the United State Censes Bureau (Center for Economic Studies) which documents Longitudinal Employer-Household Dynamics was researched to characterize workforce dynamics for the Town of Needham. It is interesting to note that Needham had a net inflow of employees. There is a significant share of outbound workers, but there are significantly more inbound employees. Promoting walkability and alternative modes of transportation is critical to attracting more business to Needham.



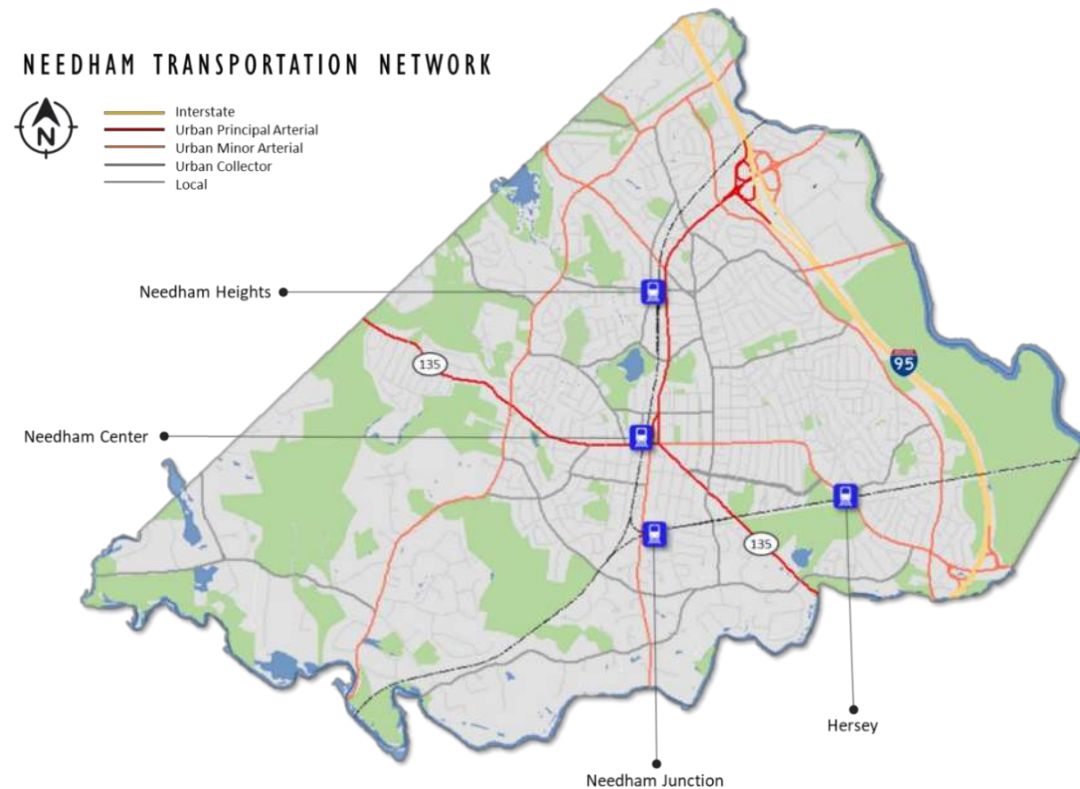
3.1 ROADWAY/TRANSIT NETWORK

Needham is well integrated into the regional roadway network. Interstate 95, the main interstate highway along the east coast, provides four exits which service the Town of Needham. Massachusetts Route 135 (Great Plain Avenue/Dedham Avenue) also passes through Needham providing regional access to Route 20 in Northborough to the west to Interstate 95 in Dedham to the east.

Needham owns and maintains approximately 123 centerline roadway miles with the following classification breakdown: 4% Urban Principal Arterial, 11% Urban Minor Arterial, 17% Urban Collector, and 68% Local Roadway. These roadway classifications function together to serve the needs of the traveling public. The functional classification of a roadway limits its design. For example, principal arterials and interstate highways are meant to service high volumes of traffic at moderate to high speeds. Therefore, design elements such as traffic calming measures would deter from that function and thus are not applicable on those roadways. It is important that pedestrian related design elements be implemented in ways which foster sustainable safety, i.e. implementing measures on roadways most suitable for pedestrian travel and those that carry the larger walking demands. The Town is recommended to reference the 2016 Traffic Calming Guidelines prepared by the Institute of

Transportation Engineers New England Section Technical Committee (NEITE), which is an update to the originally prepared guidelines published in November 2000. This document introduces a wide array of traffic calming techniques to varying conditions as well as provides guidance to the applicability of said traffic calming techniques. GPI recommends the Town utilize this document when exploring traffic calming measures to attain information regarding design considerations and typical context uses.

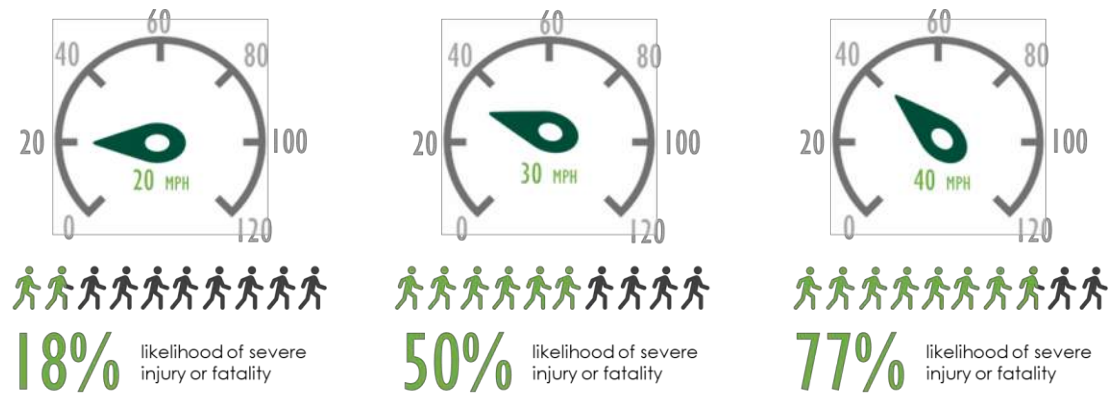
Needham is well integrated into the MBTA's commuter rail system, with 10% of the population commuting to work via public transportation. There are four commuter rail stops in Needham including Needham Heights, Needham Center, Needham Junction, and Hersey Station. The MBTA commuter Rail provides an economic mode of transportation, especially for those commuting to and from Boston for work. It is important to note that most transit trips start with a walking trip. Therefore, incorporating/enhancing pedestrian safety in the vicinity of these commuter rail stations is crucial to a successful public transportation system and encourages the use of alternative modes of travel.



3.2 TRAFFIC SPEEDS/VOLUMES

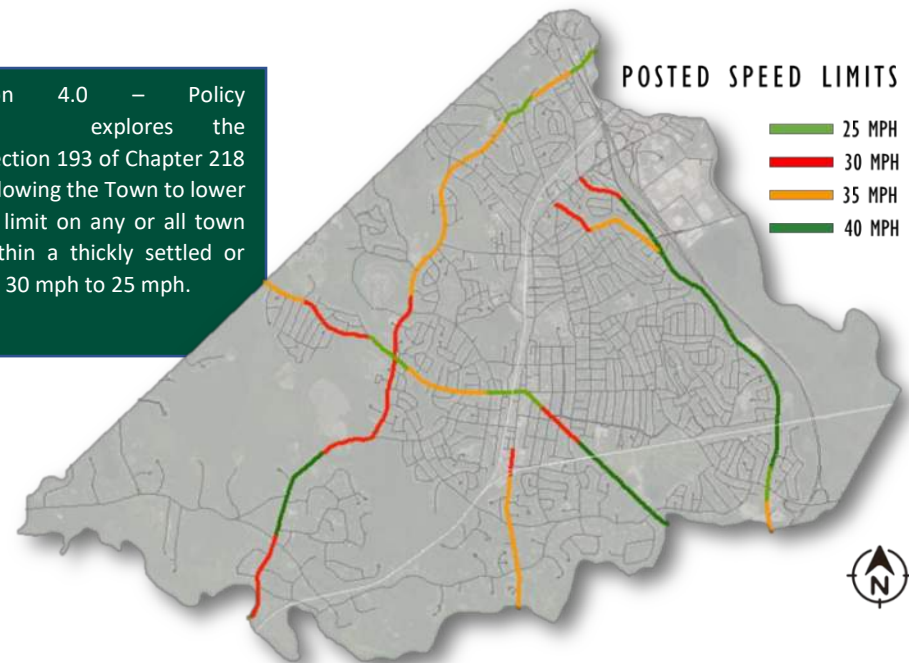
Speed can have a detrimental effect on pedestrian safety. The faster a vehicle strikes a pedestrian, the more likely that pedestrian will sustain a severe injury or the collision will result in fatality. Statistics highlighted in “Impact Speed and Pedestrian’s Risk of Severe Injury or Death”, published by Brian Tefft with the AAA Foundation for Traffic Safety, indicates that if a vehicle were to strike a pedestrian at 40 mph, there is a 77% likelihood that a pedestrian will suffer from a severe injury or death. Conversely, if a vehicle were to strike a pedestrian traveling at 25 mph, there would be an 18% likelihood that the pedestrian would suffer from a severe injury or death. These statistics depict the importance of slowing down motor vehicles, specifically in the vicinity of a pedestrian crossing. Therefore, uncontrolled crosswalks, specifically those at midblock locations, in higher speed zones should be given priority to accelerated implementation.

Road speeds are also associated with the functional classification of a roadway, or the desired purpose or use of the roadway. Arterial and collector roadways typically service a greater number of vehicles throughout the day and at more moderately paced speeds in comparison to local roadways. Existing speed limit data was collected from the Town of Needham and the Massachusetts Department of Transportation to display town wide speeds on arterial roadways.



Data source: Impact Speed and a Pedestrian's Risk of Severe Injury or Death, Brian Tefft, AAA Foundation for Traffic Safety, 2011.

Upcoming: Section 4.0 – Policy Recommendations explores the implementation of Section 193 of Chapter 218 of the Acts of 2016 allowing the Town to lower that statutory speed limit on any or all town owned roadways within a thickly settled or business district from 30 mph to 25 mph.



As part of the pedestrian safety audit, GPI conducted a data collection program to collect traffic volumes and speeds at specific locations where vulnerable pedestrians may be present as identified in the preliminary audit report. Automatic Traffic Recorder (ATR) counts were conducted on Wednesday, November 28, 2018 and Thursday November 29, 2018 at the following locations:

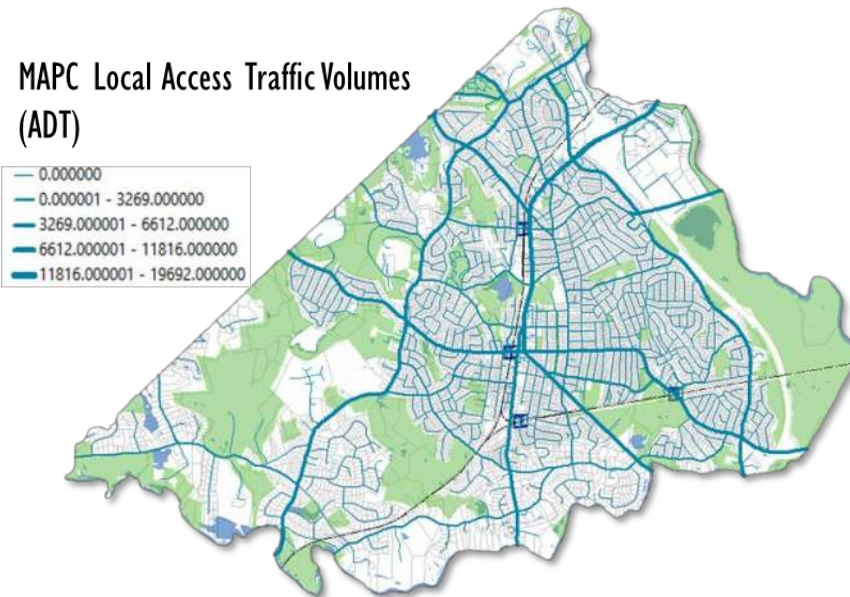
1. Highland Avenue south of Rosemary Street (between stairs to Memorial Field)
2. 642 Webster Street south of Brookline Street
3. 900 Greendale Avenue north of Enslin Road
4. Dedham Avenue east of School Street
5. Great Plain Avenue just east of Ridgeway Avenue

Table 1 provides a breakdown of the observed speeds and volumes. As seen in Table 1, the average speeds observed for all five locations were less than the posted speed limit while the 85th percentile speeds ranged from 1 mph to 5 mph over the posted speed limit.

Table 1. Count/Speed Program Results

Count Location	Direction: NB/EB				Direction: SB/WB				Total Volume (vpd)
	Posted Speed Limit (mph)	Average Speed (mph)	85th Percentile Speed (mph)	Volume (vpd)	Posted Speed Limit (mph)	Average Speed (mph)	85th Percentile Speed (mph)	Volume (vpd)	
Thursday, November 29, 2018									
Highland Avenue south of Rosemary Street (between stairs)	30	25	31	5995	30	24	30	6835	12830
642 Webster Street south of Brookline Street	30	28	32	5794	30	26	31	5685	11479
900 Greendale Avenue north of Enslin Road	40	35	38	3370	40	37	42	4100	7470
Dedham Avenue east of School Street	30	31	35	3988	30	28	32	3814	7802
Great Plain Avenue just east of Ridgeway Avenue	30	28	33	4296	30	27	32	4583	8879

Given the extent of scope, additional traffic volume and speed data were researched via means of the MassDOT Transportation Management System as well as the Metropolitan Area Planning Council (MAPC) Local Access Dataset which is a tool developed by the MAPC to provide a quantitative estimate of current or potential usability for walkers and bikers. Traffic volumes, where available, provide an important factor in assigning a network utility score for each roadway segment. As expected, roadways with arterial classification carry a higher volume of vehicles while collectors and local roadways carry lower volumes.

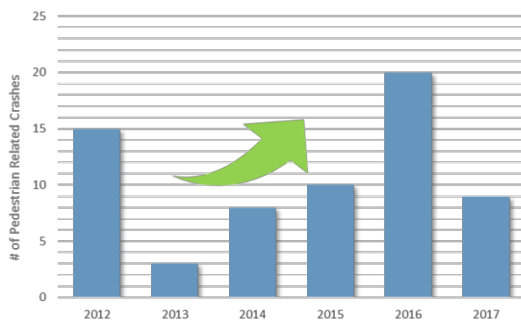


3.3 PEDESTRIAN RELATED CRASHES

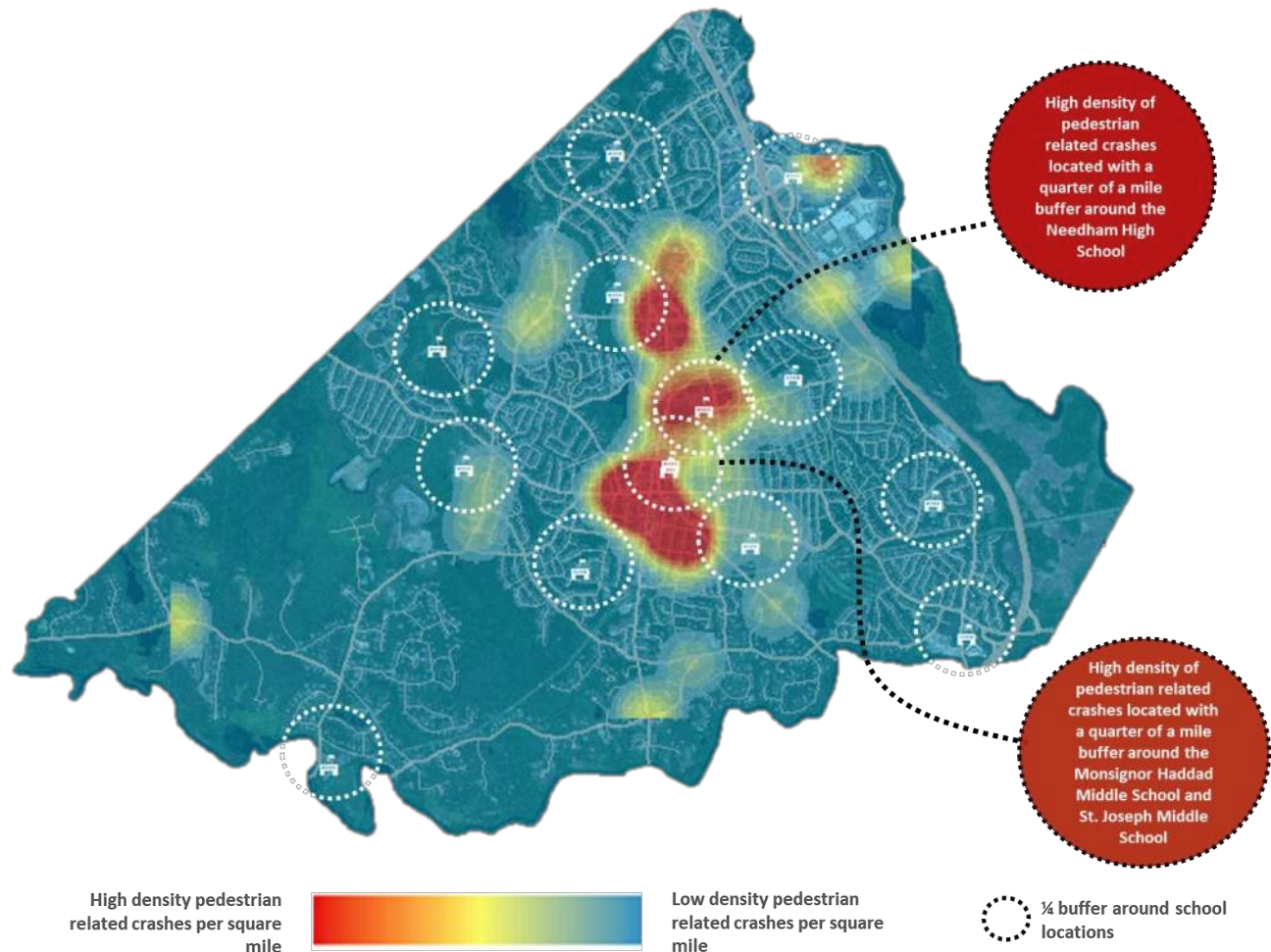
A primary goal of the pedestrian safety audit is to **reduce** the number and severity of crashes involving pedestrians.

Collision data have been researched for the latest available six-year period (2012-2017) on file with MassDOT via means of the MassDOT Crash Portal. Within the complete six-year study period, approximately 2,005 collisions were reported in Needham, excluding collisions which occurred on interstate highways (I-95) in Town. Of the total 2,315 reported collisions, 65 were related to pedestrians or approximately 2.8% of the Town's crashes. A total of 482 collisions resulted in injury, 11% of which (51 collisions) were pedestrian related, indicating that pedestrians face disproportionately higher injury risks than motorists.

Pedestrian related collisions in Needham doubled from 2015 to 2016 and have been rising steadily since 2013. Nationwide, the number of students walking to school has increased and could explain the significant increase in pedestrian related collisions in Needham as well.



All pedestrian related collisions were geolocated and a heat map was applied to allow for easy visualization of the data. Red areas indicate locations where pedestrian related crashes are more likely to occur based on data trends while blue areas indicate locations where pedestrian related crashes are less likely to occur. The map suggests that pedestrian related collisions are most likely in the downtown area (specifically along the Highland Avenue corridor and within close proximity to commuter rail stops) as well as in the vicinity of the Needham High School along the Webster Street corridor.



3.4 EXISTING STREET LIGHTING

Adequate street lighting is critical to the effectiveness of a crossing location. Street lighting is often installed more so with the focus on motorists rather than the safety of the pedestrians. Sufficient lighting can drastically improve the pedestrian safety at a crosswalk while also providing comfort, safety and security.

Street lighting is of specific concern in Needham as community concerns collected by the TMAC indicated that approximately 58% of respondents stated that pedestrian safety is especially detrimental during nighttime conditions or dusk/dawn. Many respondents stated that after school activities and sporting events are often let out after sunset when crossing guards are no longer on duty, increasing safety risks for students walking home from school especially in the winter months. During the crosswalk inventory, all uncontrolled crossings were evaluated for existing street lighting and whether it conformed to FHWA recommendations which are described in detail in Section 7.0 of this report.

The crash data collected from the MassDOT Crash Portal also indicates that lighting may be insufficient. Approximately 26% of all vehicle collisions in the Town of Needham from 2012-2016 were reported to have occurred during night time hours. Further analysis of the pedestrian related collisions indicates that 27% occurred during night hours.

The Town of Needham has been proactive in improving their nighttime context through means of upgraded streetlighting. In an effort to reduce energy consumption, greenhouse gas emissions and maintenance costs, the Town investigated the potential of a LED Conversion Project. Prior to a town-wide conversion effort, the Town conducted a LED Pilot Project in May of 2017 in which three streets (Stevens Road, Pinewood Road and Eaton Road) received LED lighting with different lighting temperatures and one street, Coolidge Avenue, received new High-Pressure Sodium lighting. Residents were asked to visit all four streets and indicate their lighting preference through an online survey. According to results posted on the Town's website, both residents and members of the Select Board, expressed a preference to install LED lighting fixtures in comparison to High-Pressure Sodium lighting. Following general acceptance from residents via the pilot program, the Town moved forward with a town wide LED Conversion Project that was completed in June 2019.

Following the completion of the LED Conversion Project, GPI researched and summarized industry recommended lighting levels based on several lighting publications for the Town to use as a tool for future street light installations as part of new construction. GPI also evaluated the expected lighting levels from the recently converted lights along the Town's roadways based on the manufacturer's specifications. A GIS map was then developed that depicts all the LED light fixtures and provides anticipated lighting footprints based on the Wattage of each different type of LED bulb. The map clearly illustrates lighted roadway segments versus dark roadway segments, allowing planners and city officials to quickly determine locations that may need additional lighting to fit the context of the roadway based on street classification and pedestrian activity levels. Below is an index of the overall map focusing on a particular neighborhood. Readers are encouraged to read through the *Town Wide LED Streetlighting Assessment* report developed by GPI for more information regarding street lighting.



4.0

POLICY RECOMMENDATIONS



4.1 SPEED LIMITS: IS 25 THE NEW 30?

New legislation signed by Governor Charlie Baker allows municipalities to reduce the statutory speed limit from 30 to 25 miles per hour on any or all local, non-state roadways in a thickly settled or business district. This legislation also allows municipalities to establish regulatory 20 mph safety zones in areas where vulnerable road users are likely to be present such as parks, playgrounds, senior citizen housing, hospitals and medical facilities, high schools and higher education centers, and daycare facilities. The recent passage of Sections 193 and 194 of Chapter 218 of the Acts of 2016 regarding changes to the Speed Limit Regulations under Chapter 90, Sections 17 and 18, was signed on August 9, 2016 and became effective on November 7, 2016.

What is a statutory speed limit? A statutory speed limit exists in the absence of a special speed regulation and official posted speed limit. Per MGL c. 90 § 17C statutory speed limits include the following:

- 20 MPH – School Zone
- 30 MPH – Thickly Settled or Business District for at least 1/8 of a mile
- 40 MPH – Undivided way outside of a thickly settled or business district for at least a ¼ of a mile

- 50 MPH – Divided way outside of a thickly settled or business district for at least ¼ of a mile

What is a thickly settled or business district? Massachusetts state law defines a thickly settled or business district as “the territory contiguous to any way which is built up with structures devoted to business, or the territory contiguous to where dwelling houses are situated at such distances as will average less than two hundred feet between them for a distance of a quarter of a mile or over”.

How are speed limits generally determined? Before the implementation of the new State legislation, speed limits were determined either by costly speed studies which take into account the 85th percentile speed rather than the general characteristics of a roadway or they are statutory speed limits which are those set by the State as appropriate speeds for that general type of roadway. In some cases, 30 miles per hour may be too high for some roadways given their land use context which jeopardizes the safety of vulnerable road users such as pedestrians and bicyclists.

As previously stated, speed can have a detrimental effect on pedestrian safety. The faster at which a vehicle strikes a pedestrian, the more likely that pedestrian will sustain a severe injury or result in fatality. According to the community engagement results, approximately 52% of respondents reported speeding as a point of concern in Needham. The act of lowering the speed limit from 30 mph to 25 mph would set the precedence to the community that the Town is prioritizing safety over speed. **However, how effective is lowering the speed limit by 5 mph and does the Town have the available resources to enforce the change?** The Town of Needham investigated the possibility of opting into the program and lowering the statutory speed limit on any or all town owned roadways within a thickly settled area or business district from 30 mph to 25 mph.

The Effects of Lowering the Speed Limit – What does the research say?

When considering lowering the speed limit, it is important to answer two questions: what effect does lowering the speed limit by 5 mph have on driver compliance and what is the effect on the number and severity of collisions? GPI conducted an extensive research effort to develop a sustainable recommendation to the Town.

Case Study: Boston, Massachusetts

On January 9, 2017, the City of Boston’s new prima-facia speed limit became 25 mph (from 30 mph) following the recent passage of new legislation with the intent of eliminating traffic crashes that result in death and serious injuries as stated in the city’s Vision Zero action plan. Following the implementation, the Insurance Institute for Highway Safety (IIHS) conducted a study to analyze vehicle speeds in Boston before and after the lower limit took effect. The study, released in August 2018, compared Boston’s vehicle speeds both before and after the change and compared them to control sites in Providence, Rhode Island where the speed limit remained the same at 30

mph. The study sites in both Boston and Providence included arterials, collectors and local roads and were all similar in that they had no more than one travel lane per direction and were located away from intersections on relatively flat, straight roadway segments and at least a half-mile away from any school or speed feedback sign. The study concluded that the 85th percentile speed remained unchanged at 31 mph before and after the reduced default speed limit took effect. ***This indicates that 85% of drivers are traveling at or below 31 mph and suggests that driver compliance has decreased (meaning a greater number of motorists are now violating the speed limit), and actual travel speeds have remained relatively unchanged since the implementation of the new speed limit.***

Case Study: New York City

New York City implemented a 25-mph default speed limit law on November 7, 2014 as part of the City's Vision Zero action plan. New York City's Vision Zero initiative states that driving at or below 25-mph decreases stopping distance, thus giving drivers and pedestrians more time to see each other and react. The vehicle stopping distance when traveling at 25-mph improves by 45 feet (23%) in comparison to the vehicle stopping distance of a vehicle traveling at 30-mph, thus providing more time for drivers to avoid a collision. ***This statement only holds true if the motorist is obeying the speed limit and is actually traveling at 25-mph.*** Therefore, to enforce the

new speed limits, NYC has implemented Automated Speed Enforcement to deter speeding. Automated Speed Enforcement was first tested in school zones throughout NYC. Speeding during school hours at the fixed camera locations dropped more than 63% and injuries recorded at these locations dropped over 14%, indicating that with proper enforcement, driver behavior can be modified, and the number and severity of collisions can be reduced.

Case Study: Chicago

Although Chicago's default speed limit is 30-mph, the City has also implemented Automated Speed Enforcement within its 20-mph school zones. Since implementation, severe crashes have decreased 11%. Within one week of camera installation, average speeds decreased 13% and by the end of the second month, violations had decreased 53%, once again proving that with proper enforcement, speeds are likely to decrease.

Case Study: Federal Highway Administration

Publication No. FHWA-RD 9 7-084, *Effects of Raising and Lowering Speed Limits on Selected Roadway Sections*, as published by the Federal Highway Administration (FHWA) in January 1997 was produced to determine the effects of raising and lowering speed limits on driver behavior for urban and rural nonlimited access highways. The study collected data at 100 sites on nonlimited access highways which consisted of 172 miles where speed limits were either lowered or raised as well as 83 comparison sites which consisted of 132 miles where posted speed limits remained as is across 22 states. Variations in the speed limits ranged from lowering the speed limit by 5, 10, 15, or 20 miles per hour to raising the speed limit from 5, 10, or 15 miles per hour.

Ultimately, the study showed that there is little change in the driving speeds after a lower speed sign is posted. The average change in any of the percentile speeds at the experimental sites was less than 1.5 miles per hour regardless of whether the speed limit was raised or lowered. Even though lowering the speed limits at the study sites had a minor effect on vehicle speeds, driver violations of the speed limit increased. ***The study reported that lowering speed limits provides a noncompliance rate of approximately 67%, indicating that enforcement is crucial to reflect an actual change in driver behavior.***



Top: City of Boston 25 MPH Citywide Speed Limit Sign; *Insurance Institute of Highway Safety, August 2018.*
 Bottom Left: New York City Vision Zero flier; nyc.gov/visionzero, . Bottom Right: City of Portland '20 is Plenty' campaign; <https://www.portlandoregon.gov/transportation/article/669625>

Recommendation to the Town of Needham

Given the passage of new legislation that allows municipalities to reduce the statutory speed limit from 30 to 25 miles per hour on any or all local, non-state roadways in a thickly settled or business district, the Town of Needham expressed interest in exploring the possibility of implementing a lower 25 mph speed limit. Supporting factors include community level support, adjacent city opt-in and increased pedestrian survival rates at lower speeds in the event of vehicle-pedestrian crashes. According to the research, opposing factors include very minor effects on vehicle speeds and a decrease in driver compliance.

Although the results from the Boston case study show promising figures in the reduction of the odds of motorists exceeding 35 miles per hour, the 85th percentile speeds remained the same at 31 mph. Studies show that there is little change in driving speeds after a lower speed limit sign is posted mostly because drivers are generally influenced by the roadway conditions and typically travel at a rate of speed they perceive to fit the context of the road. In the suburb of Needham, some roadways can be perceived by the motorist as reasonable to be exceeding 30 mph, never mind 25 mph. Therefore, lowering the speed limit may in fact lead to a greater disparity in vehicle travel speeds which could result in more vehicle conflicts. A major component in combating speeds on these types of roadways is to change the context of the roadway through traffic calming efforts where the physical characteristics of the roadway alter the motorist's

perception of what is a reasonable speed to travel and enforcement.

It appears most cities who have adopted a 25-mph speed limit have done so on the basis of potential crash reduction rather than actual travel speed reduction. Those who have experienced actual travel speed reduction with the lowering of the speed limit have done so through proper enforcement techniques such as automated enforcement cameras which require extensive resources and funding allocations. In the current funding environment, it would likely be difficult for local police to effectively enforce a 25-mph statutory speed limit town wide.

At this time, GPI recommends no change to the town-wide statutory speed limit of 30 miles per hour but rather to focus on implementing 20-mph speed safety zones in areas where vulnerable users may be present and enforcement efforts can be targeted. Should the implementation of safety speed zones deem successful (i.e. reduction in travel speeds and collisions) through proper enforcement, the Town should revisit the topic and allocate additional funding to enforcement efforts and educational campaigns.

At this time, GPI recommends no change to the town-wide statutory speed limit of 30 miles per hour, but rather to focus on implementing 20-mph speed safety zones in areas where vulnerable users may be present and enforcement efforts can be targeted.

4.2 IMPLEMENTING SPEED SAFETY ZONES

What is a Safety Zone Speed Limit? Per Massachusetts State Law, Safety Zones are regulatory speed limits set at 20 miles per hour intended to be used in areas where vulnerable road users are likely to be present. Vulnerable road users include pedestrians and bicyclists especially children, people with disabilities and the elderly. As previously noted, Needham has a significant percentage of youth (under 18 years old) and senior citizens (65 years and older), comprising of approximately 30% and 16% of the community, respectively. Approximately 7.0% of the Needham population has a reported disability.

What are the requirements to establish a Safety Zone? MassDOT has identified the following minimum criteria to establish a safety zone:

- 1. The street should be adjacent to a land use that is likely to attract vulnerable road users.
- 2. The Safety Zone should contain one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets.
- 3. The minimum length of the Safety Zone should be at least ¼ of a mile and it

should not extend more than 500’ beyond a side street unless an applicable land use continues along the adjacent block.

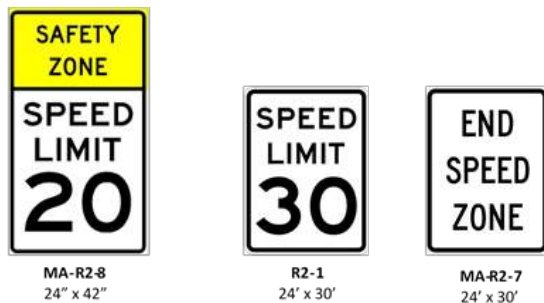
Where should Needham implement Safety Zones? As State Law suggests, Safety Zones should be strategically implemented in areas where vulnerable road users are likely to be present. Pedestrian generators analyzed included facilities such as parks and playgrounds, senior citizen housing and centers, hospitals or other medical facilities, high school and higher education centers, transit centers and daycare facilities- all of which represent areas where children, elderly and persons with disabilities may frequent. It should be noted that *Safety Zones shall not be used in place of School Zones*. Utilizing the GIS platform, pedestrian generators were mapped and a ¼ mile buffer, utilizing the existing street network, was applied to each facility. This allowed GPI’s planners and engineers to quickly identify street segments in which safety zones are warranted based on adjacent land use, number of access points along a given segment (including crosswalks, driveways and side streets), and segment length. In total, GPI identified 5 roadways segments that warranted further evaluation for the implementation of a safety zone. These are listed in Table 2 and can be graphically seen on the following pages.

Following implementation, the Town should conduct speed studies to measure driver compliance. Should the speed studies show poor compliance, additional safety improvements, such as traffic calming measures, may be warranted.

Table 2. Potential Safety Zones

Safety Zone Identifier	Safety Zone Location Description
1	Hillside Avenue (Approx. 100 feet south of Webster Street to Approx. 150 feet south of Pine Groove Street) near Cricket Field
2	Rosemary Street (Tilotsen Road to Approx. 100 feet west of Highland Avenue) near Rosemary Recreation Complex/ Rosemary Lake/ Pool
3	Webster Street (Rosemary Street to May Street) near Needham High School
4	Beaufort Avenue (Nichols Road to Mt. Vernon Avenue) near Perry Park
5	Great Plain Avenue (Harris Avenue to Elmwood Road) near Hersey MBTA Train Station

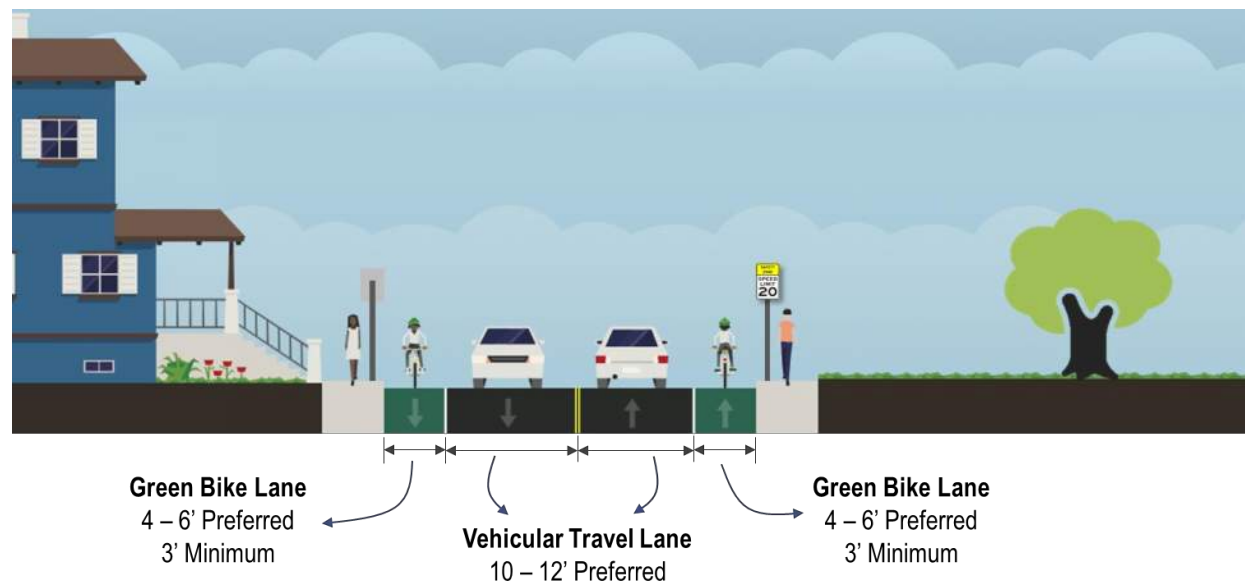
What materials are required to implement a Safety Zone? Safety Zone speed limits, according to new Massachusetts law, are the only regulatory speed limits in which municipalities can adopt without prior consent from MassDOT. **Safety Zones proposed on State Highway roadways require review and approval by MassDOT.** As referenced in MassDOT document, “Speed Limits: Frequently Asked Questions,” Safety Zones should be designated by a MA-R2-8 (Safety Zone Speed Limit 20) sign to be erected at the beginning of the zone for each direction and terminated with either a R2-1 (Speed Limit Sign) corresponding to the regulatory speed limit when a legal Special Speed Regulation is present, or more likely, a MA-R2-7 (End Speed Zone) sign in areas where there is no current Special Speed Regulation.



GPI also recommends that **uncontrolled crosswalks falling within a safety zone be enhanced with a Rectangular Rapid Flashing Beacon** and be designated by a continental style crosswalk for greater visibility.

In addition to signage, **it is recommended that the Town stripe roadway segments within Safety Zones to provide green-colored pavement shoulders which can be used to designate bicycle travel.** Colored pavement within a bicycle lane increases the visibility of bicyclists, discourages illegal parking in bike lanes, increases motorist yielding behavior and identifies potential areas of conflict. The proposed colored pavement will also promote the multi-modal nature of the Safety Zone and provide contrast to motorists to indicate they are entering a “sensitive” roadway context. Industry standards prefer bike lanes of 4-6 feet in width. In areas where these widths cannot be accommodated, it is acceptable for Needham to install minimum 3-foot bike lanes on low speed, low volume roadways. If a 3-foot bike lane cannot be accommodated due to the existing right-of-way, it is recommended that white edge lines be installed to designate shoulders. Figure 1 depicts a typical Safety Zone cross section that the Town of Needham can implement towards future cases.

Figure 1. Typical Safety Zone Cross Section



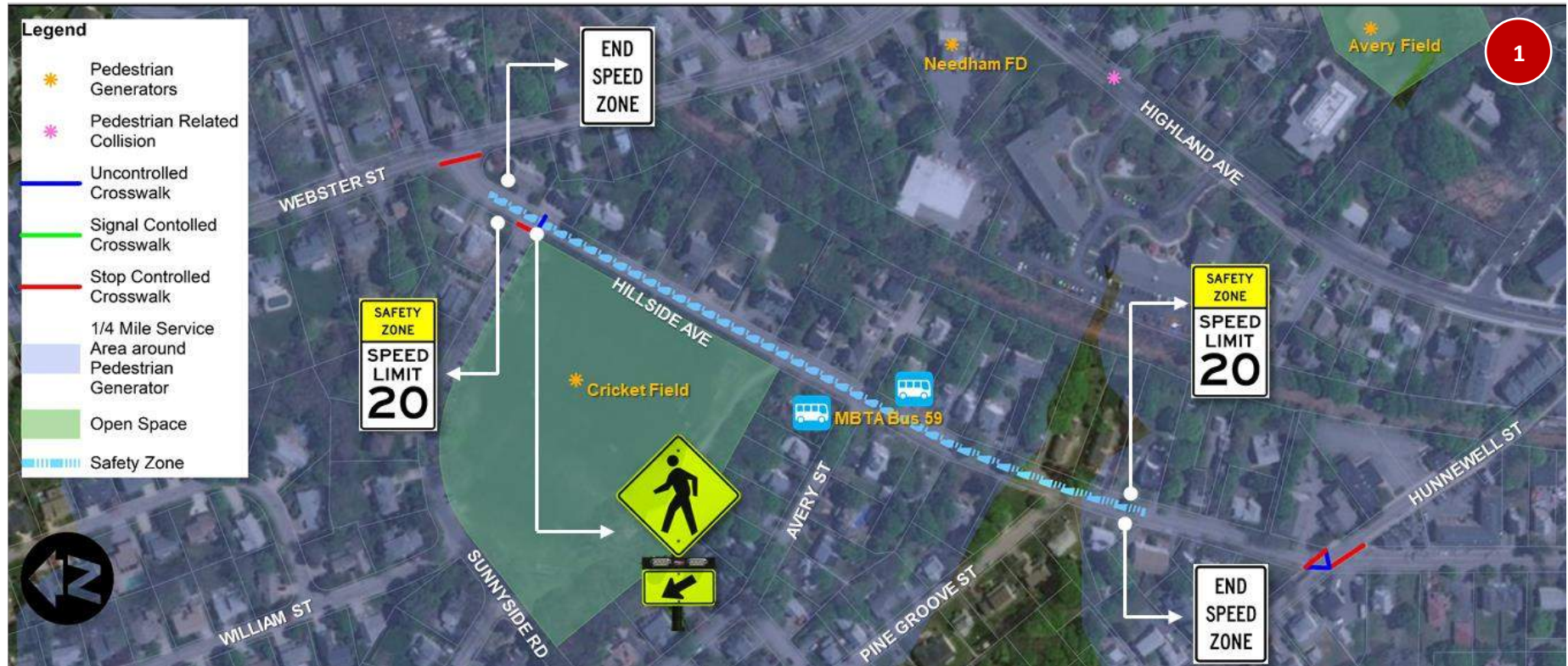
Following is a breakdown of each proposed safety zone including attributes such as length, adjacent pedestrian generators, existing speed and volume data (if available), the need for MassDOT approval (if applicable) and approximate cost to implement. Approximate cross sections and cost estimates are provided for each safety zone.

PROPOSED SAFETY ZONE LOCATIONS

-  Pedestrian Generators
-  Pedestrian Related Collision
-  Uncontrolled Crosswalk
-  Signal Controlled Crosswalk
-  Stop Controlled Crosswalk
-  1/4 Mile Service Area around Pedestrian Generator
-  Open Space
-  Safety Zone



HILLSIDE AVENUE NEAR CRICKET FIELD



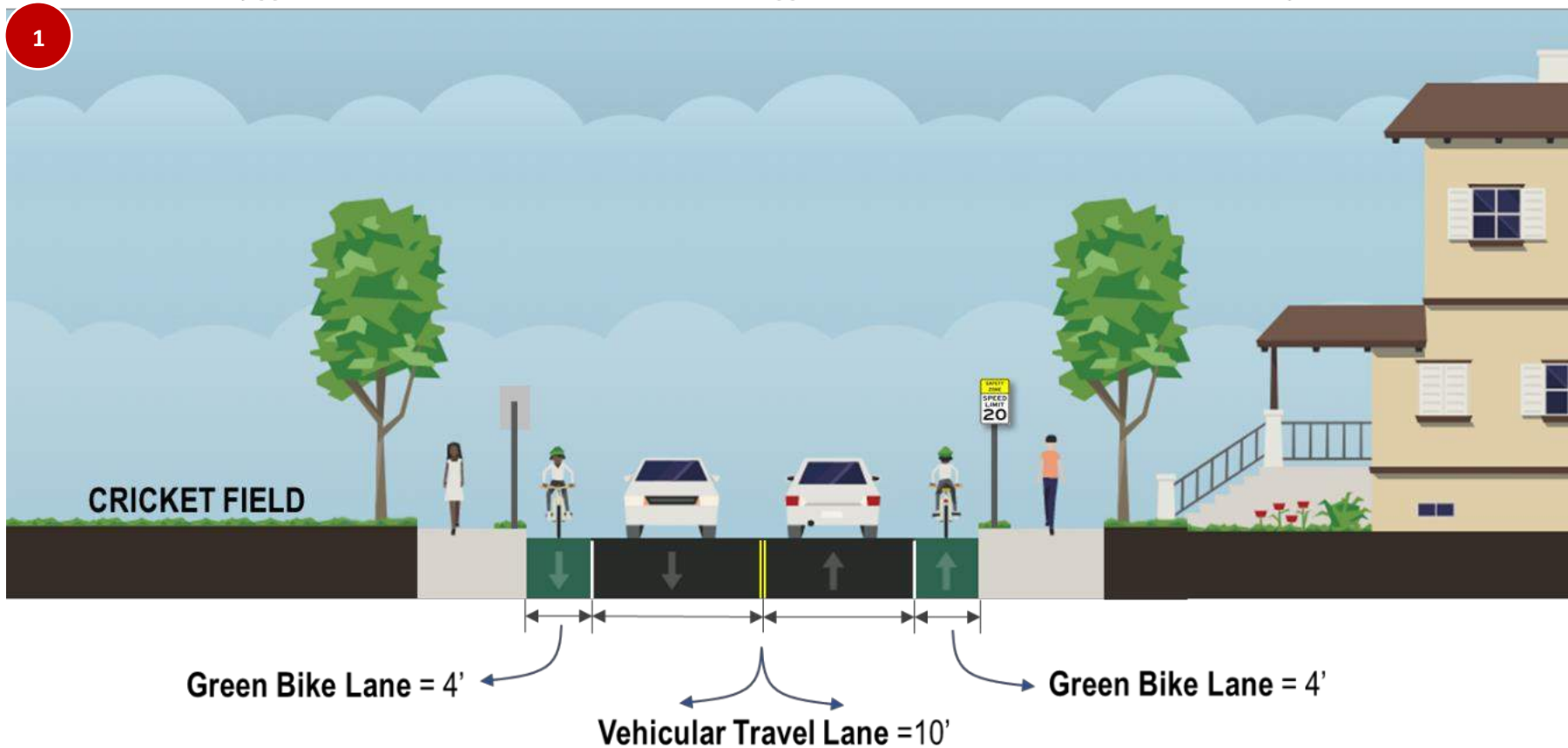
Hillside Avenue near Cricket Field (Approximately 100 feet south of Webster Street to approximately 150 feet south of Pine Groove Street)

Length of Segment	1,320 feet (0.25miles)
Adjacent Land Use	Cricket Field (Recreational), Residential
Number of Crosswalks along Segment	1 Uncontrolled Crosswalk
Traffic Volumes (if available)	3,060 vpd (2012-MAPC Local Access Dataset)
Speed Limit	30 mph (prima facie)
Roadway Classification	Urban Collector
On State Highway?	No
MassDOT Approval Required?	No

Warrants

1. The street is adjacent to a land use that is likely to attract vulnerable road users.	Yes
2. The Safety Zone contains one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets.	Yes
3. The length of the Safety Zone is at least a ¼ of a mile.	Yes

Hillside Avenue (Approx. 100 feet south of Webster Street to Approx. 150 feet south of Pine Groove Street) near Cricket Field



The cross section depicted above can be applied along the entire Safety Zone segment on Hillside Avenue. It is recommended that the crosswalk just south of Sunnyside Road be refreshed with a continental style crosswalk and an RRFB be installed for enhanced visibility.

SAFETY ZONE

1

Hillside Avenue

Approx. 100 feet south of Webster Street to Approx. 150 feet south of Pine Groove Street (near Cricket Field)

Length: 1320 Feet

		Quantity	Unit	Unit Price	Total Cost
Pavement Markings	Green Bike Area	10560	SF	\$ 5.00	\$ 52,800.00
	White Edge Lines	2640	LF	\$ 1.50	\$ 3,960.00
	Double Yellow Line	2640	LF	\$ 1.50	\$ 3,960.00
	Bike Symbols (1 Bike Lane Symbol = 15 SF)	90	SF	\$ 6.50	\$ 585.00
	High Visibility Continental Crosswalk	90	SF	\$ 3.00	\$ 270.00
					\$ -
Signs	MA-R2-7 (5 sf Each)	10	SF	\$ 11.00	\$ 110.00
	MA-R2-8 (5 sf each)	10	SF	\$ 11.00	\$ 110.00
					\$ -
Posts	P-5 Channel Posts	4	Each	\$ 125.00	\$ 500.00
					\$ -
Beacons	Rectangular Rapid Flashing Beacon System	1	Each	\$ 20,500.00	\$ 20,500.00

Location #1 Total = \$ 82,795.00

ROSEMARY STREET (TILOTSON TO APPROX. 100 FT WEST OF HIGHLAND AVENUE) NEAR ROSEMARY LAKE



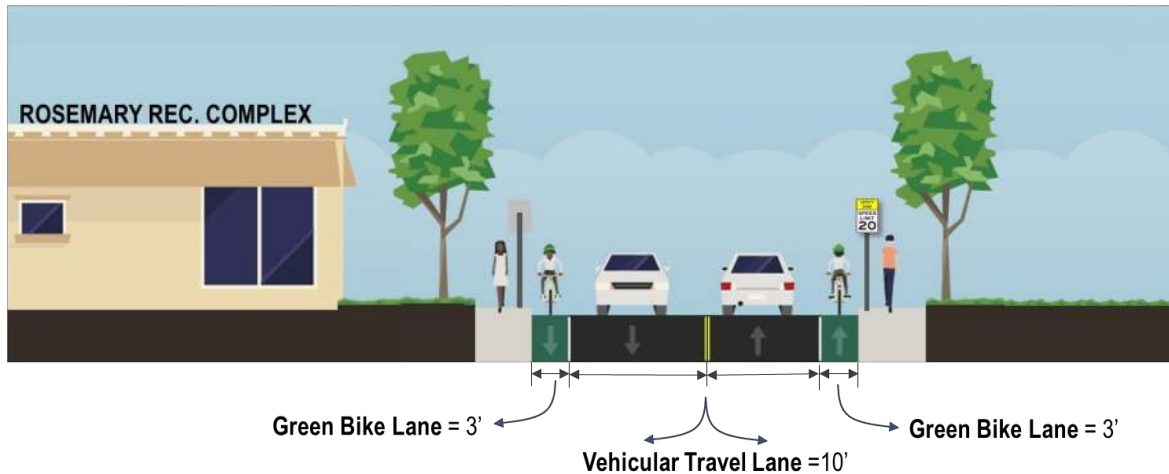
Rosemary Street near Rosemary Lake / Recreation Complex/ Pool (Tilotson Road to approx. 100 feet west of Highland Ave.)

Length of Segment	1,320 feet (0.25 miles)
Adjacent Land Use	Rosemary Recreation Complex, Residential, Needham Public Library
Number of Crosswalks along Segment	1 Uncontrolled Crosswalk
Traffic Volumes (if available)	2,970 vehicles per day – 2012 MAPC Local Access Dataset
Speed Limit	30 mph (prima facie)
Roadway Classification	Urban Collector
On State Highway?	No
MassDOT Approval Required?	No

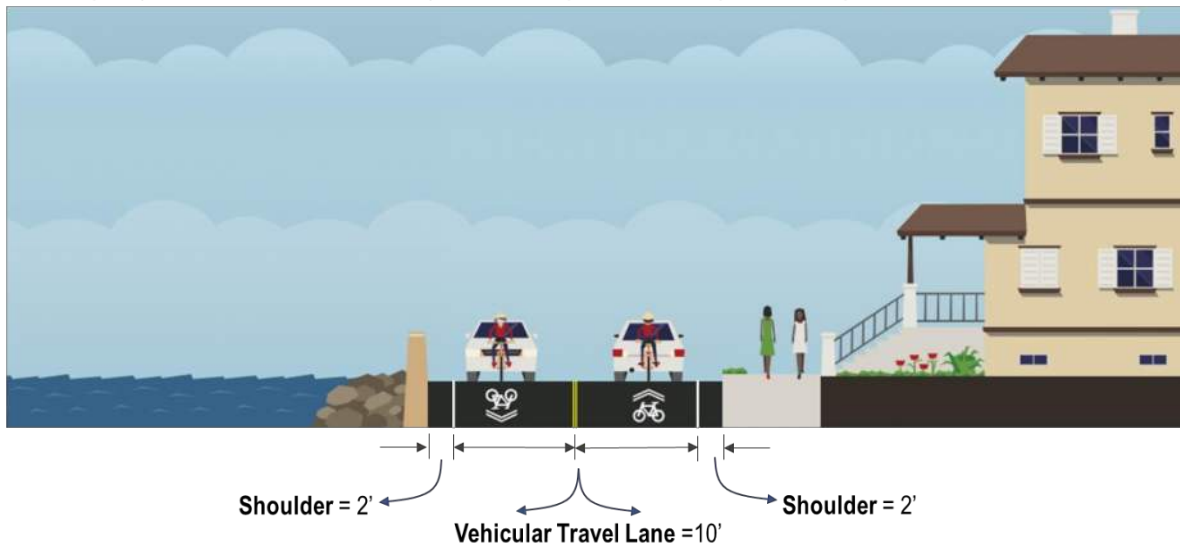
Warrants

- | | |
|--|-----|
| 1. The street is adjacent to a land use that is likely to attract vulnerable road users. | Yes |
| 2. The Safety Zone contains one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets. | Yes |
| 3. The length of the Safety Zone is at least a ¼ of a mile. | Yes |

Rosemary St. (Hillside Avenue to Approx. 100 ft west of Highland Ave.) near Rosemary Recreation Complex/ Rosemary Lake/ Pool



Rosemary St. (Hillside Avenue to Tilotson Road.) near Rosemary Recreation Complex/ Rosemary Lake/ Pool



2

The cross section depicted to the top left can be applied along Rosemary Street from the easterly limits of the Safety Zone westerly to Hillside Avenue. The existing pavement width west of Hillside Avenue is too narrow to accommodate the minimum width green and thus just edge lines should be provided west of Hillside Avenue with in lane sharrows to help accommodate bicyclists (proposed cross section in bottom left image). In order for the Town to maintain a consistent cross section throughout the entire Safety Zone inclusive of painted green shoulders, it is recommended that the Town widen the roadway from Hillside Avenue to Tilotson Road as part of a long term reconstruction plan in the future.

Given the proposed lack of green contrast west of Hillside Avenue, it is recommended that a marked crosswalk be installed just east of Tilotson Road, enhanced with a RRFB, to accommodate the residential apartment complex just north of Rosemary Street. The installation of this crosswalk should be dependent on the Town's plans to potentially reconstruct the shoulder south of Rosemary Street from Tilotson Road to the Pool's entrance. It is also recommended that the Town remove the blinking pedestrian warning signs at the crosswalk at the pool's entrance and replace with a complete RRFB system for enhanced visibility.

Rosemary Street

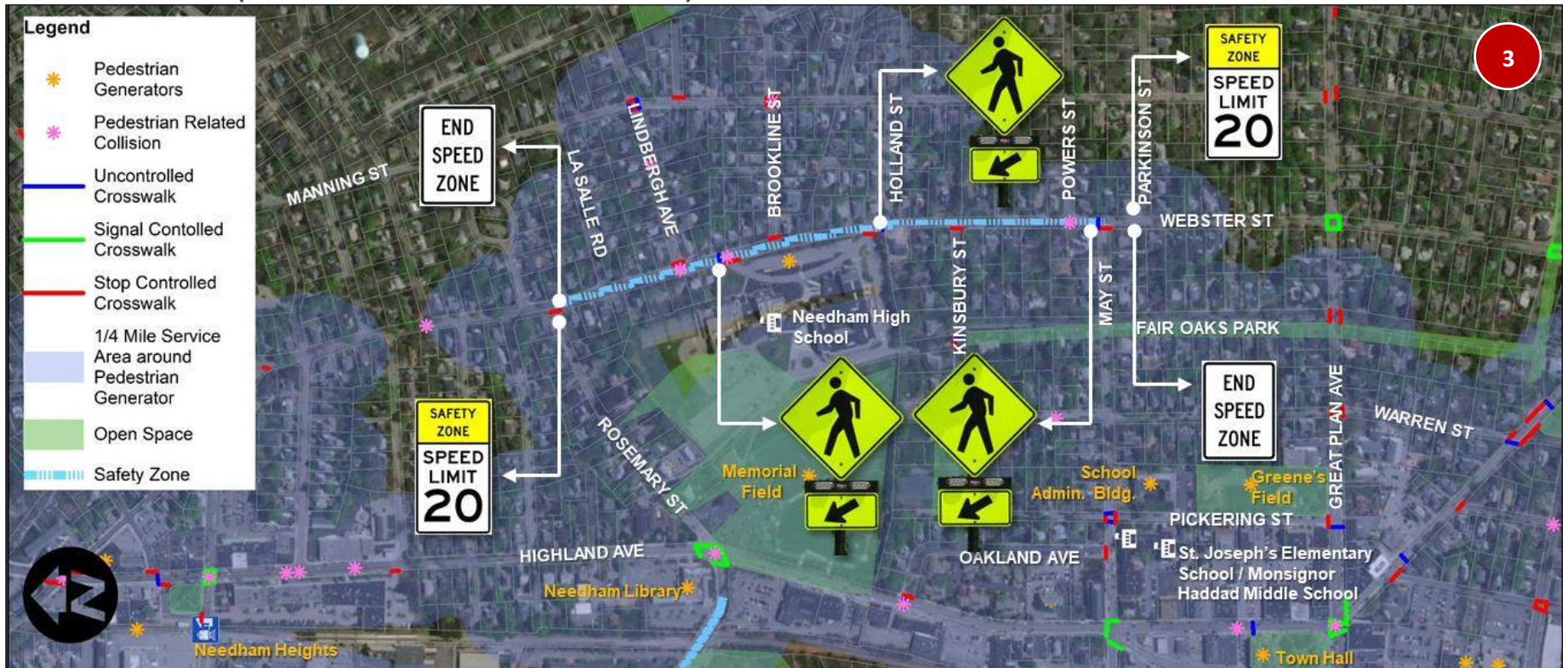
Tilotsen Road to Needham Library Driveway (near Rosemary Recreation Complex)

Length: 1320 Feet

		Quantity	Unit	Unit Price	Total Cost
Pavement Markings	Green Bike Area	5400	SF	\$ 5.00	\$ 27,000.00
	White Edge Lines	2640	LF	\$ 1.50	\$ 3,960.00
	Double Yellow Line	2640	LF	\$ 1.50	\$ 3,960.00
	Bike Symbols (1 Bike Lane Symbol = 15 SF)	90	SF	\$ 6.50	\$ 585.00
	High Visibility Continental Crosswalk	160	SF	\$ 3.00	\$ 480.00
					\$ -
Signs	MA-R2-7 (5 sf Each)	10	SF	\$ 11.00	\$ 110.00
	MA-R2-8 (5 sf each)	10	SF	\$ 11.00	\$ 110.00
					\$ -
Posts	P-5 Channel Posts	4	Each	\$ 125.00	\$ 500.00
					\$ -
Beacons	Rectangular Rapid Flashing Beacon System	2	Each	\$ 20,500.00	\$ 41,000.00

Location #2 Total = \$ 77,705.00

WEBSTER STREET (ROSEMARY STREET TO MAY STREET) NEAR NEEDHAM HIGH SCHOOL



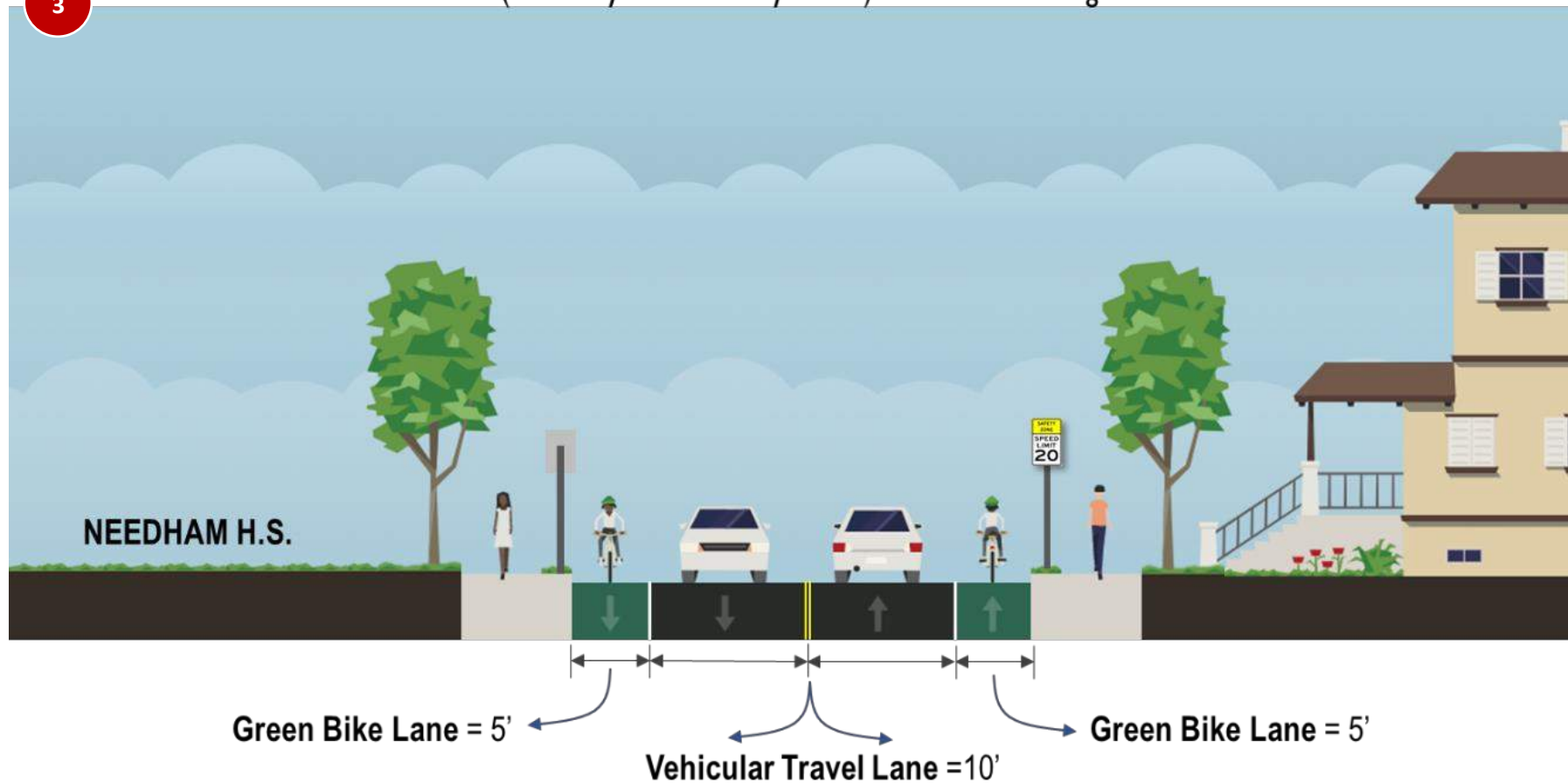
Webster Street near Needham High School (Rosemary Street to May Street)

Length of Segment	2,320 feet (0.44 miles)
Adjacent Land Use	Needham High School, Residential
Number of Crosswalks along Segment	3 Uncontrolled Crosswalks
Traffic Volumes (if available)	11,480 vehicles per day – GPI count '18
Speed Limit	30 mph (prima facie)
Roadway Classification	Urban Collector
On State Highway?	No
MassDOT Approval Required?	No

Warrants

- | | |
|--|-----|
| 1. The street is adjacent to a land use that is likely to attract vulnerable road users. | Yes |
| 2. The Safety Zone contains one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets. | Yes |
| 3. The length of the Safety Zone is at least a ¼ of a mile. | Yes |

Webster Street (Rosemary Street to May Street) near Needham High School



The cross section depicted above can be applied along the entire Safety Zone segment on Webster Street. The three proposed RRFB locations are currently in design and will be constructed in late Summer 2019.

Webster Street

Rosemary Street to May Street

Length: 2320 Feet

		Quantity	Unit	Unit Price	Total Cost
Pavement Markings	Green Bike Area	23200	SF	\$ 5.00	\$ 116,000.00
	White Edge Lines	4640	LF	\$ 1.50	\$ 6,960.00
	Double Yellow Line	4640	LF	\$ 1.50	\$ 6,960.00
	Bike Symbols (1 Bike Lane Symbol = 15 SF)	120	SF	\$ 6.50	\$ 780.00
	High Visibility Continental Crosswalk	300	SF	\$ 3.00	\$ 900.00
					\$ -
Signs	MA-R2-7 (5 sf Each)	10	SF	\$ 11.00	\$ 110.00
	MA-R2-8 (5 sf each)	10	SF	\$ 11.00	\$ 110.00
					\$ -
Posts	P-5 Channel Posts	4	Each	\$ 125.00	\$ 500.00
					\$ -
Beacons	Rectangular Rapid Flashing Beacon System	3	Each	\$ 20,500.00	\$ 61,500.00

\$ 193,820.00

Removed as part of Pedestrian Safety Design Contract No. 20DPW021C:

\$ 62,400.00

Location #3 Total =

\$ 131,420.00

BEAUFORT AVENUE (NICHOLS ROAD TO MT. VERNON AVENUE) NEAR PERRY PARK



Beaufort Avenue near Perry Park (Nichols Road to Mt. Vernon Avenue)

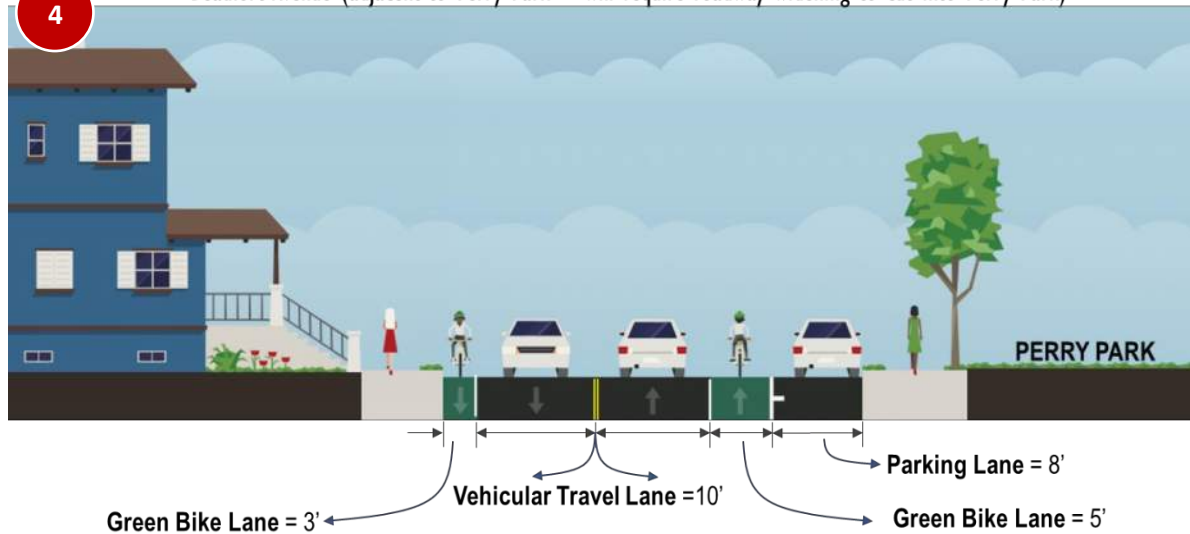
Length of Segment	1,320 feet (0.25 miles)
Adjacent Land Use	Perry Park (Recreation), Residential
Number of Crosswalks along Segment	3 Uncontrolled Crosswalks
Traffic Volumes (if available)	Unavailable
Speed Limit	30 mph (prima facie)
Roadway Classification	Local
On State Highway?	No
MassDOT Approval Required?	No

Warrants

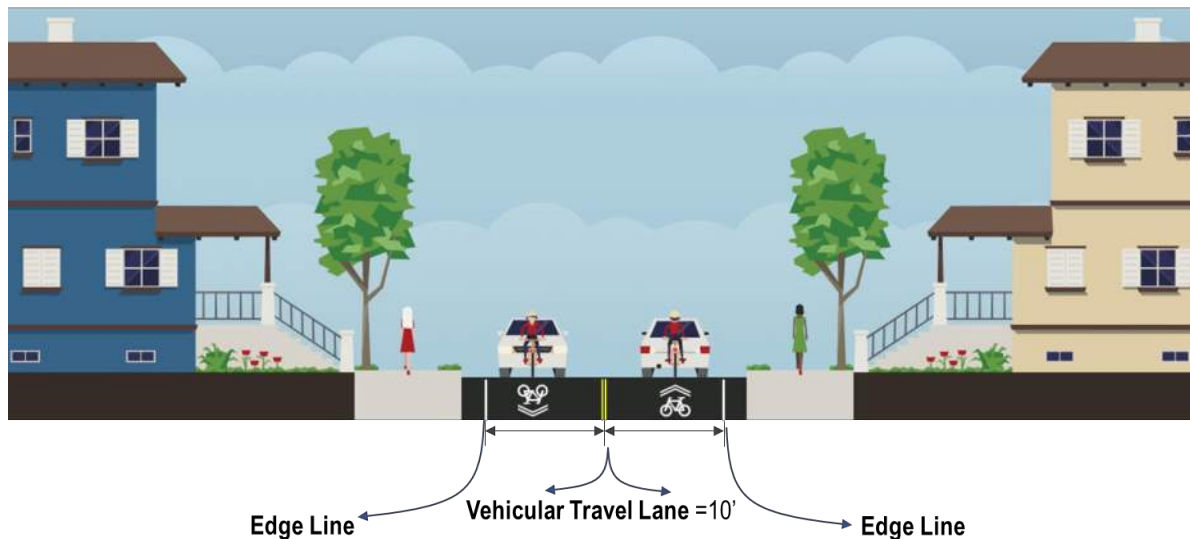
- | | |
|--|-----|
| 1. The street is adjacent to a land use that is likely to attract vulnerable road users. | Yes |
| 2. The Safety Zone contains one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets. | Yes |
| 3. The length of the Safety Zone is at least a ¼ of a mile. | Yes |

4

Beaufort Avenue (adjacent to Perry Park — will require roadway widening to cut into Perry Park)



Beaufort Avenue (Mount Vernon Avenue to southerly extents of Perry Park and Arden Street to Nichols Road)



It currently exists, the cross section along Beaufort Avenue is too narrow to safely accommodate a designated bike lane via green painted shoulders. Vehicles currently park on the eastern side of the roadway to access the park and in doing so, often encroach the sidewalk as there is no adequate buffer to prevent this action. With the intent to provide bicycle accommodations and a designated parking area, it is recommended that the Town cut into the park approximately 10 feet to achieve the cross section depicted in the top left.

Public right-of-way both north and south of the Park is limited and thus widening is unlikely to occur. Therefore, the roadway segments along Beaufort Avenue from Mount Vernon Avenue to the southerly extents of Perry Park and from Arden Street to Nichols Road, are recommended to receive pavement markings to achieve the cross section in the bottom left. This includes 10-foot travel lanes with painted edge lines to give a narrowing effect.

In regard to crosswalks along the safety zone corridor, it is recommended that the Town remove the diagonal crosswalk and crosswalk south of Hawthorne Avenue and instead provide a marked, continental style crosswalk just north of Hawthorne Avenue. It is recommended that complete RFB systems be installed at said crosswalk as well as the existing marked crosswalk just south of Nichols Road.

Beaufort Avenue

Nichols Road to Mount Vernon Avenue (near Perry Park)

Length: 1320 Feet

		Quantity	Unit	Unit Price	Total Cost
Pavement Markings	Green Bike Area	10560	SF	\$ 5.00	\$ 52,800.00
	White Edge Lines	2640	LF	\$ 1.50	\$ 3,960.00
	Double Yellow Line	2640	LF	\$ 1.50	\$ 3,960.00
	Bike Symbols (1 Bike Lane Symbol = 15 SF)	90	SF	\$ 6.50	\$ 585.00
	High Visibility Continental Crosswalk	180	SF	\$ 3.00	\$ 540.00
					\$ -
Signs	MA-R2-7 (5 sf Each)	10	SF	\$ 11.00	\$ 110.00
	MA-R2-8 (5 sf each)	10	SF	\$ 11.00	\$ 110.00
					\$ -
Posts	P-5 Channel Posts	4	Each	\$ 125.00	\$ 500.00
					\$ -
Beacons	Rectangular Rapid Flashing Beacon System	2	Each	\$ 20,500.00	\$ 41,000.00
					\$ -
Roadway Widening	Widen roadway Approx. 10 feet from Approx. 350 Feet along Perry Park.	1	LS	\$80,000.00	\$ 80,000.00

Location #4 Total = \$ 183,565.00

GREAT PLAIN AVENUE (HARRIS AVENUE TO ELMWOOD ROAD) NEAR HERSEY MBTA TRAIN STATION



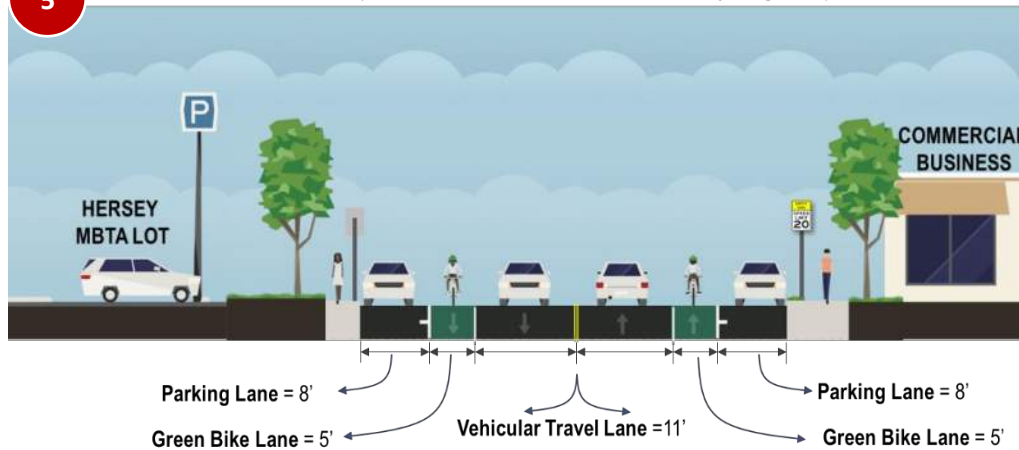
Great Plain Avenue near Hersey MBTA Station (Harris Avenue to Mt. Elmwood Road)

Length of Segment	1,390 feet (0.26 miles)
Adjacent Land Use	Hersey MBTA Station, Commercial, Residential
Number of Crosswalks along Segment	2 Uncontrolled Crosswalks
Traffic Volumes (if available)	8,8800 – GPI Count 2018
Speed Limit	30 mph (prima facie)
Roadway Classification	Urban Minor Arterial
On State Highway?	No
MassDOT Approval Required?	No

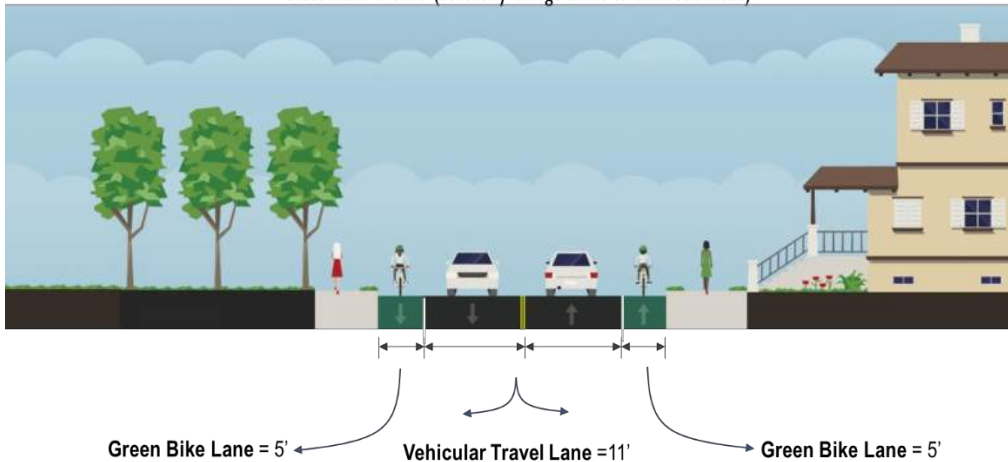
Warrants

1. The street is adjacent to a land use that is likely to attract vulnerable road users.	Yes
2. The Safety Zone contains one or more areas that have potential conflicts between motor vehicles and vulnerable road users that warrant a reduction in speeds such as crosswalks, driveways or side streets.	Yes
3. The length of the Safety Zone is at least a ¼ of a mile.	Yes

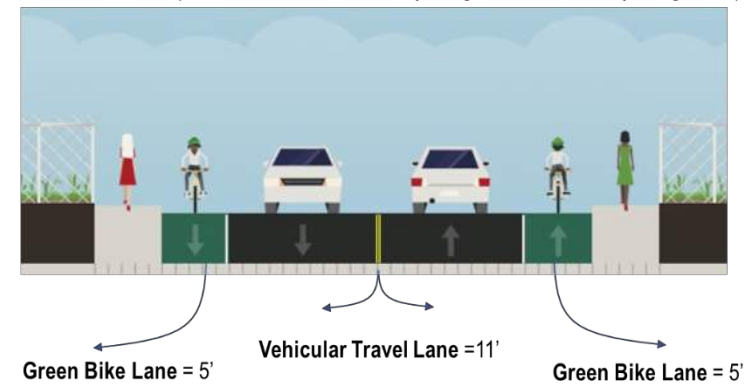
Great Plain Avenue (Harris Avenue to Broad Meadow Road/Northerly Bridge Limit)



Great Plain Avenue (Southerly Bridge Limit to Elmwood Road)



Great Plain Avenue (Broad Meadow Road/Northerly Bridge Limit to Southerly Bridge Limit)



The cross section depicted in the top left image can be applied from Harris Avenue to Broad Meadow Road (Northerly bridge limits). This section includes designated bike lanes at 5 feet wide and dedicated parking lanes at 8 feet wide.

The pavement cross section narrows when traveling along the bridge. Therefore, parking lanes are not included within this cross section, depicted in the top right image.

The bottom left image depicts the cross section south of the bridge to Elmwood Road. There is no dedicated parking lane in this segment and the designated bike lane is a minimum of 5 feet in both directions, however, it may be widened as pavement width allows.

The two proposed RRFB locations are currently in design and will be constructed in late Summer 2019.

Great Plain Avenue

Harris Avenue to Elmwood Road (near Hersey Station)

Length: 1390 Feet

		Quantity	Unit	Unit Price	Total Cost
Pavement Markings	Green Bike Area	13900	SF	\$ 5.00	\$ 69,500.00
	White Edge Lines	5560	LF	\$ 1.50	\$ 8,340.00
	Double Yellow Line	2780	LF	\$ 1.50	\$ 4,170.00
	Bike Symbols (1 Bike Lane Symbol = 15 SF)	90	SF	\$ 6.50	\$ 585.00
	High Visibility Continental Crosswalk	480	SF	\$ 3.00	\$ 1,440.00
					\$ -
Signs	MA-R2-7 (5 sf Each)	10	SF	\$ 11.00	\$ 110.00
	MA-R2-8 (5 sf each)	10	SF	\$ 11.00	\$ 110.00
					\$ -
Posts	P-5 Channel Posts	4	Each	\$ 125.00	\$ 500.00
					\$ -
Beacons	Rectangular Rapid Flashing Beacon System	2	Each	\$ 20,500.00	\$ 41,000.00
					\$ -
					\$ 125,755.00
Removed as part of Pedestrian Safety Design Contract No. 20DPW021C:					\$ 42,440.00

Location # 5 Total = \$ 83,315.00

Location #1 Total = \$ 82,795.00
 Location #2 Total = \$ 77,705.00
 Location #3 Total = \$ 131,420.00
 Location #4 Total = \$ 183,565.00
 Location #5 Total = \$ 83,315.00

SAFETY ZONE TOTAL = \$ 558,800.00

4.3 CROSSWALK POLICY

A critical component of pedestrian safety is implementing crossing treatments that foster sustainable safety and are appropriate for a location given the roadway context and surrounding land use. This section of the report establishes a process for the evaluation and installation of proposed crosswalk locations. It is recommended that the Town of Needham adopt a crosswalk installation policy to ensure that crosswalks are implemented in locations where it is safe to establish a crossing, and that where installed, they are complying to Federal and State standards.

According to the Manual on Uniform Traffic Control Devices (MUTCD), *“Crosswalk lines should not be used indiscriminately. An engineering study should be performed before they are installed at locations away from high traffic signals or STOP signs.”* The MUTCD further states, *“New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:*

A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or

B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.”

Therefore, it is highly recommended that all proposed crosswalk locations be evaluated through an engineering study. Typical studies should include collection of traffic and pedestrian volume data at the proposed location, collection of speed data, evaluation of accident history and field measurement of available sight distances. Since a marked crosswalk can sometimes create a “false sense of security” for pedestrians, the engineering study is critical in identifying the actual need and adequacy of a marked crosswalk. Prior to preparation of a full engineering study, the following general guidelines can be reviewed for each proposed crosswalk location. If it is determined that a proposed crosswalk location appears feasible, then a full engineering study should be completed preceding a crosswalk installation.

GENERAL GUIDELINES FOR INSTALLATION BASED ON INDUSTRY STANDARDS

While pedestrian crossings are always preferred at intersections, where conflicts are more expected, there are instances where an ‘uncontrolled’ crosswalk may be considered. An uncontrolled crosswalk is a location where sidewalks or designated walkways intersect a roadway at a location where no traffic control (traffic signal or STOP sign) is present. As stated in the MUTCD, *“Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops. Crosswalk markings also serve to alert road users of a pedestrian crossing point across roadways not controlled by high traffic signals or STOP signs. At midblock locations, crosswalk markings legally establish the crosswalk.”* A midblock crossing is an uncontrolled, marked crosswalk occurring at a location away from an intersection.

Marked pedestrian crosswalks can be used to delineate preferred pedestrian paths across roadways at non-signalized locations where engineering judgement dictates that the number of motor vehicle lanes, pedestrian exposure, pedestrian volume estimates, average daily traffic (ADT), posted speed limit, geometry of the location, area type and other site conditions would make the user of specially designated crosswalks desirable for traffic/pedestrian safety mobility.

It is noted that the MUTCD does not specify specific criteria or warrants based on minimum volume of pedestrians or vehicles required to justify installation of a crosswalk. Therefore, additional studies were researched and referenced to provide additional guidance and criteria for the establishing of crosswalk locations. **A study prepared by Zegeer, et al, and published in the Institute of Transportation Engineers (ITE) Journal**, evaluated marked crosswalks at **uncontrolled locations** and offered guidelines for their use. The purpose of the study was to determine whether marked crosswalks at uncontrolled locations were safer than unmarked crosswalks under

diverse traffic and roadway conditions and to provide recommendations on providing safer crossings for pedestrians. The study analyzed five years of pedestrian crashes at 1,000 marked crosswalks and 1,000 matched unmarked comparison sites from which improvements were recommended to provide safer pedestrian crossings. The results of their study suggested for the placement of marked crosswalks and the design of safer crossing at uncontrolled locations. Their conclusions and recommendations include the following:

- Pedestrian crashes are relatively rare at uncontrolled pedestrian crossings; however, the certainty of injury to the pedestrian and the high likelihood of a severe or fatal injury in a high-speed crash make it critical to provide a pedestrian-friendly transportation network.
- Marked crosswalks should not be used where the speed limit exceeds 40 mph without supplemental devices.
- On two-lane roads and low volume multi-lane roads with an ADT less than 12,000, marked crosswalks were not found to have any positive or negative effect on pedestrian crash rates at the study sites. Marked crosswalks may encourage some pedestrians to cross the street at such sites.
- For three-lane roads, adding marked crosswalks alone without other substantial crossing improvements

generally is not recommended for an ADT greater than 12,000, although exceptions may be allowed under certain conditions such as lower-speed roads.

- Marked crosswalks alone without other substantial treatments are not recommended at uncontrolled crossing locations on multi-lane roads with four or more lanes where traffic volume exceeds approximately 12,000 vehicles per day with no raised medians or approximately 15,000 ADT with raised medians that serve as refuge areas.
- In some situations, such as low-speed, two-lane streets in downtown areas, installing a marked crosswalk may help consolidate multiple crossing points. Engineering judgment should be used to install crosswalks at preferred crossing locations. ***Higher priority should be placed on providing marked crosswalks where the pedestrian crossing volume exceeds 20 pedestrians per peak hour or 15 or more elderly pedestrians and/or children per peak hour.***

Other publications, such as the Champaign-Urbana Pedestrian Crossing Enhancement Guidelines published by Illinois' Champaign County Regional Planning Commission in September 2017, utilize more lenient minimum pedestrian thresholds. These guidelines allow the installation of a crosswalk at locations where pedestrian demand is equal to 20 peds in any one hour, 18 peds in any two hours, or 15 peds in any three hours.

It's important to note that these are guidelines and may be altered to fit community context. As such, GPI recommends the following installation process.

CROSSWALK EVALUATION TO INSTALLATION PROCESS

Public requests for crosswalk installations will be handled by the Traffic Management Advisory Council. GPI recommends that a formal procedure be adopted by the TMAC which may include an online submission form to standardize the public request procedure. Once the TMAC has obtained a crosswalk request, it may recommend that further data be collected to determine if it is warranted, and if so, then recommend an installation appropriate for its location.

Step 1. Data Collection

If the crosswalk is endorsed by a majority of the residents, it is recommended that the Town collect data to aid in selecting an appropriate crossing treatment, if any. Data collection efforts can include speed and volume counts, pedestrian activity and existing network evaluation, adequacy of sight distance, evaluation of street lighting, evaluation of roadway characteristics, and crash trends within the vicinity of the proposed location.

Speed and Volume Counts: It is recommended that the Town of Needham deploy 48-hour Automatic Traffic Recorder Counts at an appropriate location nearby the proposed crosswalk in accordance to MassDOT Traffic Impact Assessment (TIA) Guidelines for consistency and potential further use. These ATR counts collect speed, volume and classification data and are recommended to be collected on a normal Tuesday, Wednesday or Thursday. Prior to the deployment of counts, the Town is advised to obtain any available current counts (less than 2 years old) that could be used in lieu to save funding.

Pedestrian Activity and Existing Network Evaluation: Pedestrian volumes should be collected at each proposed crosswalk location and special notes should be taken to determine the percentage of young, elderly and disabled pedestrians. Data collection should also include the identification and quantity of pedestrian generators within a ¼ mile service area buffer located on the same street as the proposed crosswalk location. Special note should be taken as to how pedestrians currently access those pedestrian generators. A conditional assessment of existing sidewalks and wheelchair ramps should be conducted, and ADA compliance should be measured to ensure crosswalk installation is appropriate.

Sight Distance: A site visit is recommended to determine the adequacy of sight distance for the proposed crosswalk. Evaluators should refer to the AASHTO Green Book for sight distance

minimum requirements given posted speed limits.

Street Lighting: Adequate street lighting is critical to the effectiveness of a crossing location. Historically, street lighting has been installed more so with the focus on the motorists rather than the safety of pedestrians. The FHWA's Publication No. FHWA-HRT-08-053: Informational Report on Lighting Design for Midblock Crosswalks, released in April 2008, documented new recommendations for streetlighting at crosswalks.

- **Street Lighting at Midblock Crosswalks** - Prior to the new recommendations, many agencies installed a single luminaire directly over a midblock crosswalk. This practice provides high pavement luminance at the crosswalk but inadequately illuminates the pedestrian. The FHWA now recommends that for roadways that have traffic traveling in both directions, particularly those without a center median, two luminaries are required, located on either side of the road and placed prior to the crosswalk from the drivers' perspective.
- **Street Lighting at Intersection Crosswalks** - Many crosswalks are located within intersections which pose many conflict points for pedestrians. Prior to FHWA's new recommendations, luminaries were positioned to provide a high level of pavement illuminance required in the intersection and to light the potential conflict areas for the vehicles. This practice lights the side of the pedestrian facing the intersection and does not light the side of the pedestrian facing the approaching vehicle. Therefore, the FHWA now recommends that luminaries be located away from the intersection to provide light on the approach side of the pedestrian.

Roadway Characteristics: A site visit is recommended to determine the grade of the roadway and pavement width (including the number of travel lanes, parking lanes, and bicycle lanes). Pavement width affects crossing distance. The presence of a bicycle lane adds another conflict point for the proposed crosswalk location and the presence of parking should be noted as the installation of a crosswalk may result in the loss of parking. Parking should not be located within 20 feet of either direction of a crosswalk to improve pedestrian visibility. Evaluators should also take special note of any drainage structures located within the vicinity of the proposed crosswalks. The installation of new crosswalks may result in the relocation/adjustment of existing drainage structures or the installation of new structures to ensure ponding does not occur at pedestrian curb ramps.

Crash Trends: Crash data should be researched for the last five available years to analyze crash trends within the vicinity of the proposed crosswalk location. Proposed crosswalks located within high crash locations should likely receive supplemental devices to improve safety in these locations.

Step 2. Select Appropriate Crossing Treatment

Given the data collected in Step 4, the Town is recommended to utilize the flow chart, depicted in Figure 5, in conjunction with Table 3 to appropriately select crossing treatments, if any. It is recommended that the following guidelines be utilized to ensure that crossing locations are implemented in a sustainable safe manner.

- No action is recommended for proposed crossing locations on roadways with an average daily traffic volume less than 1,500 vehicles per day.
- The preferred distance to the nearest marked or protected crossing is 300 feet.
- Recommended Minimum Pedestrian Volume Thresholds are as follows (young/elderly/disabled pedestrians count 2x towards the volume thresholds):
 - 20 peds/ hour in any 1 hour, or
 - 18 peds/ hour in any 2 hours, or
 - 15 peds/ hour in any 3 hours
- Crossing locations may be considered for a marked, uncontrolled crosswalk if it can be reasonably expected that the required Minimum Pedestrian Volume Thresholds listed above would be met given there was a marked crosswalk present. Pedestrian activity should be monitored, and surrounding pedestrian generators be identified to gauge potential demand.

- Crosswalks should be installed in locations where sidewalk or a distinct pedestrian destination such as a recreational field are present on both sides of the roadway.
- Crosswalk should be installed in locations where adequate street lighting is present. If there is no lighting present, design should incorporate the installation of lighting fixtures.

Step 3. Secure Funding and Prioritize

If action is recommended, it is advised that projects go through a ranking prioritization process. Crosswalk locations can be prioritized based on engineering judgement; although should generally be ranked based on the following hierarchy (1 being the highest priority):

1. Uncontrolled Crossings
2. Unsignalized Intersection – Roundabout
3. Unsignalized Intersection – Stop or Yield Controlled
4. Signalized Intersections

Step 4. Design and Construction

Crosswalks shall be designed and installed according to industry standards. All pavement markings and warning signage must adhere to the standards stated in the MUTCD to ensure consistency and efficiency. Pedestrian crossing design guidance is described in further detail in Section 7.0.

Figure 5. Crosswalk Treatment Selection Flowchart

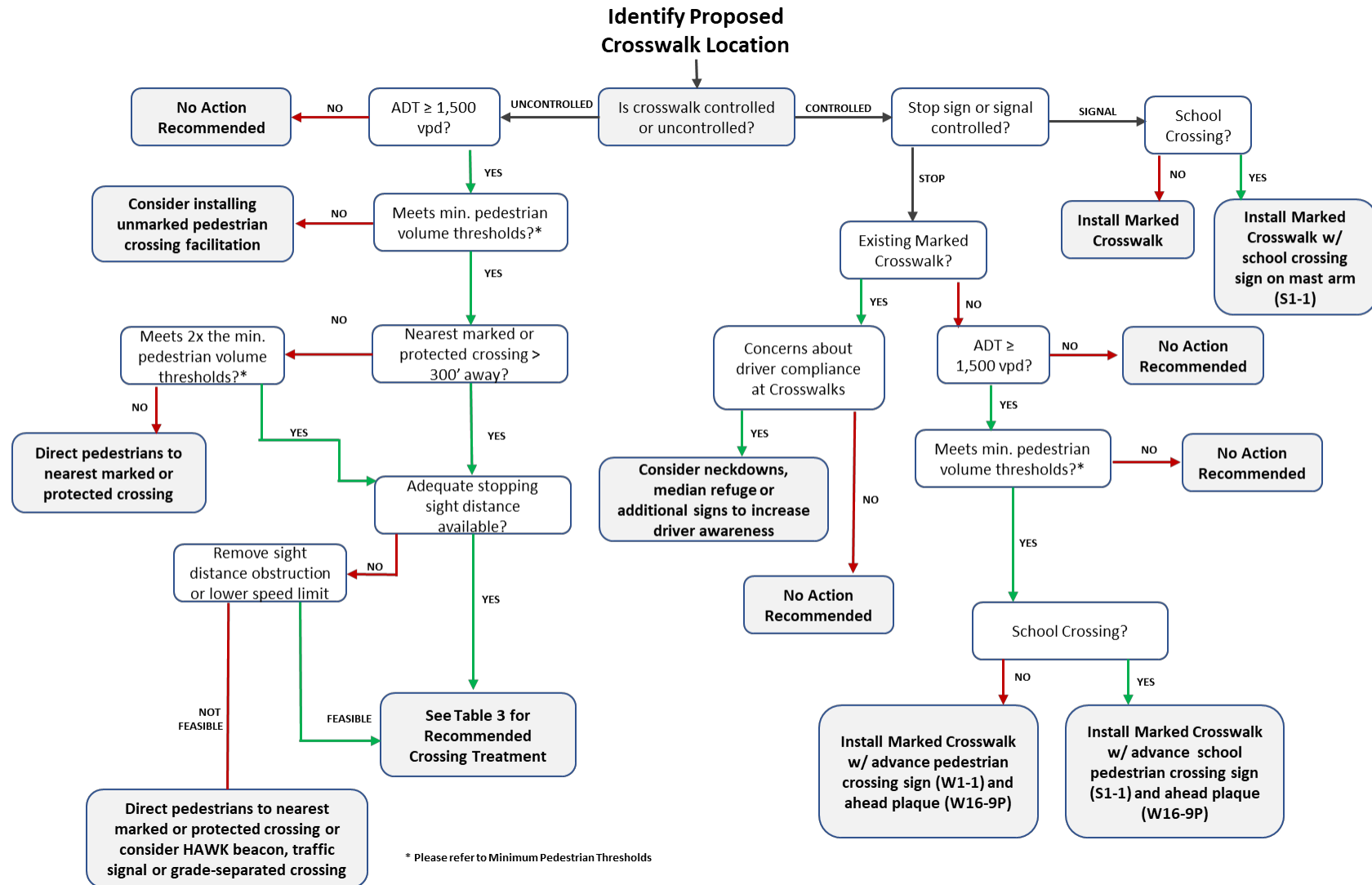


Table 3. Recommendations for Installing Marked Crosswalks and Other Needed Pedestrian Improvements at Uncontrolled Intersections

Existing Roadway Type (# of Travel Lanes and Median Type)	# of lanes crossed to reach a refuge	# of multiple threat lanes per crossing	ADT 1,500 - 6,000			ADT 6,000 - 9,000			ADT 9,000 - 12,000			ADT 12,000 - 15,000			ADT > 15,000		
			Speed Limit**														
			≤ 30 mph	35 mph	40 mph	≤ 30 mph	35 mph	40 mph	≤ 30 mph	35 mph	40 mph	≤ 30 mph	35 mph	40 mph	≤ 30 mph	35 mph	40 mph
2 Lanes (one-way street)	2	1	A	B	C	A	B	C	A	B	C	B	B	C	B	C	D
2 Lanes (two-way street with no median)	2	0	A	B	C	A	B	C	A	B	C	A	B	C	B	C	E
3 Lanes with Raised Median	1 or 2	0	A	B	D	A	B	D	A	C	D	B	D	D	C	D	E
3 Lanes with Striped Median	3	0 or 1	C	C	D	C	C	D	C	C	D	C	C	D	C	D	E
4 Lanes (two-way street with no median)	4	0 or 1	A	D	D	A	D	D	B	D	D	B	D	D	D	D	E
5 Lanes with Raised Median	2 or 3	2	A	B	D	A	B	D	B	C	D	B	C	D	C	C	E
5 Lanes with Striped Median	5	2	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E
6 Lanes (two-way street with or without median)	3 to 6	4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Speed Safety Zone/School Zone	2	2	F	F	F	F	F	F	F	F	F	F	F	F	F	F	E

A = Type 1 marked crosswalk is recommended.

B = Type 2 marked crosswalk is recommended.

C = Type 3 marked crosswalk is recommended.

D = Type 4 marked crosswalk is recommended.

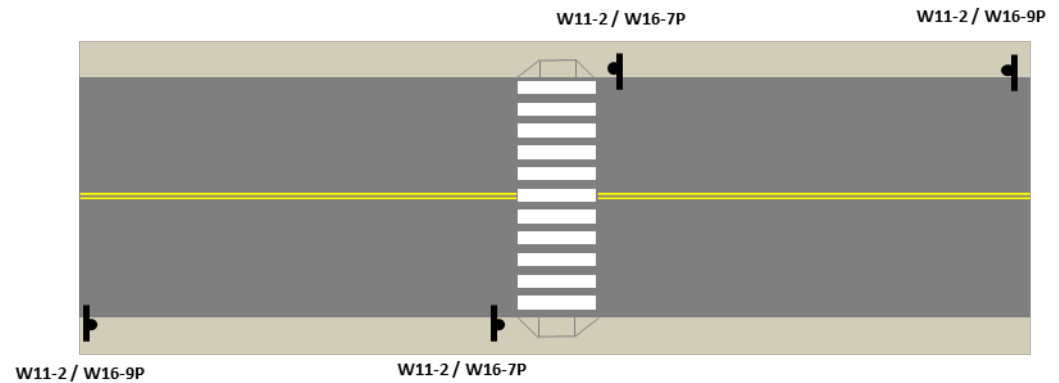
E = Type 5 marked crosswalk is recommended.

F = Type 6 marked crosswalk would be located within a Speed Safety Zone or School Zone and shall include supplemental RRFB warning devices

Crosswalk Types are explained in detail on the following pages of this document.

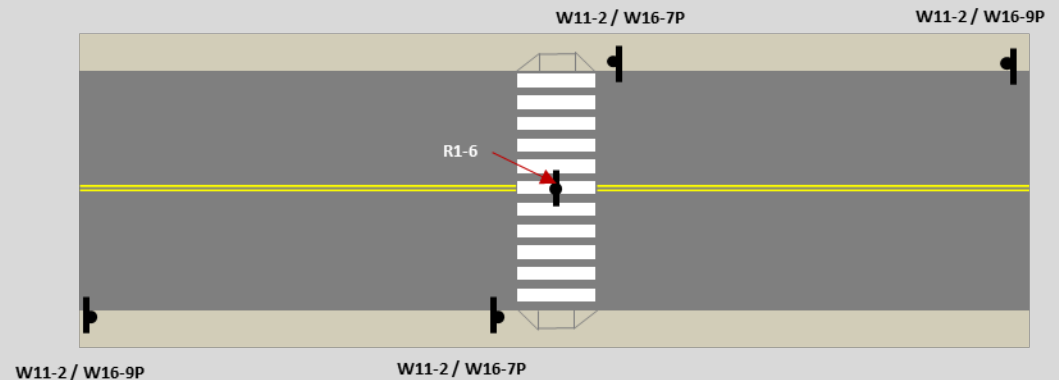
Type 1 Crosswalk Installation

- Marked crosswalk
- Pedestrian crossing warning signs (W11-2) with diagonal down arrow plaques (W16-7P) at crosswalk
- Standard advance pedestrian warning signs (W11-2) with AHEAD plaques (W16-9P) in advance of the crosswalk
- If the location is within a school zone, then standard S1-1 signs should be used



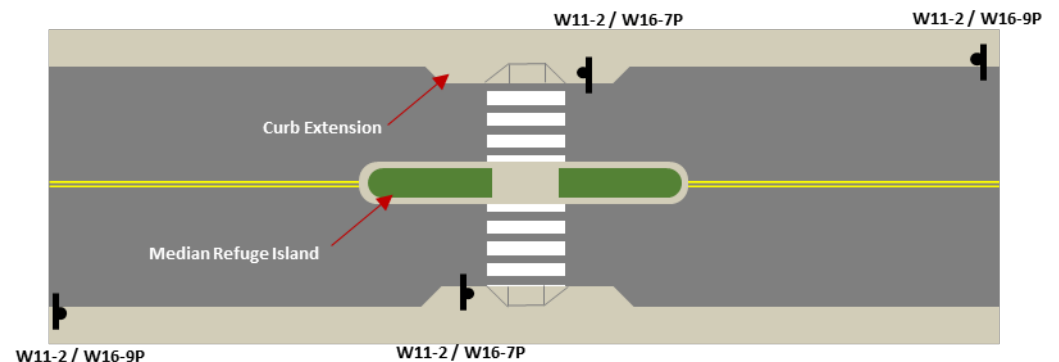
Type 2 Crosswalk Installation

- Same as Type A plus add “State Law – Stop for Pedestrians” signs (R1-6). If a raised median is present, mount on sign posts. If no median present, consider in-road installation on flexible bollards at centerline.



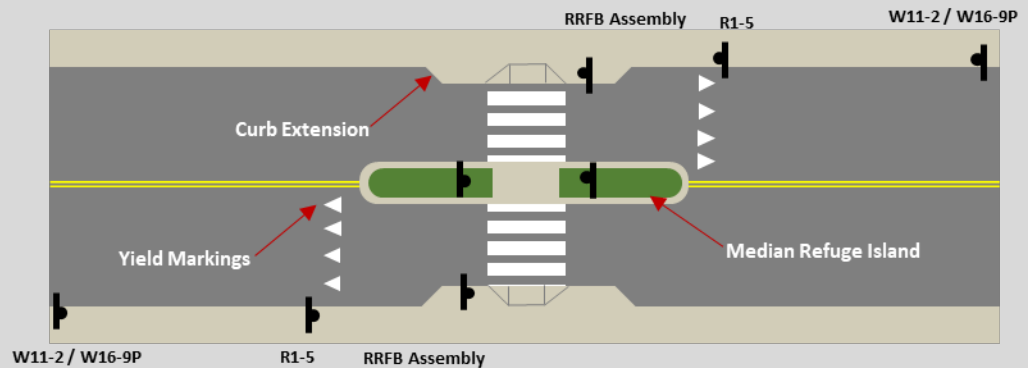
Type 3 Crosswalk Installation

- Same as Type A plus add curb extensions and/or median refuge island to shorten pedestrian crossing distance and increase pedestrian visibility to approaching motorists.



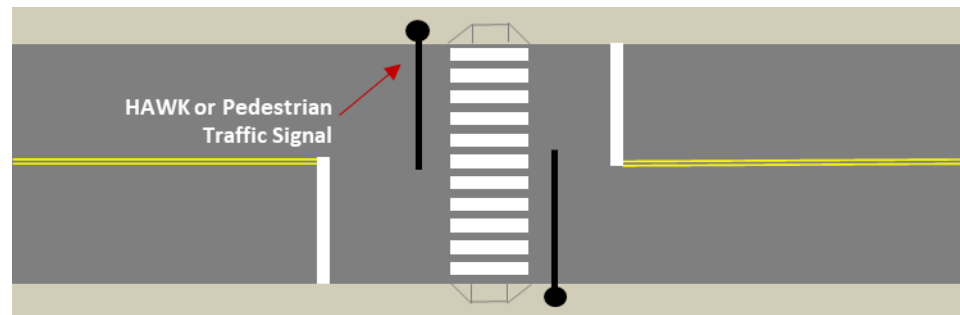
Type 4 Crosswalk Installation

- Marked crosswalk
- Median refuge island (If a median refuge island cannot be constructed on a 2-way street, then proceed to Type F)
- RRFB system installation
- Yield Markings prior to refuge island
- Standard 'Yield Here to Pedestrians' (R1-5) signs at yield markings
- Standard advance pedestrian warning signs (W11-2) with AHEAD plaques (W16-9P) in advance of the crosswalk
- If the location is within a school zone, then standard S1-1 signs should be used
- Consider adding curb extensions if on-street parking exists and drainage can be accommodated
- If pedestrian volumes are extremely high, consider Type F installation



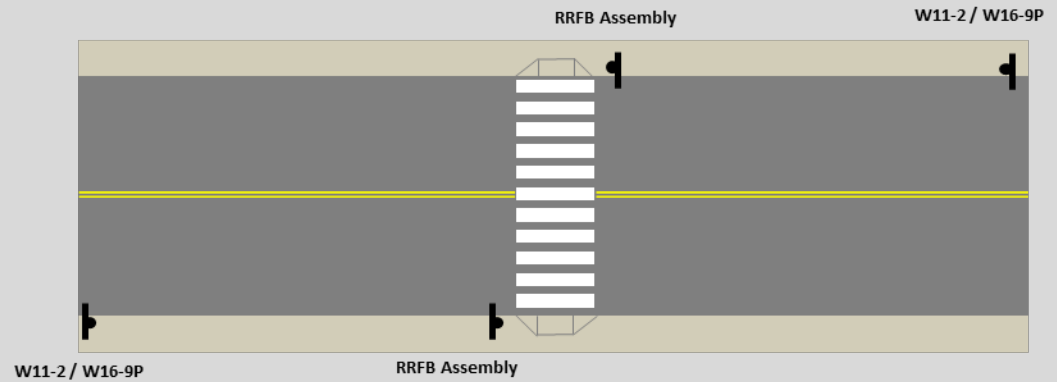
Type 5 Crosswalk Installation

- Consider a HAWK beacon, pedestrian traffic signal or grade-separated crossing.



Type 6 Crosswalk Installation

- Marked crosswalk
- RRFB system installation
- Standard advance pedestrian warning signs (W11-2) with AHEAD plaques (W16-9P) in advance of the crosswalk
- If the location is within a school zone, then standard S1-1 signs should be used





5.0

PEDESTRIAN NETWORK ASSESSMENT AND NEEDS

CROSSWALK AUDIT

In early spring of 2019, GPI conducted an inventory of all of Needham's crosswalks as provided by the Town. In total, there are 431 crosswalks with the following control breakdown: 69 Uncontrolled, marked Crossings, 230 Stop Controlled, 76 Signalized, 56 Parking Lot (Private).

5.1 DATA COLLECTION METHODOLOGY

Prior to the field inventory, all crosswalks were mapped in a GIS database, provided a unique identifier, and populated with a brief location description. To streamline the data collection process, ESRI mobile applications, Collector and Survey123, were utilized, allowing mass data collection within an organized platform. Given the large dataset (431 total crosswalks) crosswalks at signalized intersections and stop controlled approaches received a more cursory review while the uncontrolled crossings received a more in-depth evaluation given their lack of vehicular control. Crosswalks within parking lots (private areas) were excluded from this study.

Signalized Crosswalks

The cursory review for crosswalks at signalized intersections included a conditional assessment as well as data collection regarding pavement marking type, pedestrian signal equipment (pedestrian signal head type, pedestrian push button type, signal equipment condition), the presence of wheelchair ramps and photos of each

crosswalk. It should be noted that pedestrian signal timing and phasing was not collected as part of this project. It is recommended that the town conduct a separate traffic signal inventory to ensure that pedestrian signal phasing, where provided, complies with MUTCD and MassDOT standards.

Crosswalks at STOP-Controlled Approaches

The cursory review for crosswalks at STOP-Controlled approaches included a conditional assessment as well as data collection regarding pavement marking type, STOP sign condition, location of STOP bars, the presence of wheelchair ramps and photos of each crosswalk.

Uncontrolled Crosswalks

A more extensive data collection effort was executed for uncontrolled crossings and yield controlled crosswalks as pedestrians are at greater risk given the lack of vehicular control. Thus, in regard to potential implementation programs, prioritization should be given to these locations. The following data was collected for crosswalks falling into this category:

- **Public Concern Raised** – Indicates whether or not the crosswalk was identified as a concern during the public outreach efforts. Implementation efforts should be weighted to prioritize documented high-risk crosswalk locations.
- **School Zone Presence** – Indicates whether or not the crosswalk is located within a designated School Zone. Massachusetts law warrants a school zone if the school property abuts the public right of way within the limits of the proposed zone area, school children have direct access to the street or roadway from the school property, the zone contains a marked crosswalk, and the school involves one or more grades between Grade 1 and Grade 8, inclusive. Crosswalks within School Zones must adhere to specifications documented in the Massachusetts Amendment to the MUTCD.
- **Speed Regulation** – Identifies the roadway speed limit. Uncontrolled crosswalks, specifically those at midblock locations, along high-speed roadways should be given priority for any implementation programs.
- **Supplemental Device Presence** – Identifies any supplemental devices present at the crosswalk, if any, including RRFBs, HAWK signals, In-Pavement Lighting, Traffic Signal, Flashing Signal, or Other.
- **Crosswalk Type** – Identifies the type of crosswalk marking which may be one of the following: continental with no parallel lines, continental with parallel lines, parallel lines only, parallel lines with diagonals, colored insert, textured, or other.
- **Approach Data Collection**- Data was collected along each approach of the crosswalk, distinguished by the approach direction (NB, SB,EB,WB).

- Advanced Warning Sign Presence – Documents any advance warning signage and provides a photo and conditional assessment of any provided signage. Advance warning signage may include a W11-2/W16-9P sign assembly, S1-1/W16-9P sign assembly
- At Crosswalk Warning Sign Presence – Documents any advance warning signage and provides a photo and conditional assessment of any provided signage. At crosswalk warning signage may include a W11-2/W16-7P sign assembly or a S1-1/W16-7P sign assembly.
- Approach Stopping Sight Distance – Assesses the adequacy of stopping sight distance based on minimum lengths as dictated by the MUTCD and ASSHTO Green Book.
- Street Lighting– Indicates whether street lighting is available and if so, does it conform to FHWA recommendations?
- Wheelchair Ramps- Indicates whether wheelchair ramps are available and if so, what is the construction material and are detectable warning panels present.

AT&T 3:38 PM 73%

My Survey

Needham Crosswalk Inventory

Crosswalk ID

Public Concern Raised

☐ Yes

☐ No

Within a School Zone?

☐ Yes

☐ No

Speed Regulation

☐ 20 mph

☐ 25 mph

☐ 30 mph

☐ 35 mph

☐ 40 mph

☐ 45 mph

☐ Thickly Settled

☐ Safety Zone

Is a supplemental device present?

☐ Yes

☐ No

MOBILE DATA COLLECTION

A combination of ESRI mobile applications were used internally to streamline the data collection efforts. The image to the left is a screenshot of the data collection application used by GPI's field staff to complete the crosswalk inventory.

5.2 DATA COLLECTION RESULTS

Following the data collection efforts, data was housed in an ESRI geodatabase at which point data which was analyzed to ensure quality assurance and control.

Signalized Crosswalks

A total of 76 signalized crosswalks were inventoried during the data collection process. As seen in Table 4, approximately 18% of signalized crosswalks had pavement markings assessed as in poor condition. The town regularly repaints all roadway markings and it is anticipated that these crosswalk locations will be refreshed as part of the Town's annual maintenance program.

Table 4. Pavement Marking Conditional Assessment

Rating	# Crosswalks (%)
Good	26 (34%)
Fair	36 (48%)
Poor	14 (18%)

Although ramp dimensions were not taken as part of this project to assess ADA compliancy, the availability of wheelchair ramps was documented. **Of the total 76 signalized crosswalks, approximately 4 crosswalks were missing ramps.** It is advised that the Town install ramps at these locations to ensure accessibility.

A brief assessment of the pedestrian signal equipment, where available, was conducted

during the data collection process. Figure 6 provides a breakdown of pedestrian push button types while Figure 7 provides a breakdown of the different pedestrian signal heads observed in the field. It is recommended that the Town replace the 3 Non-ADA push buttons found in the field in the short term. As funding becomes available, the Town should consider upgrading all push button to APS buttons and all pedestrian signal heads to countdown timers as these represent the current industry standards.

Figure 6. Pedestrian Push Button Type

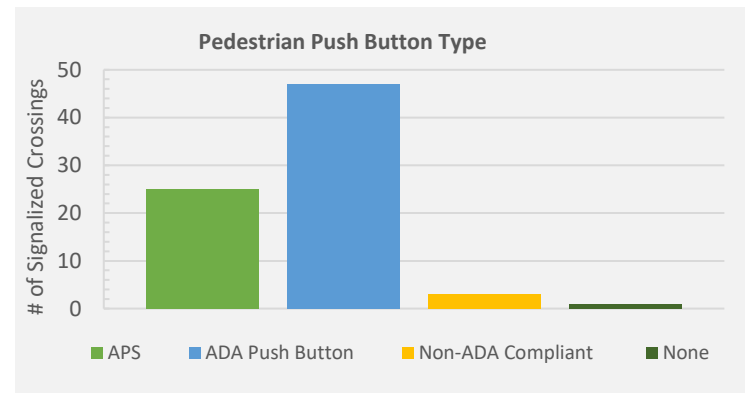
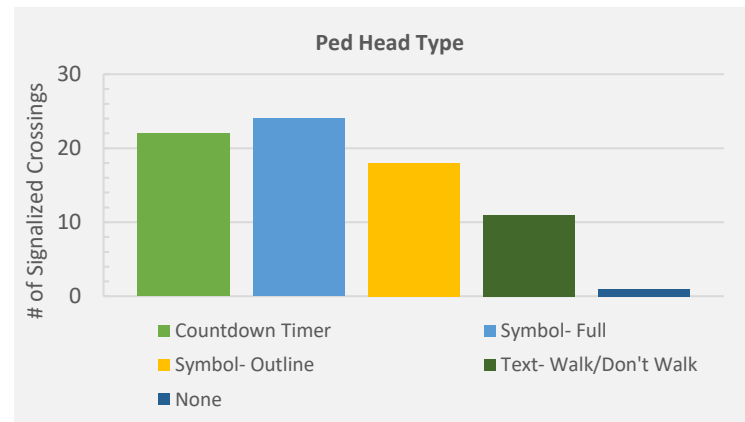


Figure 7. Pedestrian Signal Head Type



Overall pedestrian signal equipment was provided a conditional assessment- one of the options being antiquated. The following signalized intersections currently possess antiquated pedestrian signal equipment and should be upgraded to industry standards as funding becomes available:

- Central Avenue at Hunnewell Street
- Chestnut Street at Oak Street/ Beth Israel Hospital
- Great Plain Avenue at Central Avenue
- Great Plain Avenue at Greendale Avenue
- Highland Avenue at Gould Street/ Hunting Road

Stop Controlled Crosswalks

A total of 230 stop-controlled crosswalks were inventoried during the data collection process. As seen in Table 5 approximately 15% of the stop-controlled crosswalks had pavement markings assessed in poor condition. Again, it is anticipated that these markings will be refreshed as part of the Towns annual maintenance program.

Table 5. Pavement Marking Conditional Assessment

Rating	# Crosswalks (%)
Good	114 (50%)
Fair	80 (35%)
Poor	32 (15%)

Although ramp dimensions were not taken as part of this project to assess ADA compliancy, the availability of wheelchair ramps was documented. **Of the total 230 signalized crosswalks, approximately 18 crosswalks were missing ramps.** It is advised that the Town install ramps at these locations to ensure accessibility.

Uncontrolled Crosswalks

A total of 69 uncontrolled crosswalks were inventoried during the data collection process. As seen in Table 6, approximately 8% of the uncontrolled crosswalks had pavement markings assessed in poor condition. It is anticipated that these markings will be refreshed as part of the Towns annual maintenance program.

Table 6. Pavement Marking Conditional Assessment

Rating	# Crosswalks (%)
Good	37 (54%)
Fair	26 (38%)
Poor	6 (8%)

Although ramp dimensions were not taken as part of this project to assess ADA compliancy, the availability of wheelchair ramps was documented. **Of the total 69 uncontrolled crosswalks, approximately 12 locations were missing ramps.** It is advised that the Town install ramps at these locations to ensure accessibility.

Given the lack of vehicular control at uncontrolled crossings, visibility is of the utmost concern and as such, street lighting was documented during the data collection process. **Of the total 69 uncontrolled crossings, 12 locations were lacking street lighting presenting safety concerns at these locations during nighttime conditions.** For the 57 locations that reported having some sort of street lighting present, only 5% conform with the FHWA street lighting recommendations which states that for roadways that have traffic traveling in both directions, particularly those without a center median, two luminaries are required, located on either side of the road and placed prior to the crosswalk from the drivers' perspective.

Pedestrian warning crossing signage was also collected during the data collection process along each approach for each uncontrolled crossing. Advance warning signage may include a W11-2/W16-9P sign assembly or a S1-1/W16-9P sign assembly.

At crosswalk warning signage may include a W11-2/W16-7P sign assembly or a S1-1/W16-7P sign assembly. As Figure 8 indicates, 37 of the uncontrolled crosswalks (approximately 54%) have pedestrian warning signage at the crosswalk for both approaches (either a W11-2/W16-7P sign assembly or a S1-1/W16-7P sign assembly) while 11 uncontrolled crossings have pedestrian warning signage for at least one approach. Nineteen (19) of the total 69 uncontrolled crossings do not have pedestrian warning signage at the crosswalk on either approach. Of the existing at crosswalk signage, approximately 11 signs need replacement because they do not adhere to MUTCD conformance and likely do not pass required nighttime retro-reflectivity standards.

As Figure 8 also indicates, 24 of the uncontrolled crosswalks (approximately 35%) have advance pedestrian warning signage prior to the crosswalk on both approaches (either a W11-2/W16-9P sign assembly or a S1-1/W16-9P sign assembly) while 20 uncontrolled crossings have advance pedestrian warning signage for at least one approach. Twenty-five (25) of the total 69 uncontrolled crossings do not have advance pedestrian warning signage on either approach. Of the existing advance pedestrian signage, approximately 12 signs need replacement

because they do not adhere to MUTCD conformance and likely do not pass required nighttime retro-reflectivity standards.

Sight distances were measured for each approach of each uncontrolled crossing to ensure there is adequate visibility. Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO). Based on posted speeds, the **available sight distances for approximately 97% of the uncontrolled crossings meet or exceed the minimum requirements.**

Two locations were observed to have SSD close to the minimum requirements, MB-019 (Great Plain Avenue just east of North Hill Avenue) and MB-026 (Great Plain Avenue just northwest of Wilshire Park), both of which were identified as points of concern within the comments received from the TMAC.

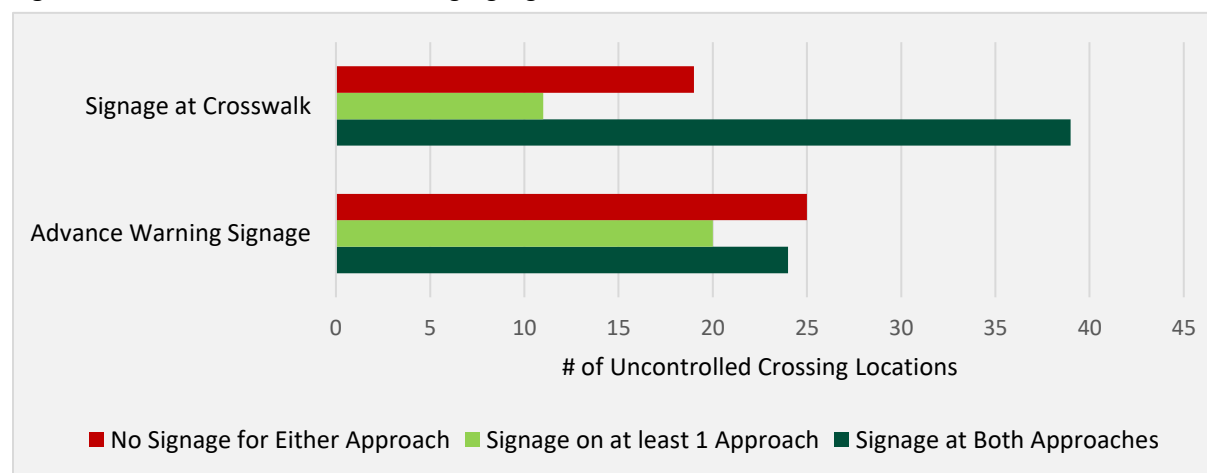
Additional SSD measurements were taken at each location at each of the wheelchair ramps as well as in the middle of each crosswalks to ensure proper visibility of pedestrians utilizing the crosswalk. Given the slight horizontal curve, the measured SSD for the westbound approach on Great Plain Avenue in regard to the southern ramp at the North Hill Avenue crossing was

approximately 300 feet. The speed limit at this location is 30 miles per hour and therefore this location meets the minimum requirement of 200 feet. It should be noted that this takes into account the posted speed limit only and not the 85th percentile speed. If the 85th percentile speed were as high as 39 mph, this location would not meet the minimum SSD requirements.

Given the horizontal curve, the measured SSD for the westbound and eastbound approach on Great Plain Avenue in regard to the southern ramp at the Wilshire Park crossing was approximately 220 feet and 200 feet, respectively. The speed limit at this location is assumed 30-mph prima facie. However, the 85th percentile speed collected as part of the count program south of this intersection was 33 mph which requires 230 feet of SSD. Therefore, both approaches fail in regard to clear visibility for pedestrians in the southern crosswalk at Wilshire Park.

It should be noted that both locations were included in the Top High Risk Locations and will receive crossing upgrades to enhance visibility.

Figure 8. Presence of Pedestrian Warning Signage at Uncontrolled Crosswalks



Section 6.0 Implementation further identifies specific crosswalk locations in need of maintenance and or upgrading.

The results of the crosswalk inventory have been added to an ESRI geodatabase that will be provided to the Town. Each crosswalk has attributes and photos from the inventory attached to it. This is a great tool for the Town to use in the future. A thorough database for the Town's crosswalks provides officials the opportunity to:

- Track assets
- Query and filter data to find specific locations in need of maintenance
- Optimize future planning and implementation efforts

All crosswalk attribute data is also included in the Appendix of this report as spreadsheets.



Faded pavement markings at Hunnewell/Hillside



Lack of wheelchair ramps at Harris Avenue/Dedham Avenue



Non-MUTCD Compliant school crossing signage, also blocked by utility pole



Non-MUTCD Compliant school crossing signage in poor condition on Greendale Avenue near St. Sebastian's School

6.0 IMPLEMENTATION



PEDESTRIAN SAFETY ENHANCEMENT PROJECTS

Following an in-depth analysis of the data collected during the crosswalk inventory, GPI identified several areas where the Town of Needham can implement pedestrian related measures to enhance safety at crossing locations.

6.1 High-Risk Crosswalk Locations

As previously stated, to accelerate the implementation efforts, a list of eight high-risk crosswalk locations was developed in Fall of 2018. These high-risk crosswalk locations were selected based on several criteria including roadway classification, traffic speeds, proximity to schools, transit, religious centers, parks, and civic destinations, adequacy of existing street lighting, the occurrence of pedestrian related collisions and community referenced locations. Since then, a design contract has been awarded to provide construction level, survey-grade plans to install Rectangular Rapid Flashing Beacons and other supplemental crossing enhancements at these locations. The full Preliminary High-Risk Crosswalk Locations Report can be found in the Appendix. The following provides a breakdown of the expected improvements to be implemented at each location:

Location 1- Webster Street at May Street

- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 2- Webster Street at High School Drive (North)

- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 3- Webster Street at High School Drive (South)

- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 4- Central Avenue at Newman Elementary School

- Install RRFB System and advanced warning crossing signs.
- Install ADA complaint ramp with detectable warning panels for eastern side of Central Ave crossing.
- Replace detectable warning panels on existing wheelchair ramps crossing the school driveway
- Refresh pavement markings.
- Upgrade Street Lighting

Location 5- Great Plain Avenue at Hillcrest Road

- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 6- Great Plain Avenue at North Hill Avenue

- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 7- Great Plain Avenue at Wilshire Park/Beaufort Avenue

- Evaluate Sight Distances and visibility of crosswalk
- Install RRFB System and advanced warning crossing signs.
- Refresh pavement markings.
- Upgrade Street Lighting

Location 8- Great Plain Avenue at Broad Meadow Road

- Evaluate realignment of crosswalk to align with MBTA access walk
- Install RRFB System and advanced warning crossing signs.
- Install ADA complaint ramps with detectable warning panels for Great Plain Avenue crossing.
- Refresh pavement markings.
- Upgrade Street Lighting

6.2 Safety Zone Implementation

As addressed in Section 4.0 Policy Recommendations, the Town of Needham is advised to strategically implement safety speed zones (20 MPH) in areas where vulnerable road users are likely to be present such as parks and playgrounds, senior citizen housing and centers, hospitals or other medical facilities, high school and higher education centers, transit centers and daycare facilities. GPI identified 5 potential safety speed areas which are listed below.

1. Hillside Avenue (Approx. 100 feet south of Webster Street to Approx. 150 feet south of Pine Groove Street) near Cricket Field
2. Rosemary Street (Tilston Road to Approx. 100 feet west of Highland Avenue) near Rosemary Recreation Complex / Rosemary Lake/ Pool
3. Webster Street (Rosemary Street to May Street) near Needham High School
4. Beaufort Avenue (Nichols Rad to Mt. Vernon Avenue) near Perry Park
5. Great Plain Avenue (Harris Avenue to Elmwood Road) near Hersey MBTA Train Station



6.3 Webster Street Safety Corridor

Safety concerns along Webster Street were most cited during the public outreach program. Webster Street is an urban collector roadway that carries a high volume of traffic due to the high school location and falls within a high-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. In an effort to slow down traffic speeds and provide more safe and comfortable accommodations for vulnerable road users such as pedestrians and bicyclists, it is recommended that the Town of Needham initiate a complete streets project along Webster Street. Elements to be incorporated may include the following:

- RRFB at the northern and southern crosswalks providing access to the high school as well as the crosswalk just north of May Street.
- Improved street lighting along the corridor, providing a more appealing and safer environment for pedestrians.
- Implement a safety speed 20 mph zone from Rosemary Street to May Street.
- Dedicated bicycle lanes along both sides of Webster Street. Bike lanes can be colored green within the vicinity of the high school for additional visibility

The improvements are depicted in Figure 9.

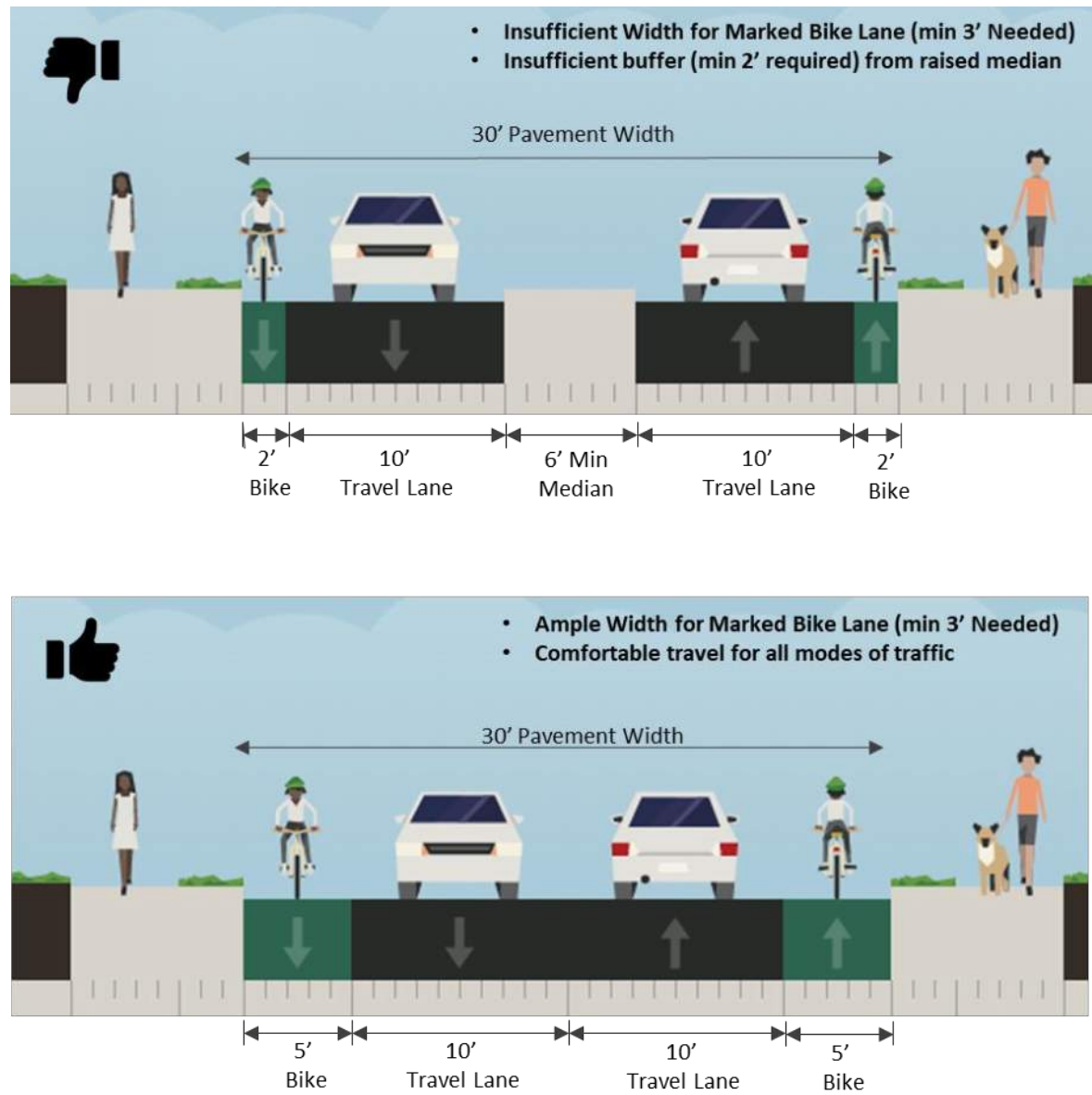
Figure 9. Potential Improvements for Webster Street



It should be noted that the installation of a raised island median was considered along Webster Street right in front of the High School. A raised median at this location would require a minimum width of 6 feet, although 8 feet is preferred according to industry standards. Webster Street, in the vicinity of the High School, has a varying curb to curb pavement width of approximately 30-36 feet. Within a 30' curb-to-curb cross section and utilizing a minimum 6-foot width raised median, there would not be enough room to safely allocate a dedicated bike lane (only 2' bike lanes would be available which is not allowed). Conceptual cross sections depicting the installation of a raised median verses no raised median are shown in Figure 10. As the Figure shows, the cross section with no raised median provides a much more comfortable roadway environment for all users.

To keep a consistent cross section and safely provide accommodations for all road users, it is recommended that a raised median not be installed along Webster Street at this time given the existing cross section. Should the Town want to consider a full roadway reconstruction project along the length of the Webster Street corridor, traffic calming elements, such as a raised median, could be considered if the roadway was widened to a consistent cross section.

Figure 10. Raised Median vs. No Raise Median Conceptual Cross Section



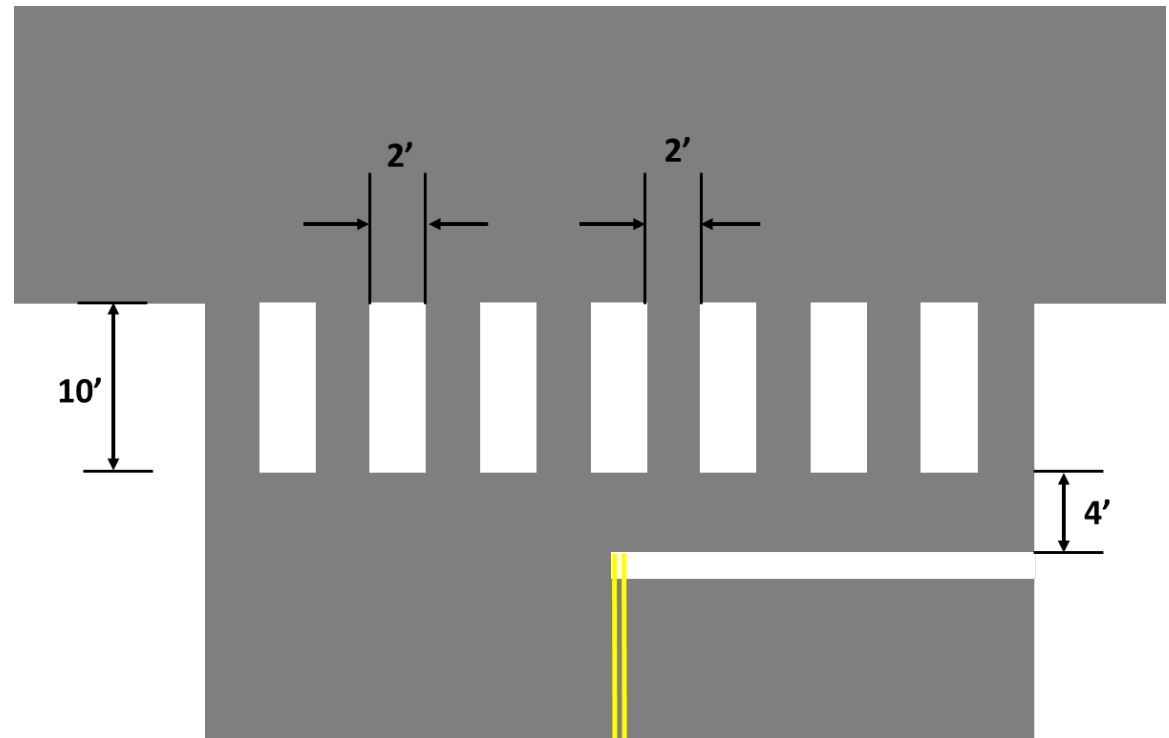
6.4 Pavement Markings

As the crosswalk inventory revealed, there are 52 crosswalk locations which had pavement markings in poor condition. Crosswalk markings legally establish a crossing location and are critical to providing visibility to both the motorist and pedestrian as to where people may be crossing. Therefore, the Town of Needham is recommended to incorporate an annual or bi-annual pavement marking maintenance program in which crosswalks are refreshed for enhanced visibility. Should the Town find that pavement markings are continually fading, the Town is recommended to experiment with a new paint or treatment for lasting durability.

Other communities in the Greater Boston region have installed 3-D Crosswalks near elementary schools which are intended to slow down drivers by means of the optical illusion. GPI does not recommend that the Town experiment with this alternative design as it is not supported by the FHWA, even under experimental status. This treatment depicts a 3-dimensional object which could be perceived as a real raised object on the roadway and thus drivers may take evasive action such as abruptly stopping or swerving upon seeing the markings. Given the potential for a significant percentage of drivers to react unpredictably, the risk is too high to even experiment with these treatments.

GPI recommends the Town install continental style crosswalks. Continental style crosswalks consist of equally spaced longitudinal lines of consistent width (as depicted below in Figure 11) and are generally considered safer because they are more visible to drivers as reported by the Federal Highway Administration (FHWA). A typical crosswalk/stop bar placing layout is depicted in Figure 11 and can be adopted by the Town of Needham.

Figure 11. Crosswalk/ Stop Bar Placement and Dimensions



6.5 Wheelchair Ramps- Accessibility

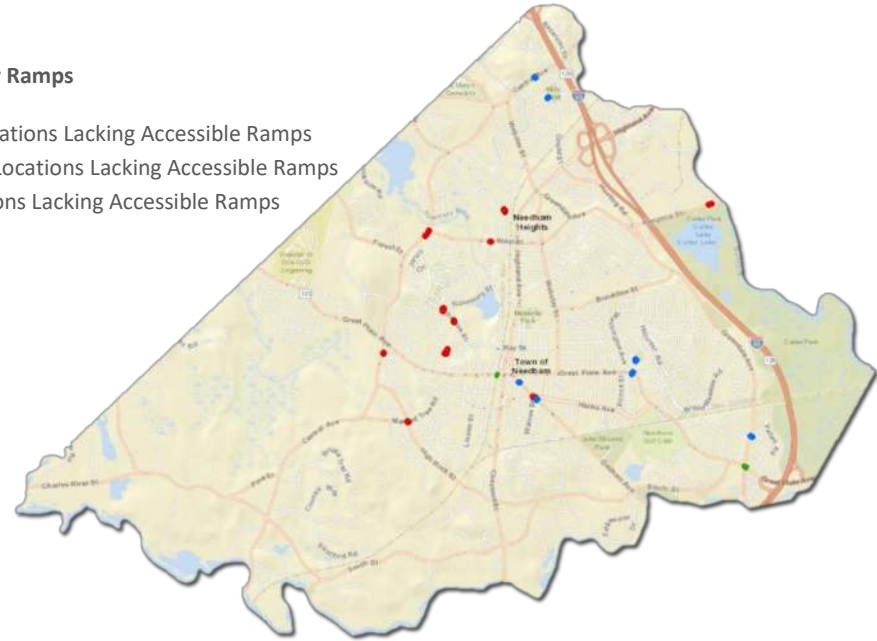
Although ramp dimensions were not taken as part of this project to assess ADA compliancy, the availability of wheelchair ramps was documented. Table 7 identifies all crosswalk locations in which a lack of ramps was documented while Figure 12 graphically depicts each location. It is advised that the Town install ramps at these locations to ensure accessibility. Uncontrolled crossings should receive treatment first, followed by signalized and stop controlled intersections. In the future, the Town should consider conducting a town-wide curb ramp inventory to assess ADA compliancy system wide and make efforts to have all ramps accessible.

Table 7. Missing Ramps

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN-001	Beaufort Avenue	Hawthorn Avenue	STP-070	Harris Avenue	Just northeast of Dedham Avenue
UN -002	Beaufort Avenue	Just north of Hawthorn Avenue	STP-074	High Rock Street	Just south of Marked Tree Road
UN -009	Central Avenue	Just east of Gould Street	STP-083	Hillside Avenue	Just south of Hunnewell Street
UN -014	Dedham Avenue	Just southwest of Lincoln Street	STP-084	Hillside Avenue	Just north of Hunnewell Street
UN -016	Dedham Avenue	Just southeast of Harris Avenue	STP-117	Marked Tree Road	Just west of High Rock Street
UN -018	Gould Street	Approx. 350 feet northeast of Ellis Street	STP-132	Meadowbrook Road	Just south of Nehoiden Street
UN -026	Great Plain Avenue	Just northwest of Wilshire Park	STP-133	Meadowbrook Road	Just west of Newell Avenue
UN -030	Greendale Avenue	Just south of Intervale Road	STP-148	Newell Avenue	Just south of Prospect Street/Lewis Street
SIG-025	Great Plain Avenue	West of Rail Crossing	STP-149	Newell Avenue	Just west of Lewis Street
SIG-030	Great Plain Avenue	East of Greendale Avenue	STP-163	Parish Road	Just north of Rosemary Street
SIG-031	Great Plain Avenue	West of Greendale Avenue	STP-164	Parish Road	Just east of Central Avenue
SIG-035	Greendale Avenue	North of Greendale Avenue	STP-176	Pond Street	Just east of Central Avenue
STP-001	4 TH Avenue	Just North of Kendrick Street	STP-184	Rosemary Street	Just east of Parish Road
STP-013	Blacksmith Drive	Just southwest of Nehoiden Street	STP-212	Warren Street	Just southwest of Dedham Avenue
STP-037	Dale Street	Just south of West Street	STP-221	West Street	Just east of Central Avenue

Figure 12. Missing Wheelchair Ramps

- Uncontrolled Crosswalk Locations Lacking Accessible Ramps
- Stop-Controlled Crosswalk Locations Lacking Accessible Ramps
- Signalized Crosswalk Locations Lacking Accessible Ramps



6.6 Traffic Signs

Traffic sign conditional assessments were collected for uncontrolled crosswalks (at crosswalk and advance pedestrian warning signs). Of the existing at crosswalk signage, approximately 11 signs do not adhere to MUTCD conformance and likely do not pass required nighttime retro-reflectivity standards (Table 8 and Figure 13). Therefore, these signs must be replaced by the Town to ensure nighttime visibility.

Nineteen (19) of the total 69 uncontrolled crossings do not have pedestrian warning signage at the crosswalk on either approach. These locations are listed in Table 9 and graphically depicted on Figure 14. It is recommended that the Town install pedestrian crossing warning signs (W11-2) mounted on the side of the roadway at the crossing, with diagonal down arrow plaques (W16-7P) for both approaches to enhance visibility of the crosswalk and provide the motorist with additional cues of a pedestrian crossing.

Of the existing advanced pedestrian signage, approximately 12 signs do not adhere to MUTCD conformance and likely do not pass required nighttime retro-reflectivity standards (Table 10 and Figure 15). Therefore, these signs must be replaced by the Town to ensure nighttime visibility. Twenty-five (25) of the total 69 uncontrolled crossings do not have pedestrian warning signage at the crosswalk on either approach. These locations are listed in Table 11 and graphically depicted on Figure 16. It is recommended that the Town install advance pedestrian warning signs (W11-2) with AHEAD plaque (W16-9P) for both approaches for additional warning where applicable.

Table 8. Pedestrian Warning Sign in Need of Replacement at Crosswalk

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -009	Central Avenue	Just east of Gould Street	UN -030	Great Plain Avenue	Just south of Intervale Road
UN -012	Chapel Street	Near Needham Town Hall	UN -034	Highland Avenue	Needham Town Hall
UN -013	Chestnut Street	Just north of Junction Street	UN -042	Interstate 95 On Ramp	Just north of Highland Avenue
UN -028	Greendale Avenue	Approx. 210 feet north of Hamlin Lane	UN -068	Nehoiden Street	Just southwest of Meadowbrook Road

Table 9. No Pedestrian Warning Sign Present at Crosswalk

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -001	Beaufort Avenue	Hawthorn Avenue	UN -049	Map Hill Drive	Coleman Parking Lot
UN -014	Dedham Avenue	Just southwest of Lincoln Street	UN -051	Map Hill Drive	East of Mandell Family Hall
UN -017	East Drive	Just northeast of Olin Way	UN -057	Newell Avenue	From Meadowbrook Road to Lewis Street
UN -018	Gould Street	Approx. 350 feet northeast of Ellis Street	UN -058	Oak Street	Just east of Maple Street
UN -022	Great Plain Avenue	Glendoon Road to Maple Street	UN -059	Oak Street	Just west of Maple Street
UN -033	High Rock Street	Just south of Birchwood Road	UN -060	Olin Way	Approximately 165 feet north of Great Plain Ave
UN -036	Highland Avenue	Just east 1st Avenue	UN -061	Olin Way	From Govoni Field to Parcel B Access Road
UN -040	Hunnewell Street	Hillside Avenue	UN -067	West Street	Just west of Hillside Avenue
UN -041	Hunnewell Street	Hillside Avenue	UN -069	Greendale Avenue	South of Great Plain Avenue
UN -043	I-95 On Ramp	NB On-Ramp, Just north of Great Plain Ave			

Table 10. Advance Pedestrian Warning Sign in Need of Replacement

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -013	Chestnut Street	Just north of Junction Street	UN -030	Great Plain Avenue	Just south of Intervale Road
UN -026	Great Plain Avenue	Just northwest of Wilshire Park	UN -061	Olin Way	From Govoni Field to Parcel B Access Road
UN -028	Great Plain Avenue	Approx. 210 feet north of Hamlin Lane	UN -068	Nehoiden Street	Just southwest of Meadowbrook Road
UN -029	Great Plain Avenue	Just south of Grosvenor Road	UN -069	Greendale Avenue	South of Great Plain Avenue

Table 11. No Advance Pedestrian Warning Signage Present Prior to Crosswalk

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -001	Beaufort Avenue	Hawthorn Avenue	UN -036	Highland Avenue	Just east 1st Avenue
UN -003	Beaufort Avenue	Just north of Sargent Street	UN -037	Highland Avenue	Avery Square to Mark Lee Road
UN -009	Central Avenue	Just east of Gould Street	UN -040	Hunnewell Street	Hillside Avenue
UN -012	Chapel Street	Near Needham Town Hall	UN -041	Hunnewell Street	Hillside Avenue
UN -014	Dedham Avenue	Just southwest of Lincoln Street	UN -043	I-95 On Ramp	NB On-Ramp, Just north of Great Plain Ave
UN -017	East Drive	Just northeast of Olin Way	UN -049	Map Hill Drive	Coleman Parking Lot
UN -018	Gould Street	Approx. 350 feet northeast of Ellis Street	UN -051	Map Hill Drive	East of Mandell Family Hall
UN -021	Great Plain Avenue	Washburn Avenue to Linden Street	UN -057	Newell Avenue	From Meadowbrook Road to Lewis Street
UN -022	Great Plain Avenue	Glendoon Road to Maple Street	UN -058	Oak Street	Just east of Maple Street
UN -025	Great Plain Avenue	Just southeast of Hillcrest Road	UN -059	Oak Street	Just west of Maple Street
UN -033	High Rock Street	Just south of Birchwood Road	UN -060	Olin Way	Approximately 165 feet north of Great Plain Ave
UN -034	Highland Avenue	Needham Town Hall	UN -067	West Street	Just west of Hillside Avenue
UN -035	Highland Avenue	Just north of Oakland Avenue			

Figure 13. Uncontrolled Crosswalk Locations where Pedestrian Warning Signage is in Need of Replacement at Crosswalk



Figure 14. Uncontrolled Crosswalk Locations where No Pedestrian Warning Signage is Present at Crosswalk

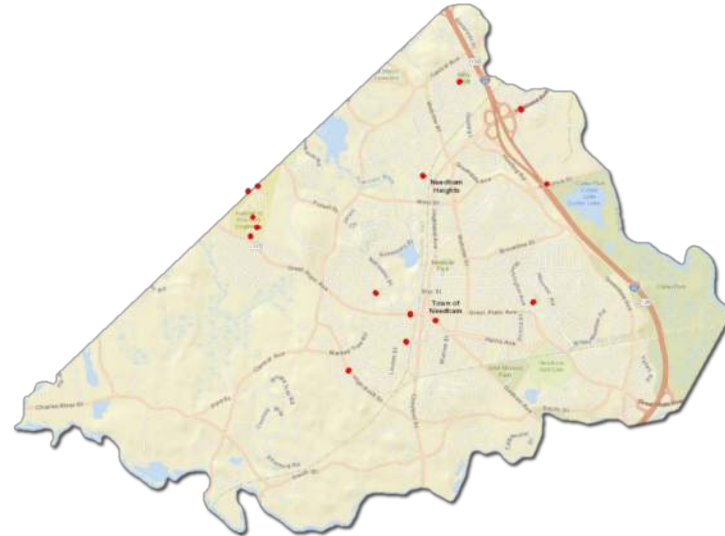
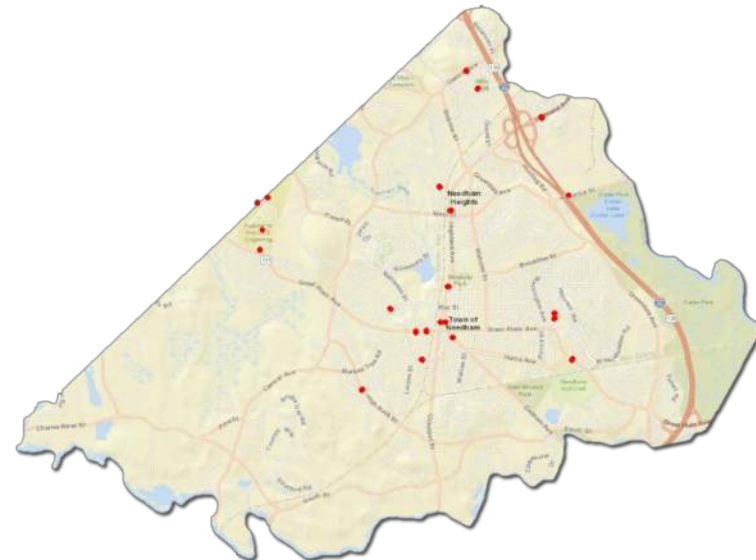


Figure 15. Uncontrolled Crosswalk Locations where Advance Pedestrian Warning Signage Needs to be Updated



Figure 16. Uncontrolled Crosswalk Locations where No Advance Pedestrian Warning Signage is Present Prior to Crosswalk



6.7 Street Lighting

As indicated by the crosswalk inventory, of the **total 69 uncontrolled crossings, 12 were lacking street lighting**. For the 57 locations that reported having some sort of street lighting present, only 5% conform with the FHWA street lighting recommendations which states that for roadways that have traffic traveling in both directions, particularly those without a center median, two luminaries are required, located on either side of the road and placed prior to the crosswalk from the drivers' perspective. Table 12 identifies the 12 locations in which street lighting was not present. The Town should install lighting at these locations and do so in conformance with FHWA recommendations.

Figure 17. Uncontrolled Crossing Street Lighting

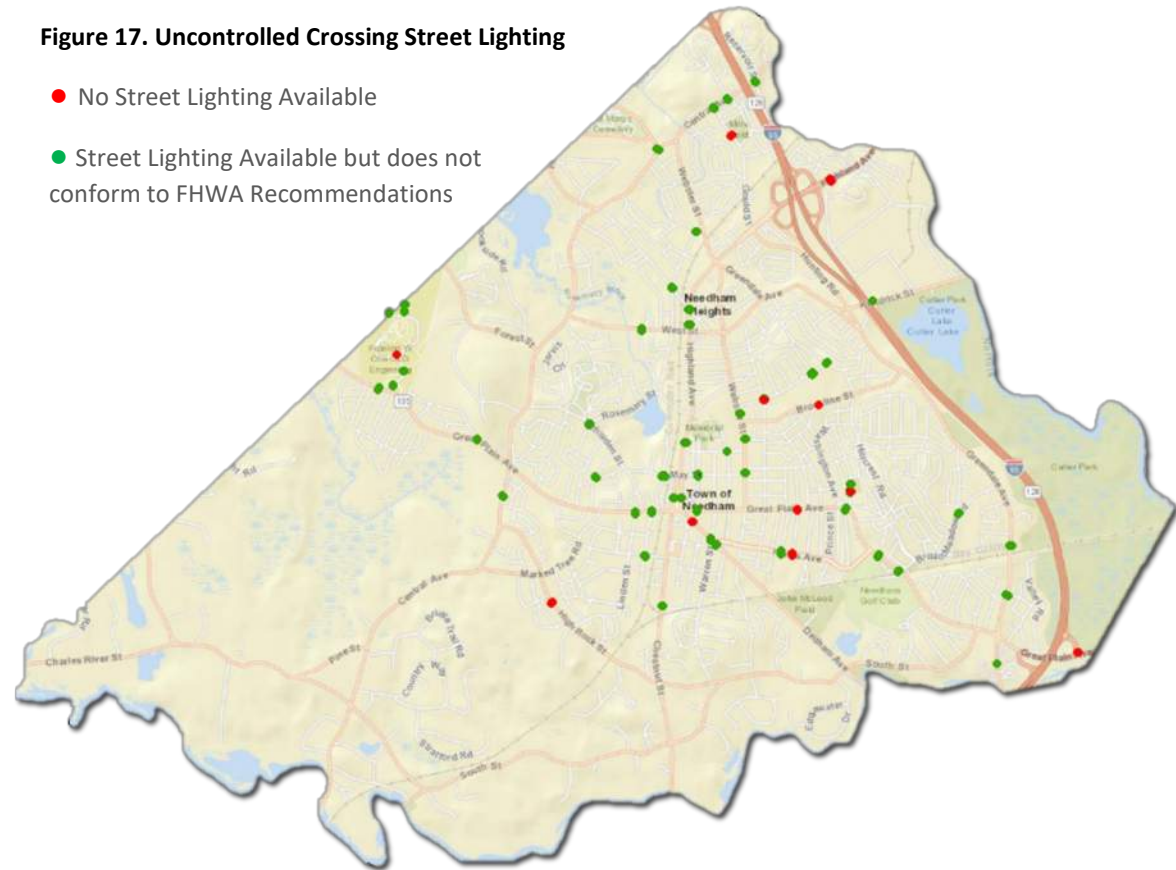


Table 12. Uncontrolled Locations Lacking Street Lighting

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -002	Beaufort Avenue	Just north of Hawthorn Avenue	UN -032	Harris Avenue	Just west of Pinewood Road
UN -006	Brookline Street	130 feet west of Dell Avenue	UN -033	High Rock Street	Just south of Birchwood Road
UN -014	Dedham Avenue	Just southwest of Lincoln Street	UN -036	Highland Avenue	Just east 1st Avenue
UN -017	East Drive	Just northeast of Olin Way	UN -042	I-95 On-Ramp	Just north of Highland Avenue
UN -018	Gould Street	Approx. 350 feet northeast of Ellis Street	UN -048	Manning Street	Just south of Lindbergh Avenue
UN -027	Great Plain Avenue	Greenwood Avenue to Pinewood Road	UN -067	West Street	Just west of Hillside Avenue

The inventory also concluded that of the remaining 57 uncontrolled crossings that did have street lighting available, 54 did not have a FHWA recommended, or preferred, layout (Table 13). Figure 18 depicts the traditional lighting design in comparison to the FHWA recommended or preferred design. The FHWA's Publication No. FHWA-HRT-08-053: Informational Report on Lighting Design for Midblock Crosswalks, released in April 2008, documented new recommendations for streetlighting at crosswalks. It should be noted that these recommended layouts are for municipalities to use as a tool rather than a standard or requirement they must meet. The preferred layout will aid Towns in obtaining optimal lighting levels should the infrastructure already be in place.

Prior to the new recommendations, many agencies installed a single luminaire directly over a midblock crosswalk. This practice provides high pavement luminance at the crosswalk but inadequately illuminates the pedestrian. The FHWA now recommends that for roadways that have traffic traveling in both directions, particularly those without a center median, two luminaires are required, located on either side of the road and placed prior to the crosswalk from the drivers' perspective.

Many crosswalks are located within intersections which pose many conflict points for pedestrians. Prior to FHWA's new recommendations, luminaires were positioned to provide a high level of pavement illuminance required in the

intersection and to light the potential conflict areas for the vehicles. This practice lights the side of the pedestrian facing the intersection and does not light the side of the pedestrian facing the approaching vehicle. Therefore, the FHWA now recommends that luminaires be located away from the intersection to provide light on the approach side of the pedestrian.

It is understood that street lighting is a costly expense for any municipality and given the current funding environment, a large funding source to relocate and install new lighting posts is not available. Therefore, it is recommended that the Town fiscally plan to modify street lighting placement where necessary to match that of the FHWA recommended layouts as part of future projects. In the meantime, it is recommended that the Town utilize the Smart Controls inclusive of the recent LED town wide retrofitting project to light crosswalks to the best of their ability given the existing infrastructure in place. Crosswalks should be lit at 1.5 times the illuminance as lighting not at a crosswalk. It is recommended that street lighting in the vicinity of a crosswalk be set at 80% Wattage between 1 AM and 5 AM and at 100% Wattage at all other times.

Figure 18. FHWA New Street Lighting Recommendations

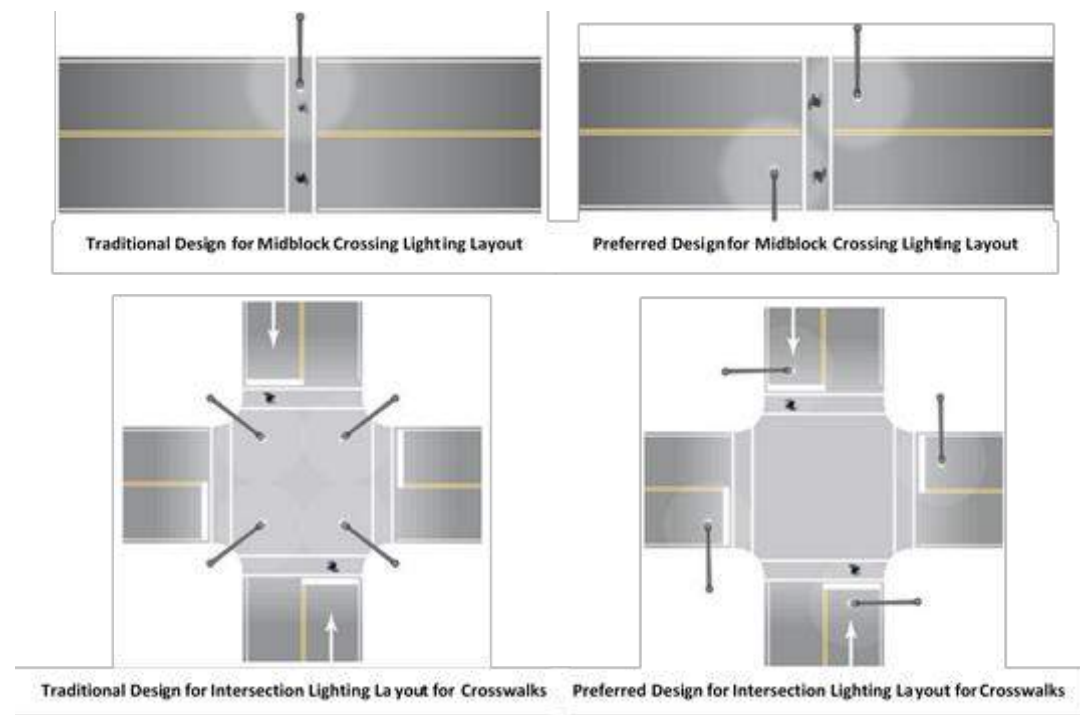


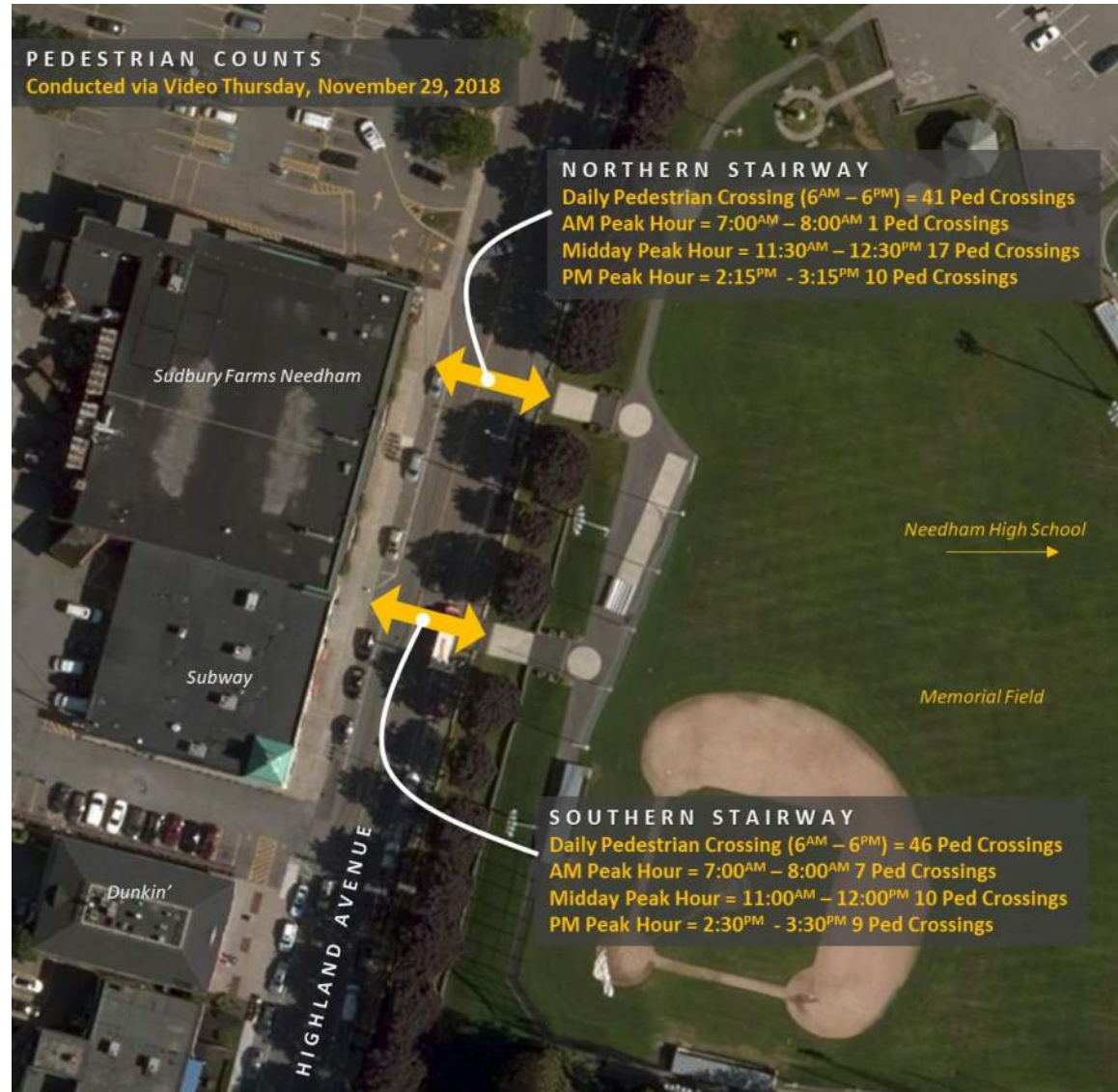
Table 13. Street Light Available but does not Conform to FHWA Recommendations

Crosswalk ID	Street	Location Description	Crosswalk ID	Street	Location Description
UN -001	Beaufort Avenue	Hawthorn Avenue	UN-039	Hillside Avenue	Just south of Sunnyside Road
UN-003	Beaufort Avenue	Just north of Sargent Street	UN-040	Hunnewell Street	Just north of Hillside Street
UN-004	Bird Street	Broad Meadow Rd	UN-041	Hunnewell Street	Just south of Hillside Street
UN-005	Broad Meadow Road	Dawson Drive to Grosvenor Road	UN-043	Interstate 95 On Ramp	Northbound On-Ramp, Just north of Great Plain Avenue
UN-007	Central Avenue	Just north of Newman Elem. School Dwy	UN-044	Kingsbury Street	Just east of Admiral Gracey Drive
UN-008	Central Avenue	Just south of Cedar Street	UN-045	Lindbergh Avenue	Just east of Tower Avenue
UN-009	Central Avenue	Just east of Gould Street	UN-046	Lindbergh Avenue	Just west of Tower Avenue
UN-010	Central Avenue	Just west of St. Mary Street	UN-047	Manning Street	Just north of Lindbergh Avenue
UN-011	Central Avenue	Reservoir Street	UN-049	Map Hill Drive	Coleman Parking Lot
UN-013	Chestnut Street	Just north of Junction Street	UN-050	Map Hill Drive	West of East Drive
UN-015	Dedham Avenue	Just northwest of Warren Street	UN-051	Map Hill Drive	East of Mandell Family Hall
UN-016	Dedham Avenue	Just southeast of Harris Avenue	UN-052	May Street	Just west of Garden Street
UN-019	Great Plain Avenue	Just east of North Hill Avenue	UN-053	May Street	Just east of Garden Street
UN-020	Great Plain Avenue	Just east of Stockdale Road	UN-054	May Street	Just west of Pickering Street
UN-021	Great Plain Avenue	Washburn Avenue to Linden Street	UN-055	May Street	Just east of Pickering Avenue
UN-022	Great Plain Avenue	Glendoon Road to Maple Street	UN-056	Nehoiden Street	Just east of Meadowbrook Road
UN-023	Great Plain Avenue	Just west of Pickering Street	UN-057	Newell Avenue	From Meadowbrook Road to Lewis Street
UN-024	Great Plain Avenue	Just northwest of Broad Meadow Road	UN-058	Oak Street	Just east of Maple Street
UN-025	Great Plain Avenue	Just southeast of Hillcrest Road	UN-059	Oak Street	Just west of Maple Street
UN-026	Great Plain Avenue	Just northwest of Wilshire Park	UN-060	Olin Way	Approximately 165 feet north of Great Plain Avenue
UN-029	Greendale Avenue	Just south of Grosvenor Road	UN-061	Olin Way	From Govoni Field to Parcel B Access Road
UN-030	Greendale Avenue	Just south of Intervale Road	UN-063	Webster Street	Just north of May Street
UN-031	Harris Avenue	Just west of Stevens Road	UN-064	Webster Street	Just north of Holland Street
UN-034	Highland Avenue	Approx. 325 feet north of Great Plain Ave	UN-065	Webster Street	Approximately 180 feet south of Lindbergh Avenue
UN-035	Highland Avenue	Just north of Oakland Avenue	UN-066	West Street	Just west of Glen Gary Road
UN-037	Highland Avenue	Avery Square to Mark Lee Road	UN-067	West Street	Just west of Hillside Avenue
UN-038	Highland Avenue	Just west of Hunnewell Street	UN-068	Nehoiden Street	Just southwest of Meadowbrook Road

6.8 Crosswalk along Highland Avenue

Given the number of community concerns regarding the desire for a crosswalk along Highland Avenue in the vicinity of the stairs accessing the Memorial Field and the High School, GPI collected pedestrian counts to gage the need for a marked crosswalk. Video pedestrian counts were conducted on Thursday, November 29, 2018 from 6 AM to 6 PM and are depicted in Figure 19. Staff reported partly cloudy conditions and a high of 46 degrees. The data depicted two paths (one at the northern stairway and one at the southern stairway). The northern stairway had a daily ped crossing of 41 while the southern stairway had a daily ped crossing of 46. The peak hour at the northern stairway occurred from 11:30 AM to 12:30 PM as 17 pedestrian crossings were observed. The peak hour at the southern stairway occurred from 11:00 AM to 12:00 PM as 10 pedestrian crossings were observed. If these paths were consolidated, it would result in approximately 27 pedestrian crossings within the lunch hour, which is expected given that High School students are allowed off campus during lunch. **An expected combined 27 pedestrian crossings would satisfy the MUTCD pedestrian volume threshold of 20 pedestrians per peak hour to install a consolidated crosswalk along Highland Avenue.**

Figure 19. Highland Avenue Pedestrian Counts



It is recommended that the Town of Needham consider the installation of a marked crosswalk along Highland Avenue to service the pedestrian demand at this location. An enhanced crossing at this location will change the context of Highland Avenue within this area and put more of an emphasis on all road users rather than just automobiles. It is recommended that one high visibility crosswalk, central of the two stairways, be installed in conjunction with curb extensions and an RRFB system.

Since pedestrians are currently using these crossings, the installation of the RRFB and higher visibility crosswalk as shown, would have little impact on traffic operations.

Curb extensions improve the visibility of pedestrians waiting to cross the street and minimize the impact of parked cars on pedestrian visibility which is important in this busy downtown area. Curb extensions also reduce the pedestrian crossing distance and have the potential to slow down vehicle traffic through traffic calming means. Additional area within the curb extension can possibly be landscaped for street side appeal and act as a gateway into the downtown area. **The curb extensions will likely result in the loss of up to five on-street parking spaces.** Curb extensions should not be wider than 6 feet. RRFBs will enhance the pedestrian crossing by increasing driver awareness of potential pedestrian conflicts. RRFBs can be activated by pedestrians manually by a push of a button or passively by a pedestrian detection system. Figure 20 depicts a conceptual look of a potential crossing along Highland Avenue.

Figure 20. Conceptual Plan View of Crosswalk



6.9 Dedham Ave. at Harris Ave. Intersection

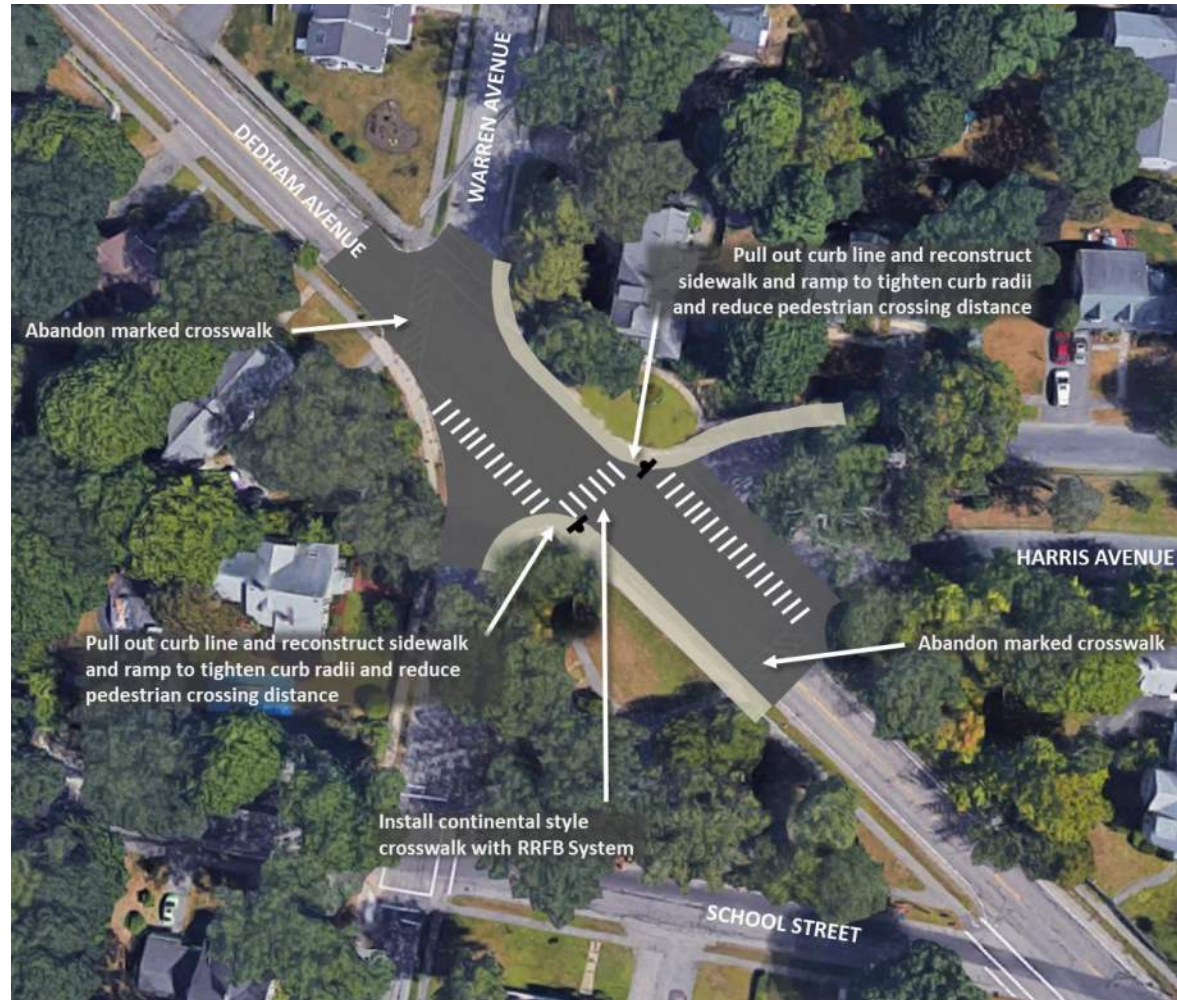
The intersection of Dedham Avenue at Harris Avenue has been identified by Town Officials, as well as the community via the TMAC feedback, as a complex and dangerous location in which pedestrian safety is compromised due to long crossing distances and the uncontrolled nature of the existing crosswalks. This intersection falls within a high-density pedestrian related crash cluster according to the crash records pulled from MassDOT's Crash Portal from 2012-2016. The speed limit along Dedham Avenue in the vicinity of the intersection is 30 mph which is dropped from 40 mph a few hundred feet south of the intersection, resulting in the possibility of residual speeding. Ramps servicing the southern crosswalk on Dedham Avenue are non-ADA compliant.

The Town has compiled several conceptual plans to address the intersection's complexity and provide a safer environment for all road users. Many of these concepts consist of realigning the southern leg of Warren Avenue to intersect Dedham Avenue perpendicularly and in line with Harris Avenue which would require roadway reconstruction and alteration to the green space. It is recommended that the Town move forward with a long term reconstruction project to address safety concerns at this intersection.

In the short term, however, it is recommended that the curb lines be pulled out and sidewalks/ramps be reconstructed at the northern side of Harris Avenue and southeast side of Warren Avenue. This will tighten curb radii

to facilitate slower turning speeds as well as reduce the pedestrian crossing distance. It is recommended that the existing crosswalks north and south of the intersection be abandoned and a new marked continental crosswalk be installed just north of Harris Avenue. This crosswalk can be enhanced via a Rectangular Rapid Flashing Beacon for additional visibility. These short term improvements are depicted below in Figure 21.

Figure 21. Short Term Improvement at Dedham Avenue/Warren Avenue/Harris Avenue Intersection



7.0

PEDESTRIAN CROSSING DESIGN GUIDANCE

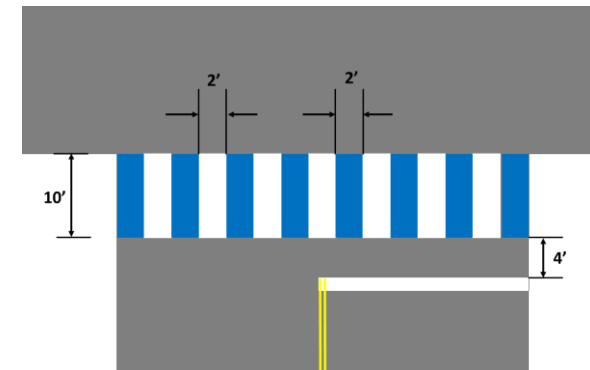
This toolbox shall be used for the design of pedestrian crossings. Good engineering judgement shall be applied to all crosswalk enhancements and future installations.



7.1 PAVEMENT MARKINGS

Treatment Type	Objective	Advantages	Disadvantages	Cost
Table 14. Pavement Markings/ Pavement Treatments:				
High-Visibility Markings	To provide drivers with greater information where pedestrians may not be expected to cross the street	Improves the visibility of the crossing for approaching drivers and for pedestrians with hindered vision	Cost of installation and maintenance	\$500- \$1,000 per crosswalk
Textured Surfaces	To increase driver attentiveness when approaching marked crosswalks	Textured surfaces help crosswalks stand out and also provide a tactile cue to help those with sight impairment.	- High construction and maintenance costs - Does not provide smooth, accessible surfaces for pedestrians - May present problems for wheelchair accessibility	\$10,000 - \$35,000 per crossing
Colored Paint	To emphasis presence of the crosswalk	Draws more attention to the crosswalk to alert drivers	Certain colors may degrade the contrast of white crosswalk lines	\$500- \$1,000 per crosswalk
Advance Stop Bar/Yield Lines	To provide motorists with a clear indication as to where they are required to stop or yield in advance of a pedestrian crossing	-Improves visibility of pedestrians to motorists - Prevents multiple threat crashes (on multi-lane roadways where one vehicle stops too closely to the crosswalk and blocks view of pedestrian crossing while vehicle continues to travel in the adjacent lane)	- Motorists may ignore markings if placed too far in advance of crosswalk. -Maintenance costs - May result in a loss of on-street parking	\$300 - \$350

As previously stated, GPI recommends that the Town adopt a continental style crosswalk as their standard as they are generally safer because they are more visible to drivers. The Town of Needham has expressed interest in incorporating the “Needham Blue” into the continental style crosswalks as depicted to the right. It is anticipated these the colored treatment will be used in high pedestrian activity areas such as Downtown Needham.



7.2 TRAFFIC SIGNS

Treatment Type	Objective	Advantages	Disadvantages	Cost
Table 15. Signs:				
Pedestrian Crossing Signage - W11-2 & W16-9P (Ahead) - W11-2 & W16-7P (Arrow)	To improve the pedestrian environment by reminding drivers to obey the law and yield to pedestrians in the crosswalk	Helps direct driver attention to pedestrian crossing	-Not useful to visually impaired pedestrians -The overuse of signs may counteract their effectiveness over time	\$200 - \$300 per sign
In-Road Pedestrian Signage - R1-6 (Yield) - R1-6a (Stop)	In-road visual cue that there is a crosswalk	-Help direct driver attention to pedestrian crossing	-Prone to get hit -Not sustainable during winter months -Must be supplemented with other devices	\$200 - \$300 per sign
School Zone Signage - S1-1 & W16-9P (Ahead) - S1-1 & W16-7P (Arrow) - S4-3P & R2-1 & S4-1P - S5-2	To improve the school environment by alerting drivers that they are entering a school zone and must slow down by law	-Helps direct driver attention to pedestrian crossing - Slows down vehicle speeds in the vicinity of children as stated by law	-Not useful to visually impaired pedestrians -The overuse of signs may counteract their effectiveness over time	\$200 - \$300 per sign
Active Driver Feedback Signs	Alert drivers that they are speeding and create a sense of being monitored	-Decreases vehicle speeds -No disturbance to emergency vehicles or physical change to the roadway -Can be powered by electric meter or solar power -Can be portable or permanent	-May promote speeding to register high speed reading -Effectiveness may decrease over time -Subject to vandalism	\$25,000 (for a permanent treatment)



School Zone Signage: All school warning signage, including any supplemental plaques used in association with these warning signs, shall have a fluorescent yellow-green background with a black legend and border as stated in the Massachusetts Amendment to the MUTCD.

MUTCD Pedestrian Crossing Signs: Crosswalks located at midblock crossings or uncontrolled intersections should be equipped with proper signage that is consistent with MUTCD (Manual on Uniform Traffic Control Devices) guidelines. Existing non-compliant pedestrian signage should be replaced with compliant signage to be more easily recognized by motorists and command driver respect. Pedestrian Crossing Signage shall not be placed at stop-controlled approaches or signalized controlled approaches.

Reflective Post Strip: Reflective strips can be applied to signposts for enhanced visibility. GPI recommends the Town install retroreflective tape or strips, based on the existing signpost, with the following sign assembly (W1-1/W16-7P or S1-1/W16-7P) to emphasize the actual location of crosswalks.

7.3 SUPPLEMENTAL TRAFFIC CALMING DEVICES

Treatment Type	Objective	Advantages	Disadvantages	Cost
<i>Table 16. Supplemental Traffic Calming Devices:</i>				
Curb Extensions	To improve the visibility of pedestrians waiting to cross the street and minimizing the impact of parked cars on pedestrian visibility	- Reduces the distance that pedestrian travel in the street and the potential for being stuck by a vehicle. - Improves the visibility of the pedestrian. - Slows down traffic from traffic calming.	- Fixed objects in roadway can cause difficult for drivers. - May hinder plowing operations during winter months. - May have a negative impact on the turning ability for large vehicles - May result in a loss of on-street parking - May require drainage modifications	\$5,000 - \$25,000 per extension
Raised Crosswalks/ Raised Intersections	To control traffic speeds approaching and traveling over the crosswalk to improve the safety of pedestrians	- Helps to focus activity in the desired location since the pedestrian crossing is highlighted - Slows down traffic from traffic calming	- Cost of installation - May require drainage modifications - May result in issues for transit and emergency vehicles due to vertical deflection - May pose difficulty for snow removal	\$5,000 - \$30,000 for raised crosswalk \$25,000 - \$100,000 for raised intersection
Raised Medians (Pedestrian Refuge Islands)	To separate opposing streams of traffic and provide a crossing area that is physically separated from the vehicle path of travel	- Improves visibility of crossing pedestrians to motorists - Reduces pedestrian crossing distances - Slows down traffic from traffic calming - Opportunity for landscaping and street aesthetics (lighting)	- Cost of installation and maintenance - May restrict left turns for businesses/homes/ etc. - May result in a loss of on-street parking - May require drainage modifications	\$5,000 - \$40,000 depending on length and landscaping



SUPPLEMENTAL TRAFFIC CALMING DEVICES

Top Left: Example of a curb extension. Curb extensions can be installed on wide roadways with an on-street parking lane that can create difficult crossing situations for pedestrian. Examples of roadways suitable for curb extensions are Highland Avenue in the vicinity of Memorial Field and Great Plain Avenue in the vicinity of the MBTA Station

Top Right: Example of a raised crosswalk treatment. Raised crosswalks are best suited along local roadways with a speed limit of 30 mph or less, an annual average daily traffic below 9,000 vehicles, and a high pedestrian demand. Raised crosswalks can be used on local roads servicing elementary schools such as Brookline Street.

Bottom Left: Example of a Raised Median with pedestrian refuge island. Raised medians with pedestrian refuge islands are recommended along collector roads with moderate-to-high speeds at midblock locations where ROW is adequate to meet minimum width requirements.



7.4 CROSSING BEACONS/ PEDESTRIAN SIGNALS

Treatment Type	Objective	Advantages	Disadvantages	Cost
<i>Table 17. Crossing Beacons/Pedestrian Signals:</i>				
Pedestrian Signal Timing	Provide adequate time for pedestrians to cross at a signalized intersection based on historical walking speeds amongst ages. Signal timing should be consistent with MUTCD standards for adequate clearance time.	- Exclusive phase provides dedicated timing for pedestrian crossing only and eliminates ped/vehicle conflicts -Concurrent timing provides permissive phase for pedestrian crossing while allowing parallel vehicles to continue with progression	- Exclusive phasing may have detrimental effect on signal automobile level of service especially locations with high pedestrian volumes -Concurrent timing allows left and right turning vehicles which results in ped/vehicle conflict in crosswalk	Signal Re-timing costs depend on staff resources and hourly costs
Right Turn on Red Restrictions	Restricts vehicles from turning right on a red signal indication to allow for pedestrians to cross without conflict	- Eliminates conflict point between pedestrians in crosswalk and right turning vehicles	- May be detrimental to intersection LOS especially at intersection with heavy right turn movements. -May promote rear-end collisions as some vehicles expect to be able to turn on red	Static signs are approximately \$250 and electronic blinking signs are approximately \$3000
HAWK Signals	Facilitate pedestrian travel in instances where traffic signal warrants were not met.	- Provides pedestrians with clear interval to safely cross street -Great for midblock crossing locations that do not warrant an actual traffic signal - Counteracts multiple threat crashes on multilane roadways	-Still fairly new and may be confusing to motorists -Pedestrians may not use indicators or may not be detected -Costly	Approximately \$50,000 - \$120,000
Rectangular Rapid Flashing Beacons	Enhance safety by reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings by increasing driver awareness of potential pedestrian conflicts	- Reduces pedestrian crashes up to 47% - Alerts motorists to pedestrian crossing location with flashing beacons	- Pedestrians may not use push button -Vehicles may not yield -All components must adhere to MUTCD and ADA accessibility requirements -Overuse may diminish their effectiveness	Approximately \$25,000

RECTANGULAR RAPID FLASHING BEACONS

RRFBs can enhance safety by reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings by increasing driver awareness of potential pedestrian conflicts. RRFBs can be activated by pedestrians manually by a push of a button or passively by a pedestrian detection system. When activated, they emit an irregular flash pattern that is similar to emergency flashers on police vehicles. The Federal Highway Administration (FHWA) has concluded that RRFBs are dramatically more effective at increasing driver yielding rates to pedestrians than traditional overhead beacons. A combined roadside and median system can further increase driver yielding behavior.

As previously stated, GPI endorse the use of RRFBs at locations where the measures is appropriate given the roadway context. Eight locations are currently under design for the installation of RRFBs to enhance the pedestrian crossing.

HAWK SIGNALS

A High-Intensity Activated Crosswalk Beacon, otherwise known as a HAWK signal, according to the MUTCD, is a special type of hybrid beacon used to warn or control traffic at an unsignalized location to assist pedestrians in crossing a street at a marked crosswalk. HAWK signals are commonly considered at locations to facilitate pedestrian travel in instances where traffic signal warrants were not met. Warrants for a HAWK signal are dependent on the number of pedestrian crossings per hour, the vehicular volume per hour, the speed limit, and the length of the crossing. The HAWK

signal consists of two horizontally aligned red lenses above a single yellow lens. When not activated, all signal lenses are dark or unlit. When a pedestrian activates the HAWK by pushing an accessible pedestrian push button located on a post/pole near the intersection, the actuated beacons begin to flash yellow to warn motorists that the system has been activated. The yellow lenses will then turn to a steady yellow. This is followed by a steady red indication. When the steady red indication is on, the pedestrian walk symbol is simultaneously presented to pedestrians allowing them to safely cross the roadway. When the WALK indication turns to a flashing DON'T WALK indication, the steady red lenses begin to flash alternating lenses. Once the pedestrian clearance interval has ended, the lenses will turn be unlit until the system is pedestrian activated again.

According to a study published by the Federal Highway Administration (FHWA) in 2010, HAWK signals have been found to reduce pedestrian crashes by 69 percent and total crashes by 29 percent. The HAWK is also very effective in regards to motor vehicle compliance, in which yield rates have been shown to exceed 90 percent at pedestrian hybrid beacons.

A HAWK signal was recently installed on Greendale Avenue at Rybury Hillway and Bird Street with success following the construction of a new residential development.



HAWK Signal at Greendale Avenue

The crosswalk just south of Grosvenor Road on Greendale Avenue was initially identified by GPI as a potential high-risk location given several community concerns, the uncontrolled nature of the crosswalk and high speeds along Greendale Avenue. This location could be a candidate for a HAWK signal given the pedestrian volume thresholds are met. Further engineering study is required.

7.5 ACCESSIBILITY

Treatment Type	Objective	Advantages	Disadvantages	Cost
Table 28. Accessibility:				
Curb Ramps	Provide access between sidewalk and street crossing as mandated by ADA Regulations	- Provides safe access to street crossings -Improves accessibility to sidewalks -Aids those who are disabled	- Must follow ADA design guidelines	Approximately \$3500 per ramp
Sidewalks	Provides designated area for pedestrian to walk along a roadway	- Safe, designated area for pedestrians -Enhances accessibility for all pedestrians	- Must follow ADA design guidelines -May require right of way acquisition -Maintaining and record keeping -Can be costly depending on materials used	Can be costly depending on materials used and curbs if present.
Pedestrian Push Buttons	Provides pedestrians with a way to place a request to cross. Provides audible and tactile cues as to when it is safe to cross a signalized intersection	-Provides guidance to those visually impaired - Provides pedestrians with sense of reassurance of an upcoming pedestrian indication	- May be ignored or may be misused and result in pedestrian calls with no pedestrians actually crossing - Must follow ADA design guidelines/MUTCD/MassDOT placement guidelines in terms of height and reach. May require additional posts and conduit to meet accessibility -Audible noises may have negative connotation for adjacent homeowners	- Approximately \$1000 for push button, supplemental direction sign and post

CURB RAMPS: When a pedestrian facility meets a roadway crossing, curb ramps must be provided. The maximum running slope allowable for ramps is 8.33 percent. The tops and bottoms of curb ramps should have a level landing area, which may be shared between two curb ramps on the same corner. These are locations where a person using a mobility device may change their direction of travel without risk of tipping over or hitting objects. Landing areas should be a minimum of 48 inches by 48 inches and may not exceed 1:50 (2 percent) slope in any direction. Detectable warning panels will be applied to all accessible wheelchair ramps existing at every crossing location. Detectable warning panels are equipped with truncated domes along the surface to alert those who are visually impaired that they are about to enter a potentially dangerous situation. Detectable warning surfaces are identical in width to the curb ramp or sidewalk, but their length is always 2 feet. They should not be placed in medians less than 6 feet.

PUSH BUTTONS: Accessible pedestrian signals (APS) are required at all signalized crossing and should be installed at new and significantly repaired signals, utilizing touch and sound for people with visual disabilities. Electronic speakers at a push button emit sounds to announce its location and notify pedestrians when the walk signal is on. A tactile arrow that can be felt with a hand, points pedestrians in the proper direction. Accessible pedestrian signal devices should be located close to the crossing. They must be less than 6 feet from the edge of the curb, within 5 feet of the crosswalk, and not higher than 42 inches from the finished sidewalk. Buttons need to be parallel to the associated crosswalk, making it clear which button should be used to cross the roadway. In addition, reach to the accessible device must not exceed 10 inches from the level landing if obstructions are present, such as a curb or signal foundation.

7.6 LIGHTING

Treatment Type	Objective	Advantages	Disadvantages	Cost
Table 29. Lighting:				
Street Lighting	Provide adequate lighting of crosswalk	- When placed correctly, drastically improves visibility of pedestrians during night time conditions - Improves sense of security and safety	- Potential negative effect for home owners in neighborhood settings	\$7,500 per street light, \$15,000 per crosswalk (one streetlight per approach)
In-Pavement Lighting	Provides supplemental lighting of the crosswalk within the pavement	- drastically improves visibility of pedestrians during night time conditions	- Maintenance - May not withhold snow removal season	Approximately \$20,000 per crosswalk

GPI Recommended Street Lighting Placement

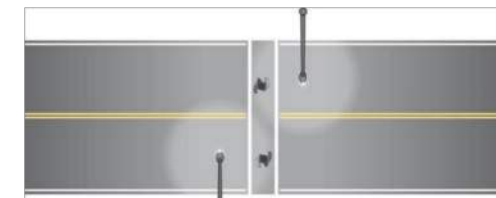
- Street lights should be at least 20 lx and placed approximately 10 feet in advance of the crosswalk.
- Street Lighting at Midblock Crosswalks - The FHWA recommends that for roadways that have traffic traveling in both directions, particularly those without a center median, two luminaries are required, located on either side of the road and placed prior to the crosswalk from the drivers' perspective.
- Street Lighting at Intersection Crosswalks - The FHWA recommends that luminaries be located away from the intersection to provide light on the approach side of the pedestrian.

GPI In-Pavement Lighting Recommendation

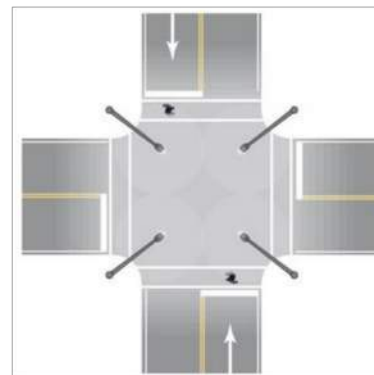
- Although in-pavement lighting has the ability to drastically improve the visibility of pedestrians during nighttime conditions, GPI does not recommend the use of such treatment due to the natural climate of New England. It is likely that with snow removal, the devices will be destroyed, requiring annual heavy maintenance costs.



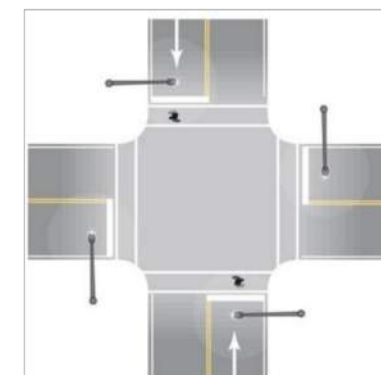
Traditional Design for Midblock Crossing Lighting Layout



Preferred Design for Midblock Crossing Lighting Layout



Traditional Design for Intersection Lighting Layout for Crosswalks



Preferred Design for Intersection Lighting Layout for Crosswalks

7.7 EDUCATION & ENFORCEMENT

Treatment Type	Objective	Advantages	Disadvantages	Cost
Table 20. Education and Enforcement:				
Police Enforcement	Provide an immediate impact on reduction of motor vehicle speeds	-Immediate Impact -Additional Safety -Opportunity for increased awareness -Opportunity for anecdotal information	-Costly -Not a permanent solution -May no be the best allocation of police resources	-Varies based on PD Resources
Pedestrian/Driver Education	Communicate to the public the goals and objectives of the pedestrian safety audit and the importance of understanding how to share the road with one another	- Most readily available resources -Inexpensive -Opportunity for community awareness -Opportunity to collect anecdotal information -Educate young drivers	- Not as effective as enforcement or engineering measures	-Varies based on efforts



CONCLUSIONS

As residents continue to voice concern over pedestrian safety throughout town, it is the intent that this Pedestrian Safety Audit will provide Needham with the tools and guidance necessary to efficiently and adequately implement pedestrian safety improvements at crosswalks throughout Town.

Some Key Takeaways...

- Comments from the community were used to identify locations of top concern as well as identify specific areas such as street lighting, speeding, and signage that need improvement. Comments received by residents helped shape the report and prioritize implementation efforts where they are needed most.
- At this time, GPI recommends no change to the town-wide statutory speed limit of 30 miles per hour but rather to focus on implementing 20-mph speed safety zones in areas where vulnerable users may be present and enforcement efforts can be targeted. Should the implementation of safety speed zones deem successful (i.e. reduction in travel speeds and collisions) through proper enforcement, the Town should revisit the topic and allocate additional funding to enforcement efforts and educational campaigns.
- In total, GPI identified 5 roadway segments that warranted further evaluation for the implementation of a safety zone based on adjacent land use, number of access points along a given segment (including crosswalks, driveways and side streets), and segment length.
- RRFB Crossing Beacons should be installed at crosswalks located within Speed Safety Zones, School Zones or as necessitated by the methodology outlined in Section 4 of this Study.
- GPI recommended a crosswalk evaluation and installation policy based on current industry standards for signalized intersection, stop-controlled intersections, and uncontrolled crossings. Midblock crossings should be installed with special care and supplemental devices may be used in conjunction to enhance pedestrian safety at these locations.
- A comprehensive crosswalk inventory was conducted in early 2019. This inventory is housed in an ESRI geodatabase which will allow Needham officials to further track assets, query and filter for maintenance efforts based on attribute information and make well informed decisions regarding future implementation.
- Several pedestrian safety enhancement projects were identified based on the results of the crosswalk inventory including the following:
 - Provide pedestrian enhancement treatments at 8 high-risk crosswalk locations.
 - Implement Safety Speed Zones at 5 roadway segments throughout Town.
 - Initiate a complete streets project along Webster Street and designate this corridor as a safety corridor in Town. Treatments may include RRFBs, raised intersections and designated bike lanes.
 - The Town should implement an annual pavement marking program and track markings with the ESRI geodatabase to efficiently prioritize maintenance efforts.
 - The Town should install wheelchair ramps at crosswalk locations currently lacking ramps to ensure accessibility throughout the pedestrian network. In the future, the Town is advised to conduct a curb ramp inventory to assess ADA compliance and gear efforts to attain a fully accessible network.
 - It is advised that the Town update traffic signs in poor condition or in non-conformance with MUTCD standards. It is also recommended that pedestrian warning signage be installed at uncontrolled crossings lacking any signage to provide enhance visibility. The Town should implement a bi-annual pedestrian traffic sign program and track signs with the ESRI geodatabase to efficiently prioritize maintenance efforts.
 - The Town should install street lighting at midblock crosswalks currently lacking any street lighting to enhance visibility during nighttime conditions. In the future, the Town should modify/add lighting at locations where lighting does not conform to FHWA recommendations.
- A pedestrian crossing design toolbox was provided to identify advantages/disadvantages of several pedestrian crossing treatments that can be implemented at crosswalks throughout town.

GPI thanks the Town of Needham for their support in developing this Pedestrian Safety Audit. It is our hope, that by utilizing this Report as a guideline to enhance and install crosswalk locations that the Town of Needham see a reduction in the number/severity of pedestrian related crashes, an increase in mobility and health amongst its residents, an improvement in walkability and accessibility for all its residents regardless of age, race, or socioeconomic status, and lastly, a sense of community.



GPI

Many Talents One Firm

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APPENDIX

- A. Preliminary High-Risk Crosswalk Locations Report**
- B. Crosswalk Inventory Attribute Lists & Maps
- C. Traffic Counts
- D. MassDOT Crash Data

PRELIMINARY HIGH-RISK CROSSWALK LOCATIONS



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Needham, MA 02492



October 2018

As part of the Town wide Pedestrian Safety Audit, GPI was tasked with identifying preliminary crosswalk locations that could benefit from immediate upgrades; including the installation of Rectangular Rapid Flashing Beacons (RRFBs). It is noted that only midblock crossing or “uncontrolled” crossings were selected as part of the preliminary audit. The following 8 site locations were selected based on several criteria including roadway classification, traffic speeds, proximity to schools, transit, religious centers, parks, and civic destinations, adequacy of existing street lighting, the occurrence of pedestrian related collisions and community referenced locations. Recommendations were based on preliminary assessment and additional enhancements at these locations may be recommended as additional data and analysis is completed as part of the full Audit. The following section of this report provides aerial representation of each site location as well as a brief description of existing condition and a reasoning behind each selection.

In no specific order:

1. Webster Street at May Street
2. Webster Street at High School (north)
3. Webster Street at High School (south)
4. Central Avenue at Newman Elementary
5. Great Plain Avenue at Hillcrest Road
6. Great Plain Avenue at North Hill Avenue
7. Great Plain Avenue at Wilshire Park
8. Great Plain Avenue at Broad Meadow Road

PRELIMINARY TOP 10 HIGH-RISK CROSSWALK LOCATIONS



Roadway Classification

Both Webster Street and May Street are collector roads in the Town of Needham. Webster Street experiences a high volume of traffic due to the high school location.

Vehicle Speeds

Both Webster Street and May Street have prima facie speed limits of 30 mph. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a high-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a quarter of a mile of Needham High School as well as two private catholic schools: Monsignor Haddad Middle School and St. Joseph's Elementary School.

Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was the most heavily referenced safety concern within the community input documentation.

WEBSTER STREET AT MAY STREET



Existing Conditions: The standard marked crosswalk on Webster Street is uncontrolled. No pedestrian crossing signage is present. May Street is STOP sign controlled. Vehicles approaching the intersection from the west on May Street may experience poor sight lines due to the tree line in both directions on Webster Street, the utility pole in the northwest corner of the intersection as well as the vegetation and fence in the northwest corner. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards. Street lighting is present in the northwest and southwest corners of the intersection. Pedestrians crossing Webster Street from the east may be difficult to see at night. Existing curb radii at the intersection are large resulting in a long crossing distance along May Street.

Initial Recommendations: To supplement the marked crosswalk along Webster Street, a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) system (S1-1/W16-7P assembly) shall be installed as well as advanced pedestrian crossing signage. Crosswalk markings shall be refreshed.

Further Recommendations may be suggested at this intersection as part of the Full Pedestrian Safety Audit, including tightened curb radii at May Street to reduce crossing distance and increase pedestrian visibility. Additional street lighting may be warranted especially in the southeast corner of the intersection.

WEBSTER STREET AT MAY STREET



Roadway Classification

Webster Street is a collector roadway in the Town of Needham. Webster Street experiences a high volume of traffic due to the high school location.

Vehicle Speeds

Webster Street has a prima facie speed limit of 30 mph. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a high-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a quarter of a mile of Needham High School.

Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily refenced safety concern within the community input documentation.

WEBSTER STREET AT HIGH SCHOOL (NORTH)

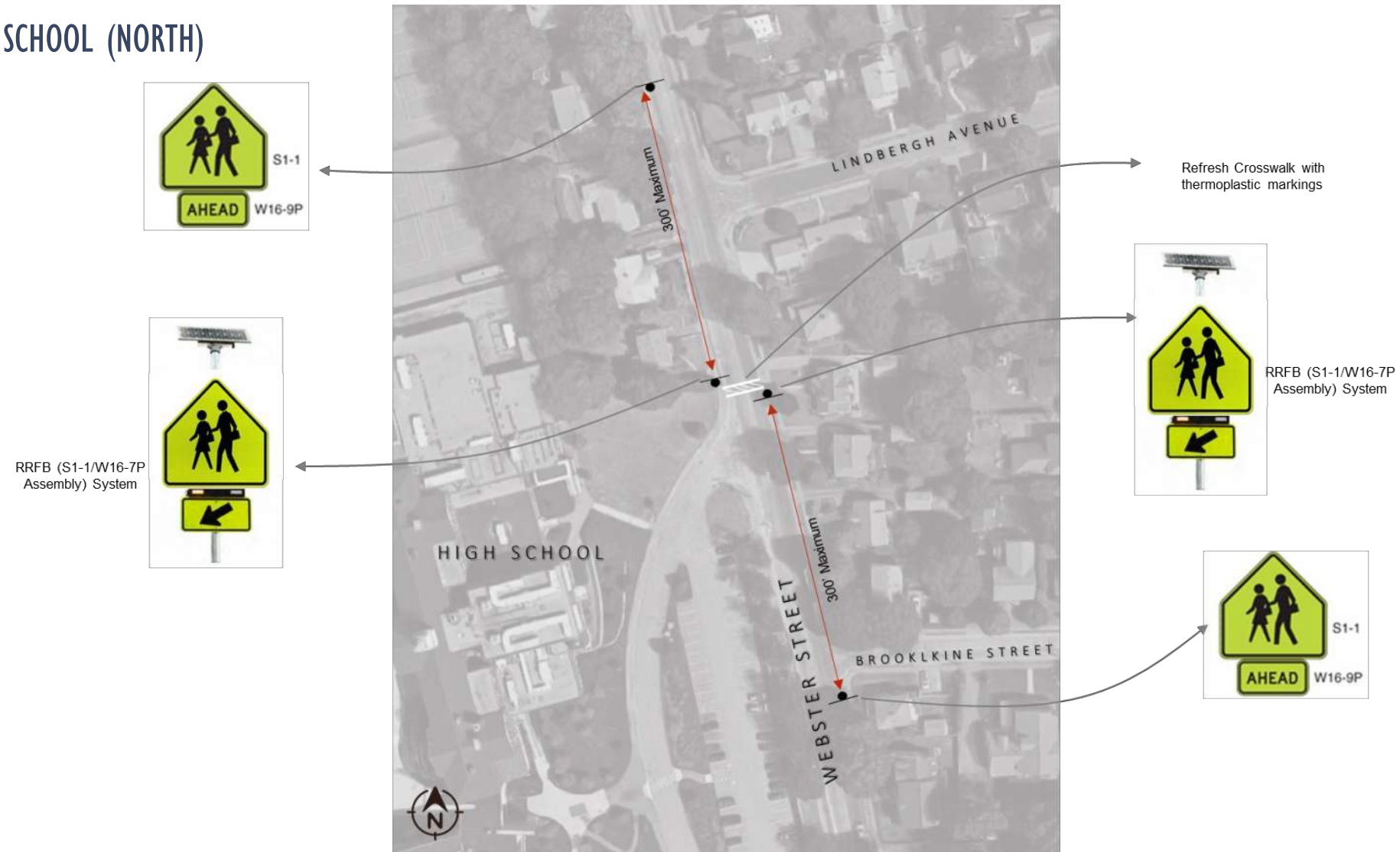


Existing Conditions: The existing marked hatch (zebra) style crosswalk along Webster Street is uncontrolled. There is existing pedestrian crossing signage with flashing LED border lighting; however, the sign is flashing continuously rather than only when pedestrians are present. This could result in drivers becoming accustomed to the sign and not reacting accordingly when a pedestrian is actually in the crosswalk. Advanced pedestrian crossing signage (S1-1/W16-9P assembly) is present for both directions on Webster Street. Sight lines are adequate for both approaches. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards. Street lighting exists just north of the crosswalk on the western side of Webster Street, but no lighting is available for the eastern side.

Initial Recommendations: To supplement the marked crosswalk along Webster Street, the LED flashing sign should be replaced by a pedestrian actuated RRFB system (W1-1/W16-7P assembly). New, updated advanced pedestrian crossing signage shall be installed as well. Crosswalk markings shall be refreshed.

Further recommendations may be suggested at this location as part of the Full Pedestrian Safety Audit, including geometric modifications to the high school entrance to reduce the curb radii in the northwest corner of the intersection which currently may facilitate high speed turning movements. Curb extensions may also be explored to reduce the crossing distance along Webster Street and potentially slow down vehicle speeds. Additional street lighting may be warranted for the eastern ramp of the Webster Street crossing.

WEBSTER STREET AT HIGH SCHOOL (NORTH)



Roadway Classification

Webster Street is a collector roadway in the Town of Needham. Webster Street experiences a high volume of traffic due to the high school location.

Vehicle Speeds

Webster Street has a prima facie speed limit of 30 mph. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a high-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a quarter of a mile of Needham High School.

Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily refenced safety concern within the community input documentation. There were two fatalities at this crossing in 2018, and as a result this area has become a major concern for the public and town officials.

WEBSTER STREET AT HIGH SCHOOL (SOUTH)



Existing Conditions: The existing marked hatch (zebra) style crosswalk along Webster Street is uncontrolled. There is existing pedestrian crossing signage with flashing LED border lighting; however, the sign is flashing continuously rather than only when pedestrians are present. This could result in drivers becoming accustomed to the sign and not reacting accordingly when a pedestrian is actually in the crosswalk. There is no advanced warning signage. The crosswalk is located just south of the Needham High School exit in which many vehicles exit right towards the crosswalk and sight lines may be compromised due to the existing geometry and tree line. Street lighting is present on the west side of Webster Street approximately 85 feet north of the crosswalk and 55 feet south of the crosswalk which may not be adequate to efficiently light the crossing. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards.

Initial Recommendations: To supplement the marked crosswalk along Webster Street, the LED flashing sign should be replaced by a pedestrian actuated RRFB system (W1-1/W16-7P assembly). New, updated advanced pedestrian crossing signage shall be installed as well. Crosswalk markings shall be refreshed.

Further recommendations may be suggested at this location as part of the Full Pedestrian Safety Audit, including geometric modifications to the high school exit to reduce the curb radii in the southwest corner of the intersection which currently may facilitate high speed turning movements. Curb extensions may also be explored to reduce the crossing distance along Webster Street and potentially slow down vehicle speeds. Existing street lighting may require modification to more efficiently light the crosswalk on the western side of Webster Street and additional street lighting may be warranted for the eastern ramp of the Webster Street crossing.

WEBSTER STREET AT HIGH SCHOOL (SOUTH)



Roadway Classification

Central Avenue is an urban minor arterial in the Town of Needham. Central Avenue in the vicinity of the crosswalk, experiences heavy volumes of traffic due to proximity of Newman Elementary School.

Vehicle Speeds

Prior to the crosswalk, Central Avenue has a speed limit of 30 mph. The crosswalk, however, falls within a school zone, which has a speed limit of 20 mph at the time the school zone is active. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a medium-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a quarter of a mile of Newman Elementary School, a religious center, a community theater, and a recreational park.

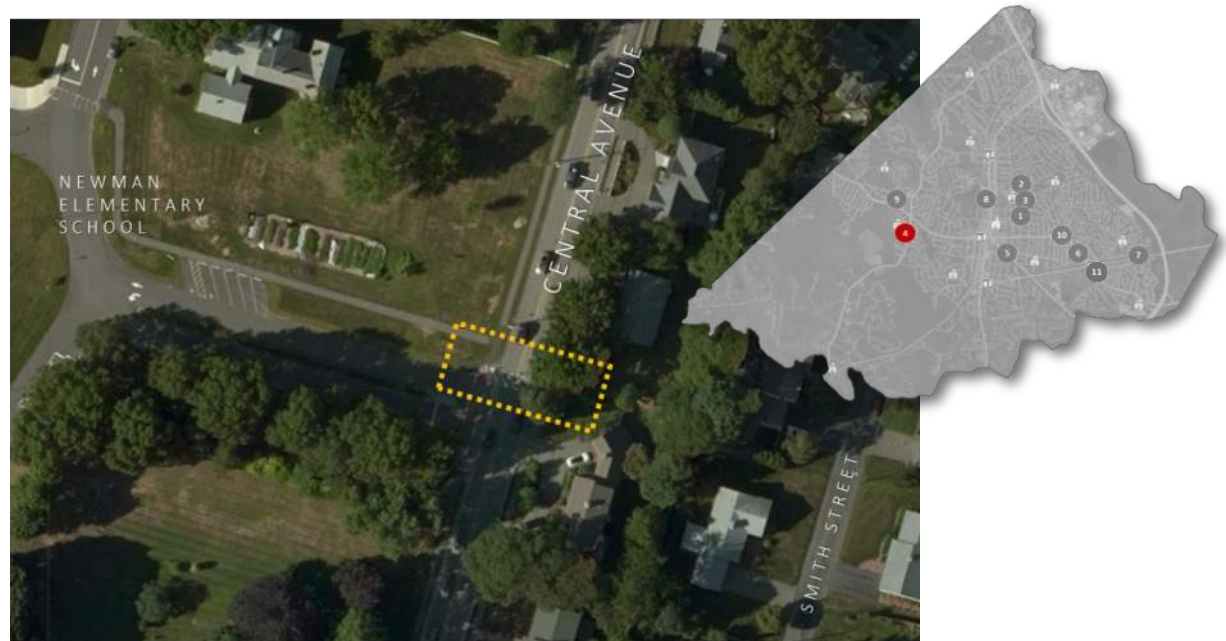
Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily referenced safety concern within the community input documentation.

CENTRAL AVENUE AT NEWMAN ELEMENTARY SCHOOL

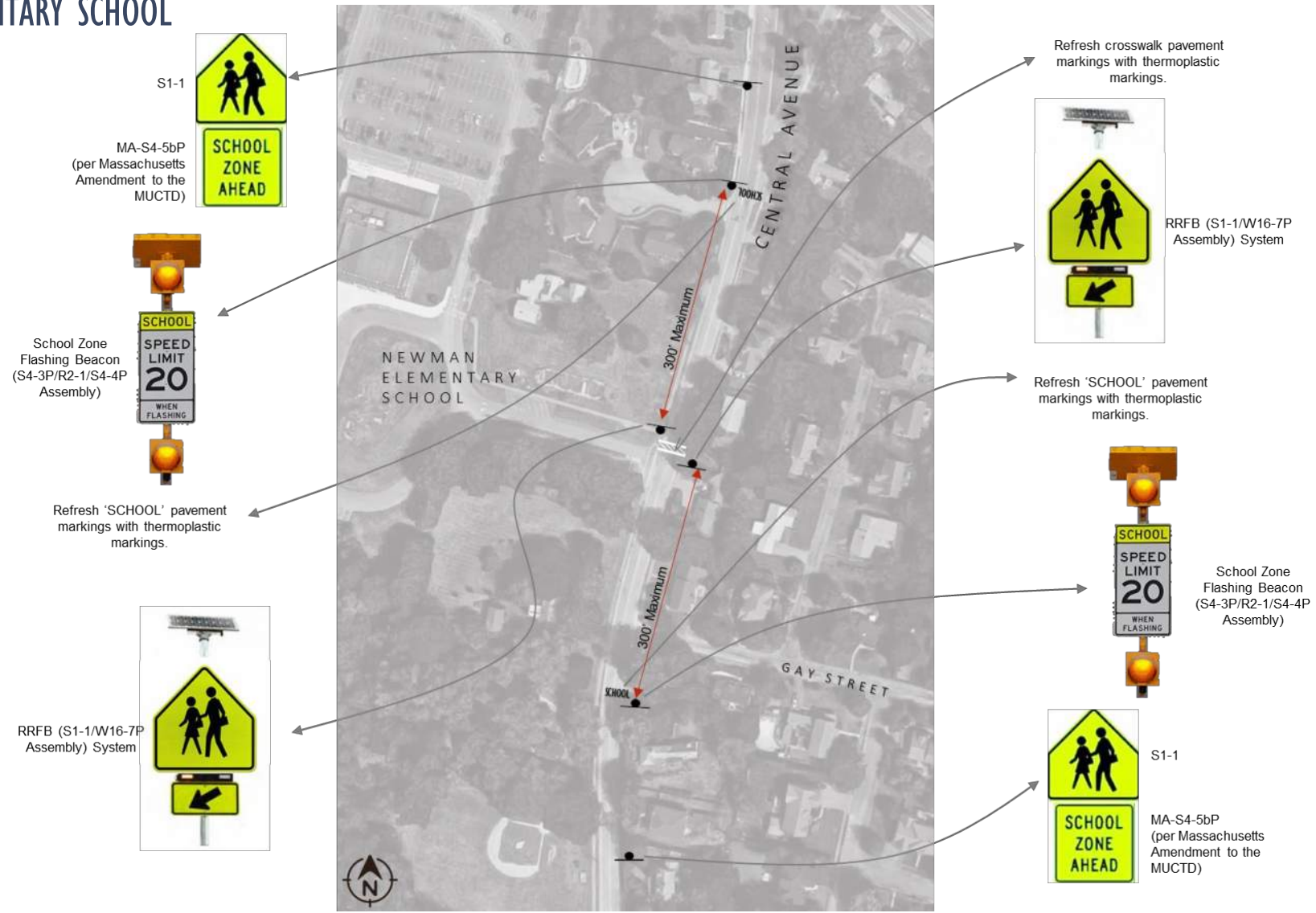


Existing Conditions: The existing marked hatch (zebra) style crosswalk along Central Avenue is uncontrolled. There is existing pedestrian crossing signage at the crosswalk (S1-1/W16-7P assembly) for both approach lanes. Advanced warning school crossing signs (S1-1/W16-9P assembly) are present for both approaches on Central Avenue. ‘SCHOOL’ pavement marking stencils and school flashing beacon signs are available in advance of the crosswalk per Massachusetts School Zone requirements. An in-road pedestrian crossing sign (R1-6) is located within the crosswalk across Central Avenue. Street lighting is present on the west side of Webster Street approximately 35 feet north of the crosswalk and 85 feet south of the crosswalk which may not be adequate to efficiently light the crossing. The eastern ramp on Central Avenue is lacking a detectable warning panel and accessibility should be examined for conformance to current ADA standards.

Initial Recommendations: To supplement the marked crosswalk along Central Avenue, a pedestrian actuated RRFB system (S1-1/W16-7P assembly) shall be installed as well as new advanced pedestrian crossing signage and updated school zone flashing beacons. Crosswalk markings and ‘SCHOOL’ stencils should be refreshed.

Further recommendations may be suggested as part of the Full Pedestrian Safety Audit, such as curb extensions along Central Avenue or possible tightening curb radii for the school entrance location. Additional lighting may be required along the eastern side of Central Avenue to efficiently light the crosswalk.

CENTRAL AVENUE AT NEWMAN ELEMENTARY SCHOOL



Roadway Classification

Great Plain Avenue is an urban minor arterial within the vicinity of the crosswalk.

Vehicle Speeds

Great Plain Avenue has a prima facie speed limit of 30 MPH near the crosswalk. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a medium-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a half mile of Pollard Middle School and within a quarter of a mile to the Hersey MBTA commuter rail stop.

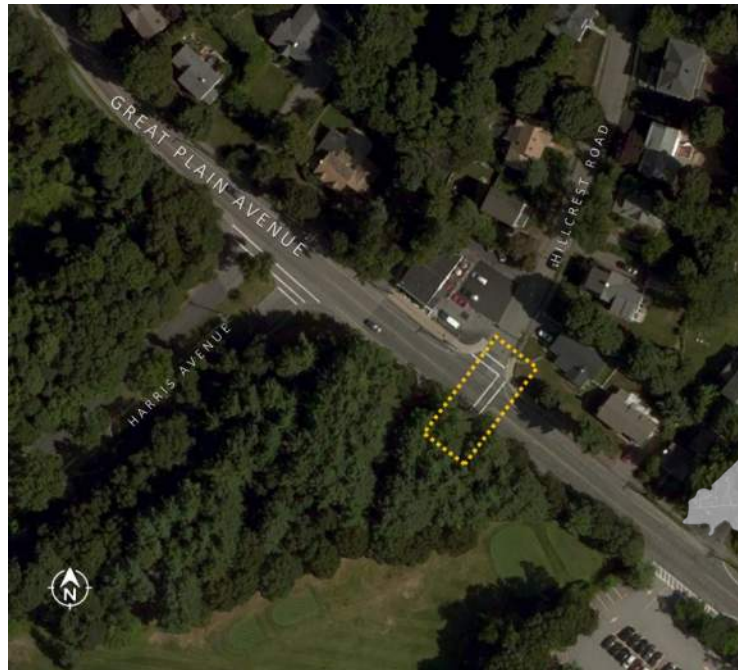
Existing Street Lighting

This crosswalk location falls within an area with potentially adequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily refenced safety concern within the community input documentation as it is often used by students to access Pollard Middle School as well as commuters utilizing the Hersey commuter rail stop.

GREAT PLAIN AVENUE AT HILLCREST ROAD



Existing Conditions: The existing standard style crosswalk along Great Plain Avenue is uncontrolled. There is existing pedestrian crossing signage at the crosswalk (S1-1/W16-7P assembly) for both approach lanes. Advanced warning pedestrian crossing signs are not present for either approach. An in-road pedestrian crossing sign (R1-6) is located within the crosswalk across Great Plain Avenue. Street lighting is present on the east side of Great Plain Avenue approximately 55 feet north of the crosswalk and 85 feet south of the crosswalk which may not be adequate to efficiently light the crossing. No street lighting is present on the western side of Great Plain Avenue. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards.

Initial Recommendations: To supplement the marked crosswalk along Great Plain Avenue, a pedestrian actuated RRFB system (W1-1/W16-7P assembly) shall be installed as well as advanced pedestrian crossing signage. Crosswalk markings shall be refreshed with high visibility paint.

Further recommendations may be suggested at this location as part of the Full Pedestrian Safety Audit, including curb extensions to reduce the crossing distance along Great Plain Avenue and potentially slow down vehicle speeds. Existing street lighting may require modification to more efficiently light the crosswalk.

GREAT PLAIN AVENUE AT
HILLCREST ROAD



Roadway Classification

Great Plain Avenue is an urban principal arterial within the vicinity of the crosswalk.

Vehicle Speeds

The regulated speed limit is 30 mph on Great Plain Avenue at this crosswalk location. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a low-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a quarter of a mile of Newman Elementary School.

Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily referenced safety concern within the community input documentation due to the existing curve along Great Plain Avenue which may alter sight distance.

GREAT PLAIN AVENUE AT NORTH HILL AVENUE



Existing Conditions: The existing marked hatch (zebra) style crosswalk along Great Plain Avenue is uncontrolled. There is existing pedestrian crossing signage at the crosswalk (W1-1/W16-7P/R1-6 assembly) for both approaches, however, signage is placed after the crosswalk rather leading before and adjacent. Advanced warning school crossing signs (W1-1/W16-9P assembly) are present for both approaches on Great Plain Avenue. Street lighting is present on the northern side of Great Plain Avenue only, approximately 75 feet east and west of the crosswalk. Despite the curvature in the roadway, sight lines do not appear to be problematic.

Initial Recommendations: To supplement the marked crosswalk along Great Plain Avenue, a pedestrian actuated RRFB system (S1-1/W16-7P assembly) shall be installed as well as new advanced pedestrian crossing signage. Crosswalk markings should be refreshed.

Further recommendations as part of the Full Pedestrian Safety Audit may include accessible ramps with detectable warning panels. Street lighting may require modification to efficiently service the crosswalk. Curb extensions may also be explored to reduce pedestrian crossing distance and potentially slow down vehicle speeds.

GREAT PLAIN AVENUE AT NORTH HILL AVENUE



Roadway Classification

Great Plain Avenue is an urban minor arterial in the vicinity of the crosswalk.

Vehicle Speeds

Great Plain Avenue has a prima facie speed limit of 30 MPH near the crosswalk. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a low-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a half of a mile of Pollard Middle School.

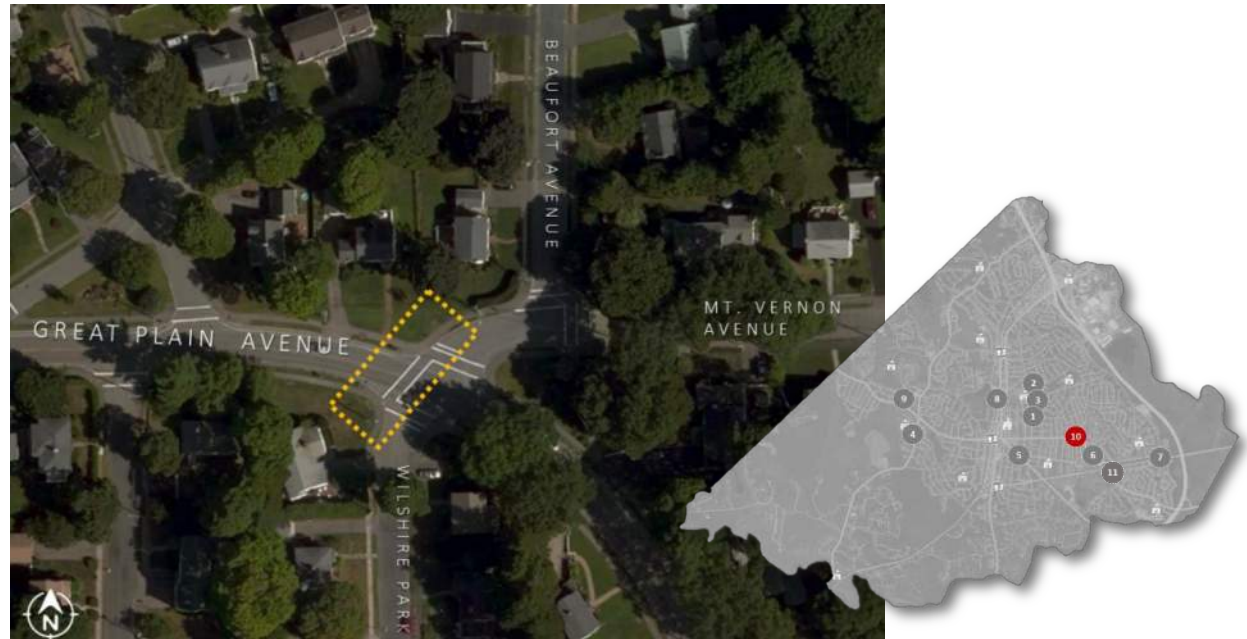
Existing Street Lighting

This crosswalk location falls within an area with potentially inadequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily refenced safety concern within the community input documentation due to the existing curve along Great Plain Avenue which may alter sight distance.

GREAT PLAIN AVENUE AT WILSHIRE PARK / BEAUFORT AVENUE

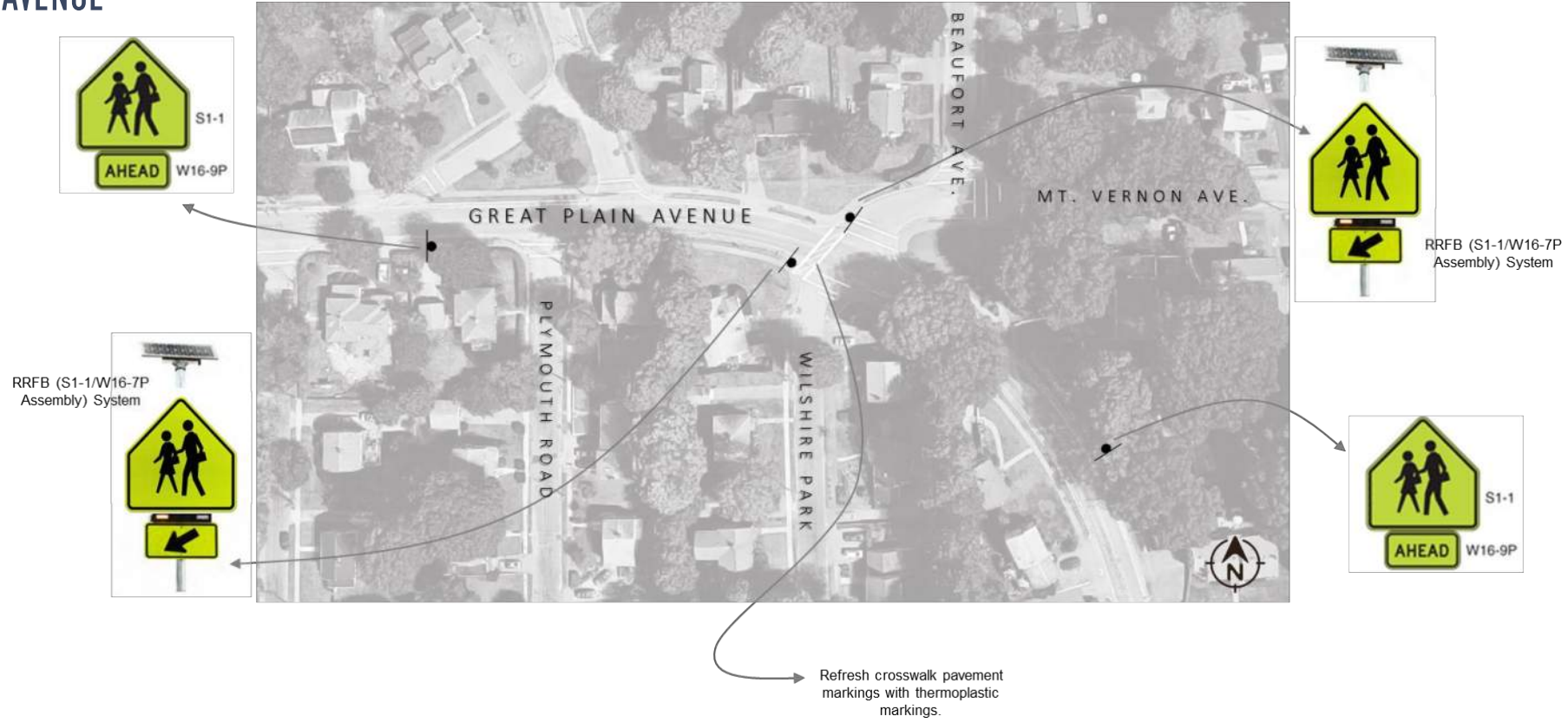


Existing Conditions: The existing standard crosswalk along Great Plain Avenue is uncontrolled. There is existing pedestrian crossing signage at the crosswalk (W1-1/W16-7P/R1-6 assembly) for both approaches, however, signage is placed after the crosswalk rather than before and adjacent along the northwest approach. Advanced warning school crossing signs (S1-1 assembly) are present for both approaches on Great Plain Avenue. There is no street lighting on Great Plain Avenue in the vicinity of the crosswalk. The curvature in the roadway creates sight line issues specifically for vehicles traveling northwest on Great Plain Avenue. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards.

Initial Recommendations: To supplement the marked crosswalk along Great Plain Avenue, a pedestrian actuated RRFB system (S1-1/W16-7P assembly) shall be installed as well as new advanced pedestrian crossing signage. Crosswalk markings should be refreshed.

Further recommendations may be suggested at this location as part of the Full Pedestrian Safety Audit to address sight line concerns and may require relocation of the crosswalk to the west near the intersection of Great Plain Avenue at Plymouth Road. Street lighting may require modification to efficiently service the crosswalk. Ramp accessibility shall be examined and addressed.

GREAT PLAIN AVENUE AT
WILSHIRE PARK / BEAUFORT
AVENUE



Roadway Classification

Great Plain Avenue is an urban minor arterial within the vicinity of the crosswalk.

Vehicle Speeds

Great Plain Avenue has a prima facie speed limit of 30 MPH near the crosswalk. Additional speed and volume data will be obtained as part of the comprehensive pedestrian safety audit.

Pedestrian Related Collisions

This crosswalk location falls within a medium-density pedestrian related crash cluster according to MassDOT Crash records available from 2012-2016. Additional local crash reports are to be obtained and analyzed as part of the comprehensive pedestrian safety audit.

Proximity to Schools, Transit, Parks, Religious Centers, Civic Destinations

This crosswalk is located within a half mile of Pollard Middle School and within a quarter of a mile to the Hersey MBTA commuter rail stop.

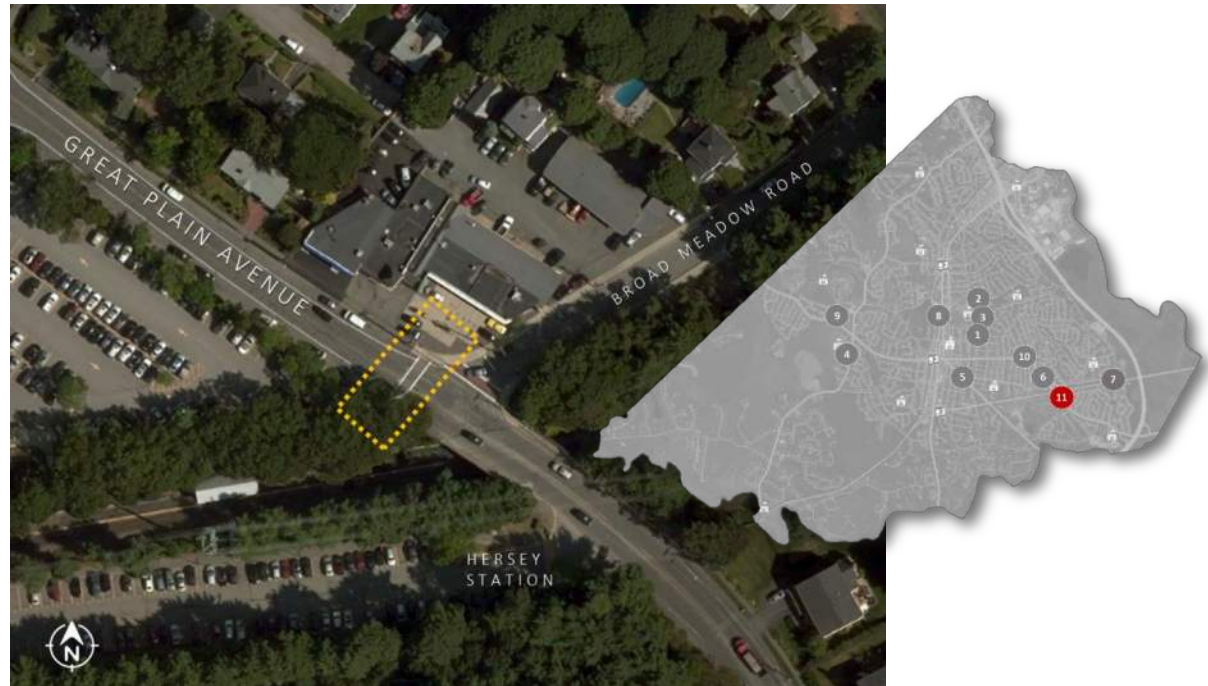
Existing Street Lighting

This crosswalk location falls within an area with potentially adequate street lighting. Existing lighting shall be further investigated as part of the comprehensive study and shall be compared to FHWA Standards to accurately recommend appropriate measures.

Community Input

This crosswalk location was a heavily refenced safety concern within the community input documentation as it is often used by students to access Pollard Middle School as well as commuters utilizing the Hersey commuter rail stop.

GREAT PLAIN AVENUE AT BROAD MEADOW ROAD



Existing Conditions: The existing standard style crosswalk along Great Plain Avenue is uncontrolled. There is existing pedestrian crossing signage at the crosswalk (S1-1/W16-7P assembly) for both approach lanes. Advanced warning pedestrian crossing signs are present for both approaches. An in-road pedestrian crossing sign (R1-6) is located within the crosswalk across Great Plain Avenue. Street lighting is present on the east side of Great Plain Avenue approximately 55 feet north of the crosswalk and 85 feet south of the crosswalk which may not be adequate to efficiently light the crossing. No street lighting is present on the western side of Great Plain Avenue. Ramps are lacking detectable warning panels and accessibility should be examined for conformance to current ADA standards.

Initial Recommendations: To supplement the marked crosswalk along Great Plain Avenue, a pedestrian actuated RRFB system (W1-1/W16-7P assembly) shall be installed as well as advanced pedestrian crossing signage. Crosswalk markings shall be refreshed with high visibility paint.

Further recommendations may be suggested at this location as part of the Full Pedestrian Safety Audit, including curb extensions to reduce the crossing distance along Great Plain Avenue and potentially slow down vehicle speeds. Existing street lighting may require modification to more efficiently light the crosswalk.

GREAT PLAIN AVENUE AT BROAD MEADOW ROAD



LOC. 01 WEBSTER STREET AT MAY STREET

GPI

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Engineering & Construction Services

191 Ballchale Street, Suite 202, Wilmington, MA 01887
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http://www.gpinet.com

PREPARED FOR
TOWN OF NEEDHAM
500 DEDHAM AVENUE
NEEDHAM, MA 02492

PRELIM. PEDESTRIAN SAFETY AUDIT
TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

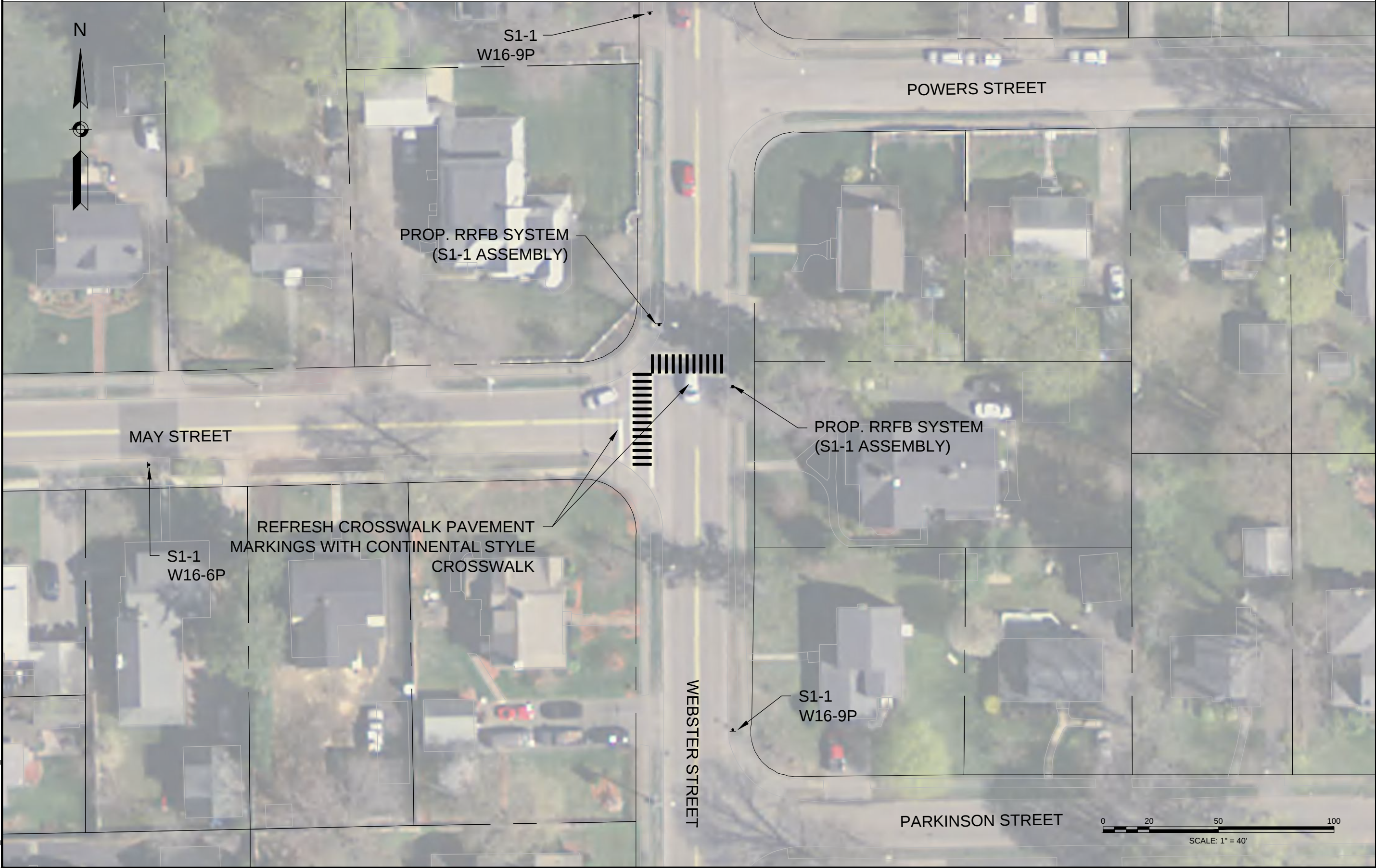
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NAR		JWD

LOC. 01

SCALE:
1" = 20'

MAX-2017099.01

OF



LOC. 02 WEBSTER STREET AT HIGH SCHOOL (NORTH)

GPI

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PRELIM. PEDESTRIAN SAFETY AUDIT
TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

REVISIONS		
NO.	REVISION	DATE
		10/25/2018
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NAR		JWD

LOC. 02

SCALE:

1" = 20'

MAX-2017099.01

OF



LOC. 03 WEBSTER STREET AT HIGH SCHOOL (SOUTH)

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NEEDHAM, MA 02492

PRELIM. PEDESTRIAN SAFETY AUDIT
TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

REVISIONS		
NO.	REVISION	DATE
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DRAWN/DESIGN BY		CHECKED BY
NAR		JWD

LOC. 03

SCALE: 1" = 20'

MAX-2017099.01

OF



117099 PRELIMCONCEPTS 06062019.DWG 6/6/2019



PREPARED FOR
TOWN OF NEEDHAM
500 DEDHAM AVENUE
NEEDHAM, MA 02492

PRELIM. PEDESTRIAN SAFETY AUDIT

TOP 10 HIGH-RISK XWALK LOCATIONS

NEEDHAM, MA

REVISIONS		
NO.	REVISION	DATE

10/25/2018	
DRAWN/DESIGN BY NAR	CHECKED BY JWD

LOC. 04

SCALE:	1" = 20'
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LOC. 05 GREAT PLAIN AVENUE AT HILLCREST ROAD

GPI

Greenman-Pedersen, Inc.

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PRELIM. PEDESTRIAN SAFETY AUDIT
TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

REVISIONS		
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NAR		JWD

LOC. 05

SCALE:
1" = 20'

MAX-2017099.01

OF



LOC. 06 GREAT PLAIN AVENUE AT NORTH HILL AVENUE

GPI

Greenman-Pedersen, Inc.

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NEEDHAM, MA 02492

PRELIM. PEDESTRIAN SAFETY AUDIT
TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

REVISIONS		
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NAR		JWD

LOC. 06

SCALE: 1" = 20'

MAX-2017099.01

OF



LOC. 7 GREAT PLAIN AVENUE AT WILSHIRE PARK/ BEAUFORT AVENUE

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TOP 10 HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA

REVISIONS		
NO.	REVISION	DATE
		10/25/2018
DRAWN/DESIGN BY		CHECKED BY
NAR		JWD

LOC. 7

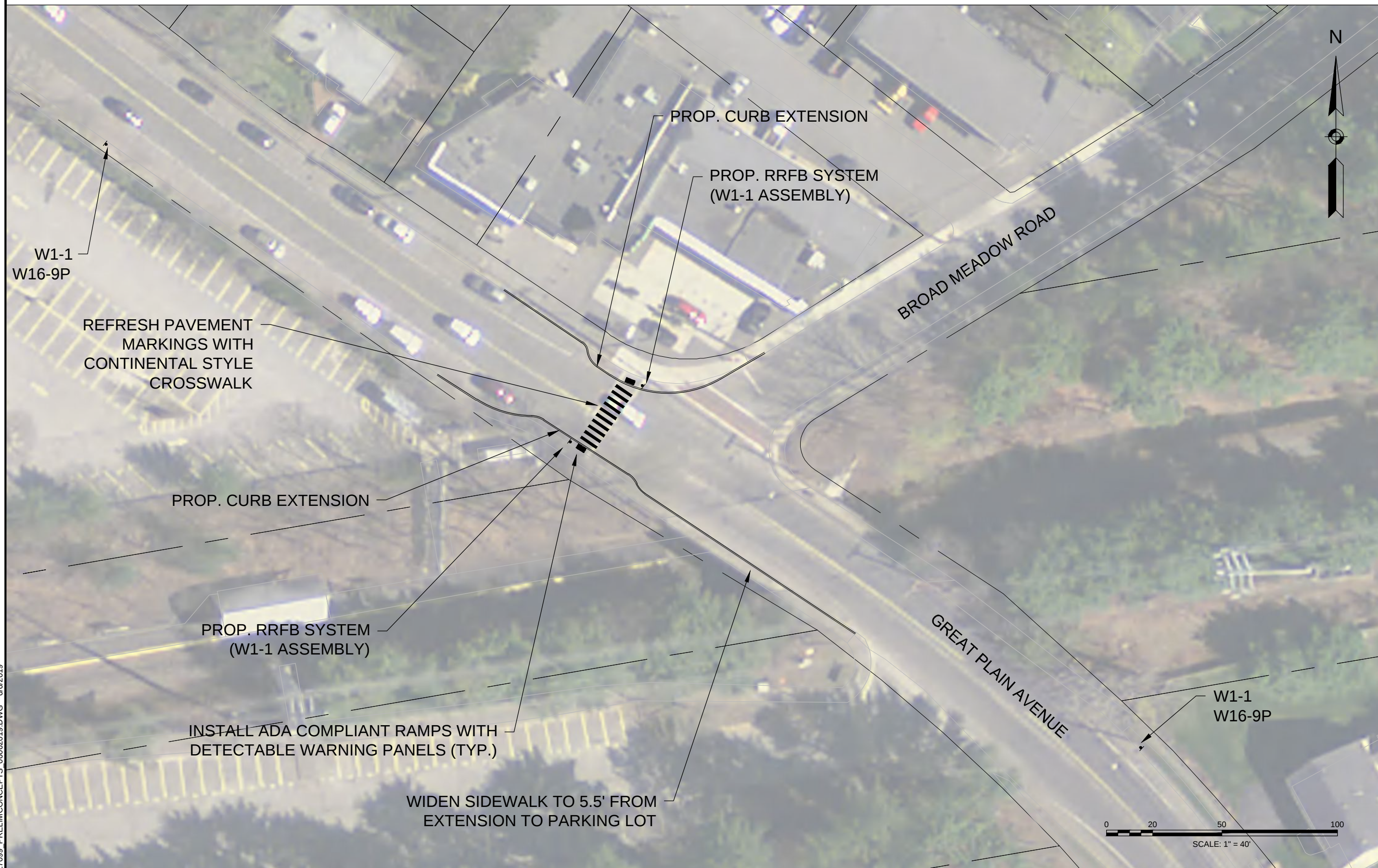
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MAX-2017099.01

OF



117099 PRELIMCONCEPTS 06062019.DWG 6/6/2019



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TOWN OF NEEDHAM
500 DEDHAM AVENUE
NEEDHAM, MA 02492

**PRELIM. PEDESTRIAN SAFETY AUDIT
HIGH-RISK XWALK LOCATIONS
NEEDHAM, MA**

REVISIONS		
NO.	REVISION	DATE

10/25/2018	
DRAWN/DESIGN BY NAR	CHECKED BY JWD

LOC. 8

SCALE: 1" = 20'

MAX-2017099.01

OF

APPENDIX

- A. Preliminary High-Risk Crosswalk Locations Report
- B. Crosswalk Inventory Attribute Lists & Maps**
- C. Traffic Counts
- D. MassDOT Crash Data

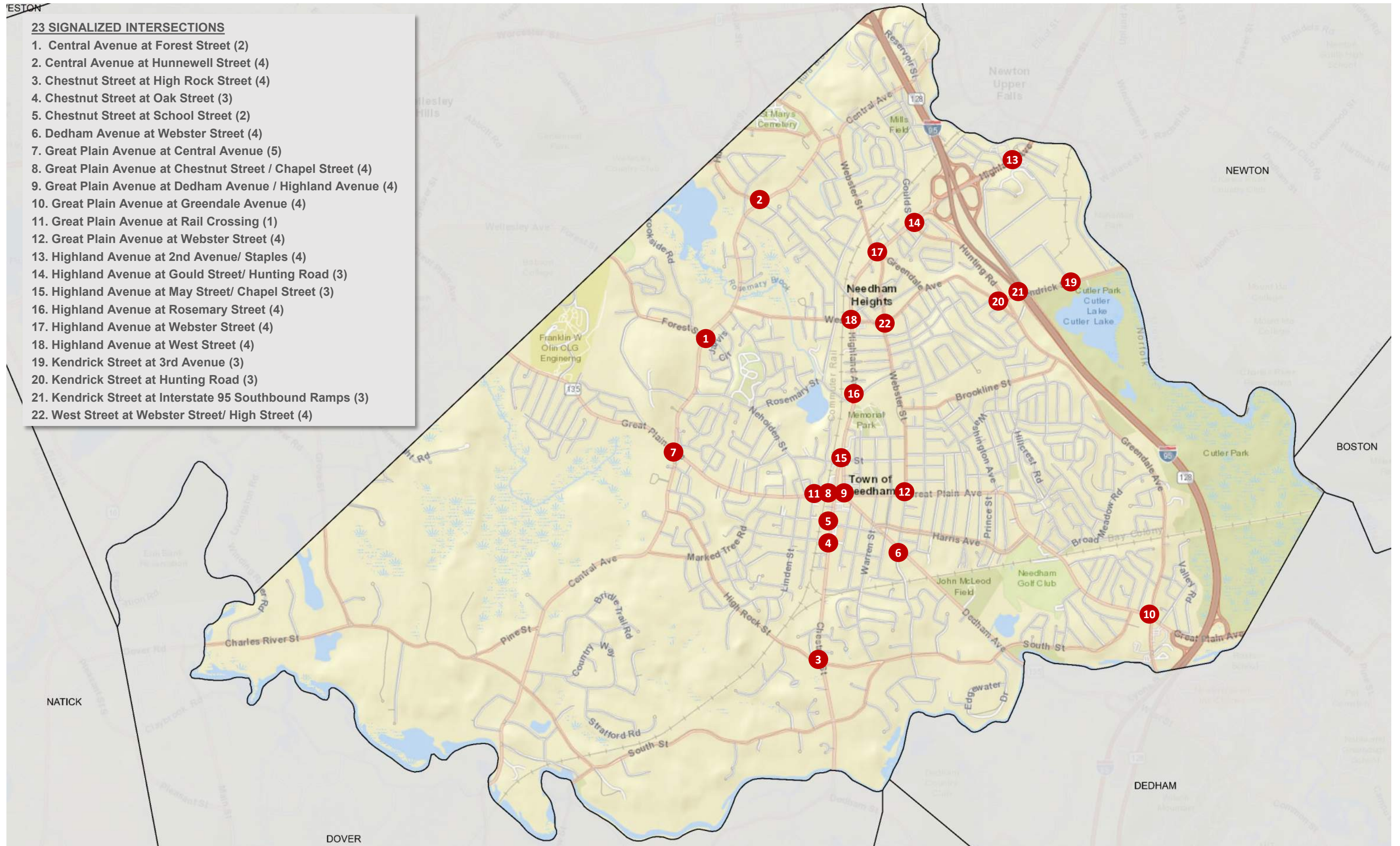


Crosswalk ID	Street	Control	Nearest Landmark/ Intersection	Location Description	Direction
SIG-001	2nd Avenue	Signal	Highland Avenue at 2nd Avenue/ Staples	Just south of Highland Avenue	East-West
SIG-002	3rd Avenue	Signal	Kendrick Street at 3rd Avenue	Northwest of Kendirck Street	Northwest-Southeast
SIG-003	3rd Avenue	Signal	Kendrick Street at 3rd Avenue	Northeast of Kendrick Street	East-West
SIG-004	Central Avenue	Signal	Great Plain Avenue at Central Avenue	South of Great Plain Avenue	East-West
SIG-005	Central Avenue	Signal	Great Plain Avenue at Central Avenue	North of Great Plain Avenue	East-West
SIG-006	Central Avenue	Signal	Great Plain Avenue at Central Avenue	Central Avenue southbound right turn lane to Great Plain Avenue	Northwest-Southeast
SIG-007	Central Avenue	Signal	Central Avenue at Forest Street	Northeast of Forest Street	Northwest-Southeast
SIG-008	Central Avenue	Signal	Central Avenue at Hunnewell Street	Southwest of Hunnewell Street	East-West
SIG-009	Central Avenue	Signal	Central Avenue at Hunnewell Street	Northeast of Hunnewell Street	Northwest-Southeast
SIG-010	Chapel Street	Signal	Great Plain Avenue at Chestnut Street/Chapel Street	North of Great Plain Avenue	East-West
SIG-011	Chestnut Street	Signal	Great Plain Avenue at Chestnut Street/Chapel Street	South of Great Plain Avenue	East-West
SIG-012	Chestnut Street	Signal	Chestnut Street at School Street	North of School Street	East-West
SIG-013	Chestnut Street	Signal	Chestnut Street at Oak Street/Beth Israel Deaconess Hospital	North of Oak Street	East-West
SIG-014	Chestnut Street	Signal	Chestnut Street at Oak Street/Beth Israel Deaconess Hospital	South of Oak Street	East-West
SIG-015	Chestnut Street	Signal	Chestnut Street at High Rock Street	North of High Rock Street	East-West
SIG-016	Chestnut Street	Signal	Chestnut Street at High Rock Street	South of High Rock Street	East-West
SIG-017	Dedham Avenue	Signal	Great Plain Avenue at Dedham Avenue/ Highland Avenue	South of Great Plain Avenue	East-West
SIG-018	Dedham Avenue	Signal	Dedham Avenue at Webster Street	West of Webster Street	North-South
SIG-019	Dedham Avenue	Signal	Dedham Avenue at Webster Street	East of Webster Street	North-South
SIG-020	Kendrick Street	Signal	Kendrick Street at Interstate 95 Southbound Ramps Exit 19A	North of Dedham Avenue	East-West
SIG-021	Forest Street	Signal	Central Avenue at Forest Street	West of Central Avenue	North-South
SIG-022	Gould Street	Signal	Highland Avenue at Gould Street/ Hunting Road	Northwest of Highland Avenue	Southwest-Northeast
SIG-023	Great Plain Avenue	Signal	Great Plain Avenue at Central Avenue	East of Central Avenue	North-South
SIG-024	Great Plain Avenue	Signal	Great Plain Avenue at Central Avenue	West of Central Avenue	North-South
SIG-025	Great Plain Avenue	Signal	Great Plain Avenue at Rail Crossing	West of Rail Crossing	North-South
SIG-026	Great Plain Avenue	Signal	Great Plain Avenue at Chestnut Street/ Chapel Street	West of Chestnut Street	North-South
SIG-027	Great Plain Avenue	Signal	Great Plain Avenue at Chestnut Street/ Chapel Street	East of Chestnut Street	North-South
SIG-028	Great Plain Avenue	Signal	Great Plain Avenue at Dedham Avenue/ Highland Avenue	West of Highland Avenue	Northwest-Southeast
SIG-029	Great Plain Avenue	Signal	Great Plain Avenue at Dedham Avenue/ Highland Avenue	East of Highland Avenue	Southwest-Northeast
SIG-030	Great Plain Avenue	Signal	Great Plain Avenue at Greendale Avenue	East of Greendale Avenue	North-South
SIG-031	Great Plain Avenue	Signal	Great Plain Avenue at Greendale Avenue	West of Greendale Avenue	North-South
SIG-032	Great Plain Avenue	Signal	Great Plain Avenue at Webster Street	East of Webster Street	North-South
SIG-033	Great Plain Avenue	Signal	Great Plain Avenue at Webster Street	West of Webster Street	North-South
SIG-034	Greendale Avenue	Signal	Great Plain Avenue at Greendale Avenue	South of Great Plain Avenue	East-West
SIG-035	Greendale Avenue	Signal	Great Plain Avenue at Greendale Avenue	North of Great Plain Avenue	East-West
SIG-036	High Rock Street	Signal	Chestnut Street at High Rock Street	West of Chestnut Street	North-South
SIG-037	High Rock Street	Signal	Chestnut Street at High Rock Street	East of Chestnut Street	North-South
SIG-038	High Street	Signal	West Street at Webster Street/ High Street	East of Webster Street	North-South
SIG-039	Highland Avenue	Signal	Great Plain Avenue at Dedham Avenue/ Highland Avenue	North of Great Plain Avenue	East-West
SIG-040	Highland Avenue	Signal	Highland Avenue at May Street/ Chapel Street	North of May Street	East-West
SIG-041	Highland Avenue	Signal	Highland Avenue at Rosemary Street	North of Rosemary Street	East-West
SIG-042	Highland Avenue	Signal	Highland Avenue at Rosemary Street	South of Rosemary Street	Southwest-Northeast
SIG-043	Highland Avenue	Signal	Highland Avenue at 2nd Avenue/ Staples	Northeast of 2nd Avenue	Northwest-Southeast
SIG-044	Highland Avenue	Signal	Highland Avenue at Gould Street/ Hunting Road	Southwest of Hunting Road	Northwest-Southeast
SIG-045	Highland Avenue	Signal	Highland Avenue at Webster Street	Northeast of Webster Street	Northwest-Southeast
SIG-046	Highland Avenue	Signal	Highland Avenue at Webster Street	Southwest of Webster Street	Northwest-Southeast
SIG-047	Highland Avenue	Signal	Highland Avenue at West Street	North of West Street	East-West
SIG-048	Highland Avenue	Signal	Highland Avenue at West Street	South of West Street	East-West
SIG-049	Highland Avenue	Signal	Highland Avenue at 2nd Avenue/ Staples	Southwest of 2nd Avenue	Northwest-Southeast

SIG-050	Hunnewell Street	Signal	Central Avenue at Hunnewell Street	Northwest of Central Avenue	Southwest-Northeast
SIG-051	Hunnewell Street	Signal	Central Avenue at Hunnewell Street	Southeast of Central Avenue	Southwest-Northeast
SIG-052	Hunting Road	Signal	Kendrick Street at Hunting Road	North of Kendrick Street	East-West
SIG-053	Hunting Road	Signal	Kendrick Street at Hunting Road	South of Kendrick Street	East-West
SIG-054	Hunting Road	Signal	Highland Avenue at Gould Street/ Hunting Road	Southeast of Highland Avenue	Southwest-Northeast
SIG-055	Kendrick Street	Signal	Kendrick Street at Hunting Road	West of Hunting Road	North-South
SIG-056	Kendrick Street	Signal	Kendrick Street at Interstate 95 Southbound Ramps Exit 19A	West of I-95 SB Off Ramp Exit 19A	North-South
SIG-057	Kendrick Street	Signal	Kendrick Street at Interstate 95 Southbound Ramps Exit 19A	West of I-95 SB On Ramp Exit 19A	North-South
SIG-058	Kendrick Street	Signal	Kendrick Street at 3rd Avenue	East of 3rd Avenue	North-South
SIG-059	May Street	Signal	Highland Avenue at May Street/ Chapel Street	West of Highland Avenue	Southwest-Northeast
SIG-060	May Street	Signal	Highland Avenue at May Street/ Chapel Street	East of Highland Avenue	North-South
SIG-061	Oak Street	Signal	Chestnut Street at Oak Street/ Beth Israel Deaconess Hospital	West of Chestnut Street	North-South
SIG-062	Rosemary Street	Signal	Highland Avenue at Rosemary Street	East of Highland Avenue	North-South
SIG-063	Rosemary Street	Signal	Highland Avenue at Rosemary Street	West of Highland Avenue	North-South
SIG-064	School Street	Signal	Chestnut Street at School Street	East of Chestnut Street	North-South
SIG-065	Staples/Petco Driveway	Signal	Highland Avenue at 2nd Avenue/ Staples	Northwest of Highland Avenue	Southwest-Northeast
SIG-066	Webster Street	Signal	Dedham Avenue at Webster Street	North of Dedham Street	Northwest-Southeast
SIG-067	Webster Street	Signal	Dedham Avenue at Webster Street	South of Dedham Street	Northwest-Southeast
SIG-068	Webster Street	Signal	Great Plain Avenue at Webster Street	North of Great Plain Avenue	East-West
SIG-069	Webster Street	Signal	Great Plain Avenue at Webster Street	South of Great Plain Avenue	East-West
SIG-070	Webster Street	Signal	Highland Avenue at Webster Street	Northwest of Highland Avenue	Southwest-Northeast
SIG-071	Webster Street	Signal	Highland Avenue at Webster Street	Southeast of Highland Avenue	Southwest-Northeast
SIG-072	Webster Street	Signal	West Street at Webster Street/ High Street	North of West Street	East-West
SIG-073	Webster Street	Signal	West Street at Webster Street/ High Street	South of West Street	East-West
SIG-074	West Street	Signal	West Street at Webster Street/ High Street	West of Webster Street	North-South
SIG-075	West Street	Signal	Highland Avenue at West Street	East of Highland Avenue	North-South
SIG-076	West Street	Signal	Highland Avenue at West Street	West of Highland Avenue	North-South

23 SIGNALIZED INTERSECTIONS

1. Central Avenue at Forest Street (2)
2. Central Avenue at Hunnewell Street (4)
3. Chestnut Street at High Rock Street (4)
4. Chestnut Street at Oak Street (3)
5. Chestnut Street at School Street (2)
6. Dedham Avenue at Webster Street (4)
7. Great Plain Avenue at Central Avenue (5)
8. Great Plain Avenue at Chestnut Street / Chapel Street (4)
9. Great Plain Avenue at Dedham Avenue / Highland Avenue (4)
10. Great Plain Avenue at Greendale Avenue (4)
11. Great Plain Avenue at Rail Crossing (1)
12. Great Plain Avenue at Webster Street (4)
13. Highland Avenue at 2nd Avenue/ Staples (4)
14. Highland Avenue at Gould Street/ Hunting Road (3)
15. Highland Avenue at May Street/ Chapel Street (3)
16. Highland Avenue at Rosemary Street (4)
17. Highland Avenue at Webster Street (4)
18. Highland Avenue at West Street (4)
19. Kendrick Street at 3rd Avenue (3)
20. Kendrick Street at Hunting Road (3)
21. Kendrick Street at Interstate 95 Southbound Ramps (3)
22. West Street at Webster Street/ High Street (4)





Crosswalk ID	Street	Control	Nearest Landmark	Location Description	Direction
STP-001	4th Avenue	Stop	4th Avenue at Kendrick Street	Just North of Kendrick Street	East-West
STP-002	A Street	Stop	A Street at 1st Avenue	Just east of 1st Avenue	North-South
STP-003	A Street	Stop	A Street at 2nd Avenue	Just west of 2nd Avenue	North-South
STP-004	Abbott Street	Stop	Abbott Street at Great Plain Avenue	Just northeast of Great Plain Avenue	Northwest-Southeast
STP-005	Admiral Gracey Drive	Stop	Admiral Gracey Drive at Kingsbury Street	Just north of Kingsbury Street	East-West
STP-006	Andrea Circle	Stop	Andrea Circle at Hunnewell Street	Just southwest of Hunnewell Street	Northwest-Southeast
STP-007	Avery Square	Stop	Avery Square at Highland Avenue	Just west of Highland Avenue	North-South
STP-008	Beaufort Avenue	Stop	Beaufort Avenue at Mount Vernon Avenue	Just north of Mount Vernon Avenue	East-West
STP-009	Bennington Street	Stop	Bennington Street at High Street	Just southeast of High Street	Southwest-Northeast
STP-010	Beth Israel Hospital Entrance/Exit	Stop	Beth Israel Hospital	Just east of Chestnut Street	North-South
STP-011	Birch Street	Stop	Birch Street at West Street	Just south of West Street	East-West
STP-012	Bird Street	Stop	Bird Street at Greendale Avenue	Just southwest of Greendale Avenue	Northwest-Southeast
STP-013	Blacksmith Drive	Stop	Blacksmith Drive at Nehoiden Street	Just southwest of Nehoiden Street	Northwest-Southeast
STP-014	Bobsled Drive	Stop	Bobsled Drive at Hunnewell Street	Just southwest of Hunnewell Street	Northwest-Southeast
STP-015	Border Road	Stop	Border Road at Nehoiden Street	Just south of Nehoiden Street	East-West
STP-016	Bradford Street	Stop	Bradford Street at Harris Avenue	Just south of Harris Avenue	East-West
STP-017	Bradford Street	Stop	Bradford Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-018	Briarwood Circle	Stop	Briarwood Circle at Hunnewell Street	Just west of Hunnewell Street	Northwest-Southeast
STP-019	Broad Meadow Road	Stop	Broad Meadow Road at Great Plain Avenue	Just east of Great Plain Avenue	Northwest-Southeast
STP-020	Broad Meadow Road	Stop	Broad Meadow Road at Bird Street	Just northeast of Bird Street	North-South
STP-021	Broad Meadow Road	Stop	Broad Meadow Road at Greendale Avenue	Just west of Greendale Avenue	North-South
STP-022	Broadmeadow Elementary School	Stop	Broadmeadow Elementary School	Just south of Broad Meadow Road and Bird Street	East-West
STP-023	Brookline Street	Stop	Brookline Street at Webster Street	Just east of Webster Street	North-South
STP-024	Brookline Street	Stop	Brookline Street at Manning Street	Just east of Manning Street	North-South
STP-025	Brookline Street	Stop	Brookline Street at Manning Street	Just west of Manning Street	North-South
STP-026	Brookline Street	Stop	Brookline Street at Greendale Avenue	Just southwest of Greendale Avenue	East-West
STP-027	Cabot Street	Stop	Cabot Street at 1st Avenue	Just east of 1st Avenue	North-South
STP-028	Carol Road	Stop	Carol Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-029	Carriage Lane	Stop	Carriage Lane at Chestnut Street	Just east of Chestnut Street	North-South
STP-030	Castano Court	Stop	Castano Court at Hunnewell Street	Just southwest of Hunnewell Street	Northwest-Southeast
STP-031	Cedar Street	Stop	Cedar Street at Central Avenue	Just northwest of Central Avenue	Southwest-Northeast
STP-032	Coolidge Avenue	Stop	Coolidge Avenue at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-033	Coulton Park	Stop	Coulton Park at Harris Avenue	Just south of Harris Avenue	East-West
STP-034	Crescent Road	Stop	Crescent Road at West Street	Just north of West Street	East-West
STP-035	Curtis Road	Stop	Curtis Road at Great Plain Avenue	Just north of Great Plain Avenue	Northwest-Southeast
STP-036	Curve Street	Stop	Curve Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-037	Dale Street	Stop	Dale Street at West Street	Just south of West Street	East-West
STP-038	Dawson Drive	Stop	Dawson Drive at Broad Meadow Road	Just north of Broad Meadow Road	Southwest-Northeast
STP-039	Douglas Road	Stop	Douglas Road at Great Plain Avenue	Just northeast of Great Plain Avenue	Northwest-Southeast
STP-040	Eaton Road	Stop	Eaton Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-041	Ellicott Street	Stop	Ellicott Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-042	Elliot Street	Stop	Elliot Street at West Street	Just south of West Street	East-West
STP-043	Enslin Road	Stop	Enslin Road at Greendale Avenue	Just west of Greendale Avenue	North-South
STP-044	Fair Oaks Park	Stop	Fair Oaks Park at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-045	Fair Oaks Park	Stop	Fair Oaks Park at Great Plain Avenue	Western xwalk, just south of Great Plain Avenue	East-West
STP-046	Fair Oaks Park	Stop	Fair Oaks Park at Great Plain Avenue	Eastern xwalk, Just south of Great Plain Avenue	East-West
STP-047	Fletcher Road	Stop	Fletcher Road at Chestnut Street	Just east of Chestnut Street	North-South
STP-048	Fuller Brook Avenue	Stop	Fuller Brook Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-049	Gage Street	Stop	Gage Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-050	Garden Street	Stop	Garden Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-051	Garden Street	Stop	Garden Street at May Street	Just north of May Street	East-West
STP-052	Garden Street	Stop	Garden Street at May Street	Just south of May Street	East-West
STP-053	Gay Street	Stop	Gay Street at Central Avenue	Just east of Central Avenue	North-South
STP-054	George Street	Stop	George Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West



Crosswalk ID	Street	Control	Nearest Landmark	Location Description	Direction
STP-055	Gerber Circle	Stop	Gerber Circle at Hunnewell Street	Just northeast of Hunnewell Street	Northwest-Southeast
STP-056	Glen Cary Road	Stop	Glen Cary Road at West Street	Just north of West Street	East-West
STP-057	Glendoon Road	Stop	Glendoon Road at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-058	Gould Street	Stop	Gould Street at Central Avenue	Just southeast of Central Avenue	Southwest-Northeast
STP-059	Grant Street	Stop	Grant Street at Dedham Avenue	Just southwest of Dedham Avenue	Northwest-Southeast
STP-060	Great Plain Avenue	Stop	Great Plain Avenue at Mount Vernon Avenue/Beaufort Avenue	Just north of Great Plain Avenue/ Wilshire Park	Northwest-Southeast
STP-061	Great Plain Terrace	Stop	Great Plain Terrace at Great Plain Avenue	Just north of Great Plain Avenue	Northwest-Southeast
STP-062	Green Street	Stop	Green Street at Great Plain Avenue	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-063	Greendale Avenue	Stop	Greendale Avenue at Webster Street	Just east of Webster Street	North-South
STP-064	Greendale Avenue	Stop	Greendale Avenue at High Street	Just north of High Street	East-West
STP-065	Greenwood Avenue	Stop	Greenwood Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-066	Grosvenor Road	Stop	Grosvenor Road at Broad Meadow Road	Just southeast of Broad Meadow Road	Southwest-Northeast
STP-067	Grosvenor Road	Stop	Grosvenor Road at Greendale Avenue	Just west of Greendale Avenue	North-South
STP-068	Hamilton Lane	Stop	Hamilton Lane at Greendale Avenue	Just west of Greendale Avenue	North-South
STP-069	Hamilton Place	Stop	Hamilton Place at Central Avenue	Just north of Central Avenue	Southwest-Northeast
STP-070	Harris Avenue	Stop	Harris Avenue at Dedham Avenue	Just northeast of Dedham Avenue	Northwest-Southeast
STP-073	Harris Avenue	Stop	Harris Avenue at Great Plain Avenue	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-074	High Rock Street	Stop	High Rock Street at Marked Tree Road	Just south of Marked Tree Road	East-West
STP-075	High Rock Street	Stop	High Rock Street at Central Avenue	Just east of Central Avenue	North-South
STP-076	Highland Terrace	Stop	Highland Terrace at Highland Avenue	Just southeast of Highland Avenue	Southwest-Northeast
STP-077	Hildreth Place	Stop	Hildreth Place at Highland Avenue	Just west of Highland Avenue	North-South
STP-078	Hill Street	Stop	Hill Street at Hunnewell Street	Just southwest of Hunnewell Street	Northwest-Southeast
STP-079	Hillcrest Road	Stop	Hillcrest Road at Great Plain Avenue	Just northeast of Great Plain Avenue	Northwest-Southeast
STP-080	Hillside Avenue	Stop	Hillside Avenue at Rosemary Street	Just north of Rosemary Street	East-West
STP-081	Hillside Avenue	Stop	Hillside Avenue at Webster Street	Just west of Webster Street	North-South
STP-082	Hillside Avenue	Stop	Hillside Avenue at West Street	Just north of West Street	East-West
STP-083	Hillside Avenue	Stop	Hillside Avenue at Hunnewell Street	Just south of Hunnewell Street	Northwest-Southeast
STP-084	Hillside Avenue	Stop	Hillside Avenue at Hunnewell Street	Just north of Hunnewell Street	Northwest-Southeast
STP-085	Hunnewell Street	Stop	Hunnewell Street at Webster Street	Just west of Webster Street	North-South
STP-086	Hunnewell Street	Stop	Hunnewell Street at West Street	Just south of West Street	East-West
STP-087	Hunnewell Street	Stop	Hunnewell Street at West Street	Just north of West Street	East-West
STP-088	Hunnewell Street	Stop	Hunnewell Street at Highland Avenue	Just east of Highland Avenue	North-South
STP-089	Hunnewell Street	Stop	Hunnewell Street at Highland Avenue	Just west of Highland Avenue	North-South
STP-090	Ivy Road	Stop	Ivy Road at Great Plain Avenue	Just west of Great Plain Avenue	North-South
STP-091	James Avenue	Stop	James Avenue at Manning Street	Just east of Manning Street	North-South
STP-092	Jenna Circle	Stop	Jenna Circle at Central Avenue	Just west of Central Avenue	North-South
STP-093	Junction Street	Stop	Junction Street at Chestnut Street	Just east of Chestnut Street	North-South
STP-094	Kingsbury Street	Stop	Kingsbury Street at Webster Street	Just west of Webster Street	North-South
STP-095	Lantern Lane	Stop	Lantern Lane at Chestnut Street	Just east of Chestnut Street	North-South
STP-096	Lester Street	Stop	Lester Street at Hunnewell Street	Just northeast of Hunnewell Street	Northwest-Southeast
STP-097	Lewis Street	Stop	Lewis Street at Nehoiden Street	Just east of Nehoiden Street	North-South
STP-098	Lincoln Street	Stop	Lincoln Street at Dedham Avenue	Just south of Dedham Avenue	Northwest-Southeast
STP-099	Lincoln Street	Stop	Lincoln Street at School Street	Just north of School Street	East-West
STP-100	Lincoln Street	Stop	Lincoln Street at School Street	Just south of School Street	East-West
STP-101	Lindbergh Avenue	Stop	Lindbergh Avenue at Webster Street	Just east of Webster Street	North-South
STP-102	Lindbergh Avenue	Stop	Lndbergh Avenue at Manning Street	Just west of Manning Street	North-South
STP-103	Lindbergh Avenue	Stop	Lindbergh Avenue at Manning Street	Just east of Manning Street	North-South
STP-104	Lindbergh Avenue	Stop	Lindbergh Avenue at Paul Revere Road	Just southwest of Paul Revere Road	Northwest-Southeast
STP-105	Linden Street	Stop	Linden Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-106	Linden Street	Stop	Linden Street at Oak Street	Just south of Oak Street	East-West
STP-107	Linden Street	Stop	Linden Street at Oak Street	Just north of Oak Street	East-West
STP-108	Manning Street	Stop	Manning Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-109	Manning Street	Stop	Manning Street at Brookline Street	Just south of Brookline Street	East-West
STP-110	Manning Street	Stop	Manning Street at Brookline Street	Just north of Brookline Street	East-West



Crosswalk ID	Street	Control	Nearest Landmark	Location Description	Direction
STP-111	Manning Street	Stop	Manning Street at High Street	Just southeast of High Street	Southeast-Northeast
STP-112	Maple Street	Stop	Maple Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-113	Maple Street	Stop	Maple Street at Oak Street	Just south of Oak Street	East-West
STP-114	Maple Street	Stop	Maple Street at Oak Street	Just north of Oak Street	East-West
STP-115	Mark Lee Road	Stop	Mark Lee Road at Highland Avenue	Just east of Highland Avenue	North-South
STP-116	Marked Tree Road	Stop	Marked Tree Road at Central Avenue	Just east of Central Avenue	North-South
STP-117	Marked Tree Road	Stop	Marked Tree Road at High Rock Street	Just west of High Rock Street	North-South
STP-118	Marked Tree Road	Stop	Marked Tree Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-119	Marsh Road	Stop	Marsh Road at Chestnut Street	Just west of Chestnut Street	North-South
STP-120	Marshall Street	Stop	Marshall Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-121	Mason Road	Stop	Mason Road at Great Plain Avenue	Just northeast of Great Plain Avenue	Northwest-Southeast
STP-122	May Street	Stop	May Street at Nehoiden Street	Just east of Nehoiden Street	North-South
STP-123	May Street	Stop	May Street at Webster Street	Just west of Webster Street	North-South
STP-124	Mayflower Road	Stop	Mayflower Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-125	Mayo Avenue	Stop	Mayo Avenue at Harris Avenue	Just north of Harris Avenue	East-West
STP-126	Mayo Avenue	Stop	Mayo Avenue at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-127	MBTA Hersey Commuter Lot	Stop	MBTA Hersey Commuter Station	Just west of Great Plain Avenue	North-South
STP-128	MBTA Hersey Commuter Lot	Stop	MBTA Hersey Commuter Station	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-129	MBTA Needham Center Commutor Lot	Stop	MBTA Needham Center Commutor Station	Just west of Chapel Street	North-South
STP-130	MBTA Needham Heights Commuter Lot	Stop	MBTA Needham Heights Commuter Statton	Just north of West Street	East-West
STP-131	McCulloch Street	Stop	McCulluch Street at West Street	Just north of West Street	East-West
STP-132	Meadowbrook Road	Stop	Meadowbrook Road at Nehoiden Street	Just south of Nehoiden Street	East-West
STP-133	Meadowbrook Road	Stop	Meadowbrook Road at Newell Avenue	Just west of Newell Avenue	North-South
STP-134	Melrose Avenue	Stop	Melrose Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-135	Mitchell Elementary School	Stop	Mitchell Elementary School	Just north of Brookline Street and just west of Dell Avenue	East-West
STP-136	Mitchell Elementary School	Stop	Mitchell Elementary School	Just north of Brookline Street, Mitchell School Exit	East-West
STP-137	Mitchell Elementary School	Stop	Mitchell Elementary School	Just north of Brookline Street, Mitchell School Entrance	East-West
STP-138	MITTCOM Driveway	Stop	MITCOM Driveway	Just southeast of A Street	Southwest-Northeast
STP-139	Mt. Vernon Avenue	Stop	Mount Vernon Avenue at Beaufort Street	Just east of Beaufort Street	North-South
STP-140	Needham Gateway Shops Driveway	Stop	Needham Gateway Shops Driiveway at 2nd Avenue	Just north of 2nd Avenue	East-West
STP-141	Needham High School	Stop	Needham High School	Just west of Webster Street, southern driveway	North-South
STP-142	Needham High School	Stop	Needham High School	Just west of Webster Street, northern driveway	North-South
STP-143	Nehoiden Street	Stop	Nehoiden Street at Central Avenue	Just east of Central Avenue, southern intersection	North-South
STP-144	Nehoiden Street	Stop	Nehoiden Street at Central Avenue	Just east of Central Avenue, northern intersection	North-South
STP-145	Nehoiden Street	Stop	Nehoiden Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-146	Newbury Park	Stop	Newbury Park at Broad Meadow Road	Just north of Broad Meadow Road	East-West
STP-147	Newell Avenue	Stop	Newell Avenue at Nehoiden Street	Just west of Nehoiden Street	North-South
STP-148	Newell Avenue	Stop	Newell Avenue at Prospect Street/Lewis Street	Just south of Prospect Street/Lewis Street	East-West
STP-149	Newell Avenue	Stop	Newell Avenue at Lewis Street	Just west of Lewis Street	Northwest-Southeast
STP-150	Newell Avenue	Stop	Newell Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-151	Newman Elementary Entrance/Exit	Stop	Newman Elementary School	Just west of Central Avenue	North-South
STP-152	North Hill Avenue	Stop	North Hill Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-153	North Hill Entrance/Exit	Stop	North Hill Retirement Center at Central Avenue	Just west of Central Avenue	North-South
STP-154	Noyes Street	Stop	Noyes Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-155	Noyes Street	Stop	Noyes Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-156	Oak Knoll Terrace	Stop	Oak Knoll Terrace at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-157	Oak Street	Stop	Oak Street at Linden Street	Just west of Linden Street	North-South
STP-158	Oak Street	Stop	Oak Street at Linden Street	Just east of Linden Street	North-South
STP-159	Oakland Avenue	Stop	Oakland Avenue at May Street	Just north of May Street	East-West
STP-160	Oakland Avenue	Stop	Oakland Avenue at Highland Avenue	Just east of Highland Avenue	North-South
STP-161	Old Farm Road	Stop	Old Farm Road at Great Plain Avenue	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-162	Parcel B Access Road	Stop	Parcel B Access Road at Olin Way	Just east of Olin Way	North-South
STP-163	Parish Road	Stop	Parish Road at Rosemary Street	Just north of Rosemary Street	East-West
STP-164	Parish Road	Stop	Parish Road at Central Avenue	Just east of Central Avenue	North-South

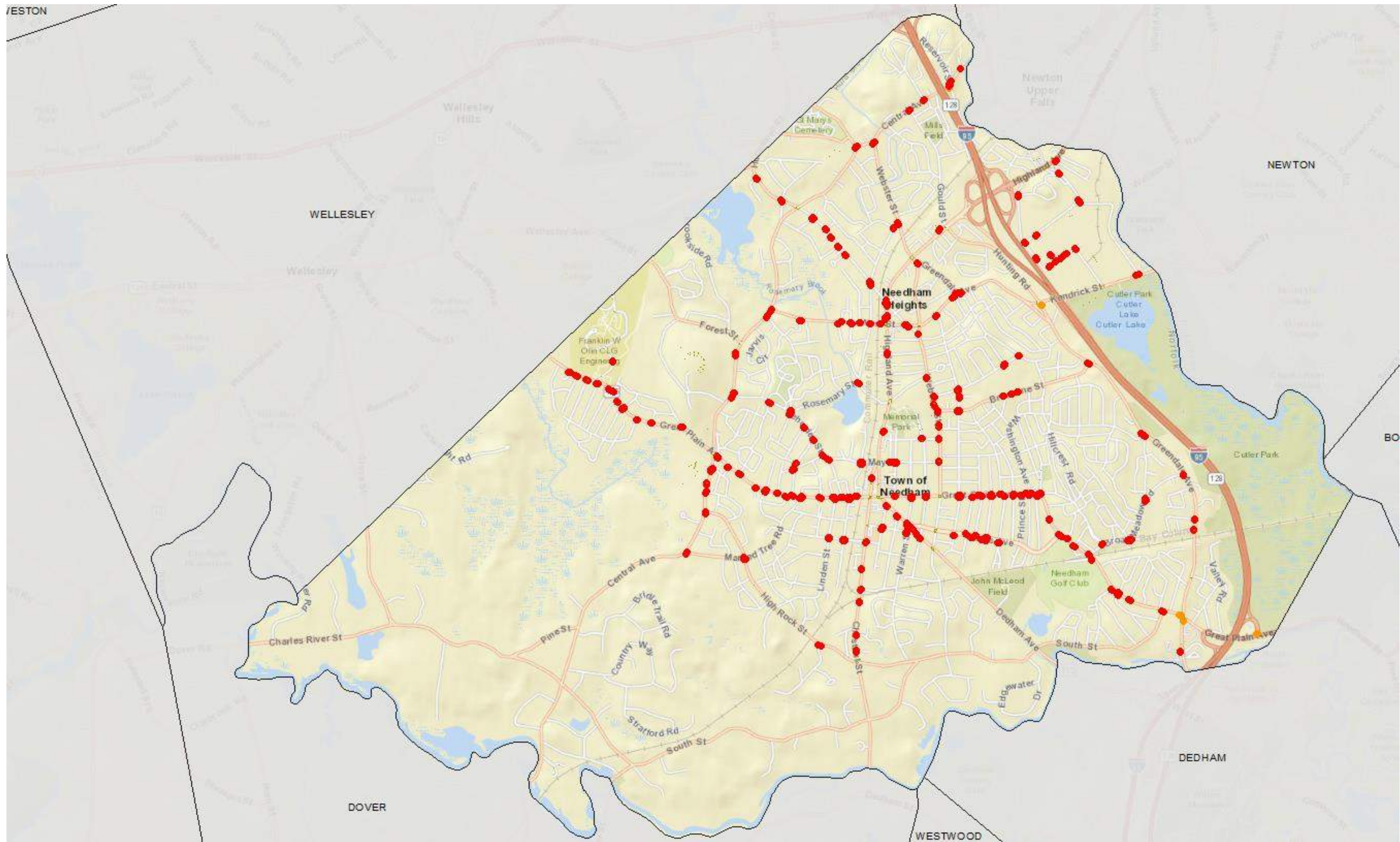


Crosswalk ID	Street	Control	Nearest Landmark	Location Description	Direction
STP-165	Pickering Street	Stop	Pickering Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-166	Pickering Street	Stop	Pickering Street at May Street	Just north of May Street	East-West
STP-167	Pickering Street	Stop	Pickering Street at May Street	Just south of May Street	East-West
STP-168	Pilgrim Road	Stop	Pilgrim Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-169	Pinewood Road	Stop	Pinewood Road at Harris Avenue	Just north of Harris Avenue	East-West
STP-170	Pinewood Road	Stop	Pinewood Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-171	Pleasant Street	Stop	Pleasant Street at Dedham Avenue	Just southwest of Dedham Avenue	Northwest-Southeast
STP-172	Plymouth Road	Stop	Plymouth Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-173	Pollard Middle School	Stop	Pollard Middle School	Just south of Harris Avenue, western driveway	East-West
STP-174	Pollard Middle School	Stop	Pollard Middle School	Just south of Harris Avenue, eastern driveway	East-West
STP-175	Pollard Middle School	Stop	Pollard Middle School	Just south of Harris Avenue, Parking lot	East-West
STP-176	Pond Street	Stop	Pond Street at Central Avenue	Just east of Central Avenue	North-South
STP-177	Powder House Circle	Stop	Powder House Circle at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-178	Prince Street	Stop	Prince Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-179	Prospect Street	Stop	Prospect Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-180	Reservoir Street	Stop	Reservoir Street at Central Avenue	Just south of Central Avenue	East-West
STP-181	Reservoir Street	Stop	Reservoir Street at Central Avenue	Just north of Central Avenue	East-West
STP-182	Richardson Drive	Stop	Richardson Drive at High Rock Street	Just south of High Rock Street	East-West
STP-183	Rivard Road	Stop	Rivard Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-184	Rosemary Street	Stop	Rosemary Street at Parish Road	Just east of Parish Road	North-South
STP-185	Rosemary Street	Stop	Rosemary Street at Webster Street	Just west of Webster Street	North-South
STP-186	Rybury Hillway	Stop	Rybury Hillway at Greendale Avenue	Just west of Greendale Avenue	North-South
STP-187	School Street	Stop	School Street at Warren Street	Just west of Warren Street	North-South
STP-188	School Street	Stop	School Street at Warren Street	Just east of Warren Street	North-South
STP-189	School Street	Stop	School Street at Dedham Avenue	Just southwest of Dedham Avenue	Northwest-Southeast
STP-190	School Street	Stop	School Street at Lincoln Street	Just east of Lincoln Street	North-South
STP-191	School Street	Stop	School Street at Lincoln Street	Just west of Lincoln Street	North-South
STP-192	South Street	Stop	School Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-193	St. Mary Street	Stop	St. Mary Street at Central Avenue	Just north of Central Avenue	Southwest-Northeast
STP-194	Standish Road	Stop	Standish Road at Great Plain Avenue	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-195	Stevens Road	Stop	Stevens Road at Harris Avenue	Just north of Harris Avenue	East-West
STP-196	Stevens Road	Stop	Stevens Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-197	Stewart Road	Stop	Stewart Road at Great Plain Avenue	Just southwest of Great Plain Avenue	Northwest-Southeast
STP-198	Stockdale Road	Stop	Stockdale Road at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-199	Sunnyside Road	Stop	Sunnyside Road at Hillside Avenue	Just west of Hillside Avenue	North-South
STP-200	Taylor Street	Stop	Taylor Street at Hunnewell Street	Just south of Hunnewell Street	East-West
STP-201	Taylor Street	Stop	Taylor Street at Hunnewell Street	Just north of Hunnewell Street	East-West
STP-202	Tower Avenue	Stop	Tower Avenue at Lindbergh Avenue	Just northwest of Lindbergh Avenue	Southwest-Northeast
STP-203	Tower Avenue	Stop	Tower Avenue at Lindbergh Avenue	Just southeast of Lindbergh Avenue	Southwest-Northeast
STP-204	Tower Avenue	Stop	Tower Avenue at Greendale Avenue	Just south of Greendale Avenue	East-West
STP-205	TripAdvisor Driveway	Stop	TripAdvisor	Just northwest of B Street	Southwest-Northwest
STP-206	TripAdvisor Driveway	Stop	TripAdvisor	Just east of 1st Avenue	North-South
STP-207	TripAdvisor Driveway	Stop	TripAdvisor	At Residence Inn Driveway	Northwest-Southeast
STP-208	Trout Pond Lane	Stop	Trout Pond Lane at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-209	Warren Street	Stop	Warren Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-210	Warren Street	Stop	Warren Street at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-211	Warren Street	Stop	Warren Street at Dedham Avenue	Just northeast of Dedham Avenue	Northwest-Southeast
STP-212	Warren Street	Stop	Warren Street at Dedham Avenue	Just southwest of Dedham Avenue	Northwest-Southeast
STP-213	Warren Street	Stop	Warren Street at School Street	Just north of School Street	East-West
STP-214	Warren Street	Stop	Warren Street at School Street	Just south of School Street	East-West
STP-215	Washburn Avenue	Stop	Washburn Avenue at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-216	Washington Street	Stop	Washington Street at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-219	Webster Street	Stop	Webster Street at Central Avenue	Just south of Central Avenue, western intersection	East-West
STP-220	Webster Street	Stop	Webster Street at Central Avenue	Just south of Central Avenue, eastern intersection	East-West



Greenman-Pedersen, Inc. || 181 Ballardvale Street, Suite 202, Wilmington, MA 01887
NEEDHAM STOP CONTROLLED CROSSWALKS– NEEDHAM, MA

Crosswalk ID	Street	Control	Nearest Landmark	Location Description	Direction
STP-221	West Street	Stop	West Street at Central Avenue	Just east of Central Avenue	North-South
STP-222	Whiting Way	Stop	Whiting Way at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-223	Whittier Road	Stop	Whittier Road at Great Plain Avenue	Just north of Great Plain Avenue	East-West
STP-224	Wilshire Park	Stop	Wilshire Park at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-225	Wingate at Needham Entrance/Exit	Stop	Wingate at Needham at Highland Avenue	Just north of Highland Avenue	Southwest-Northeast
STP-226	Woodlawn Avenue	Stop	Woodlawn Avenue at Great Plain Avenue	Just south of Great Plain Avenue	East-West
STP-227	TripAdvisor Driveway	Stop	TripAdvisor at B Street	Northwest of B Street	Southwest-Northeast
STP-228	Residence Inn Driveway	Stop	Residence Inn Driveway at B Street	Northwest of B Street	Southwest-Northeast
STP-229	Residence Inn Driveway	Stop	Residence Inn Driveway at B Street	Northwest of B Street	Southwest-Northeast
STP-230	NBC Universal Boston Media Center	Stop	NBC Universal Boston Media Center at B Street	Northeast of B Street	East-West

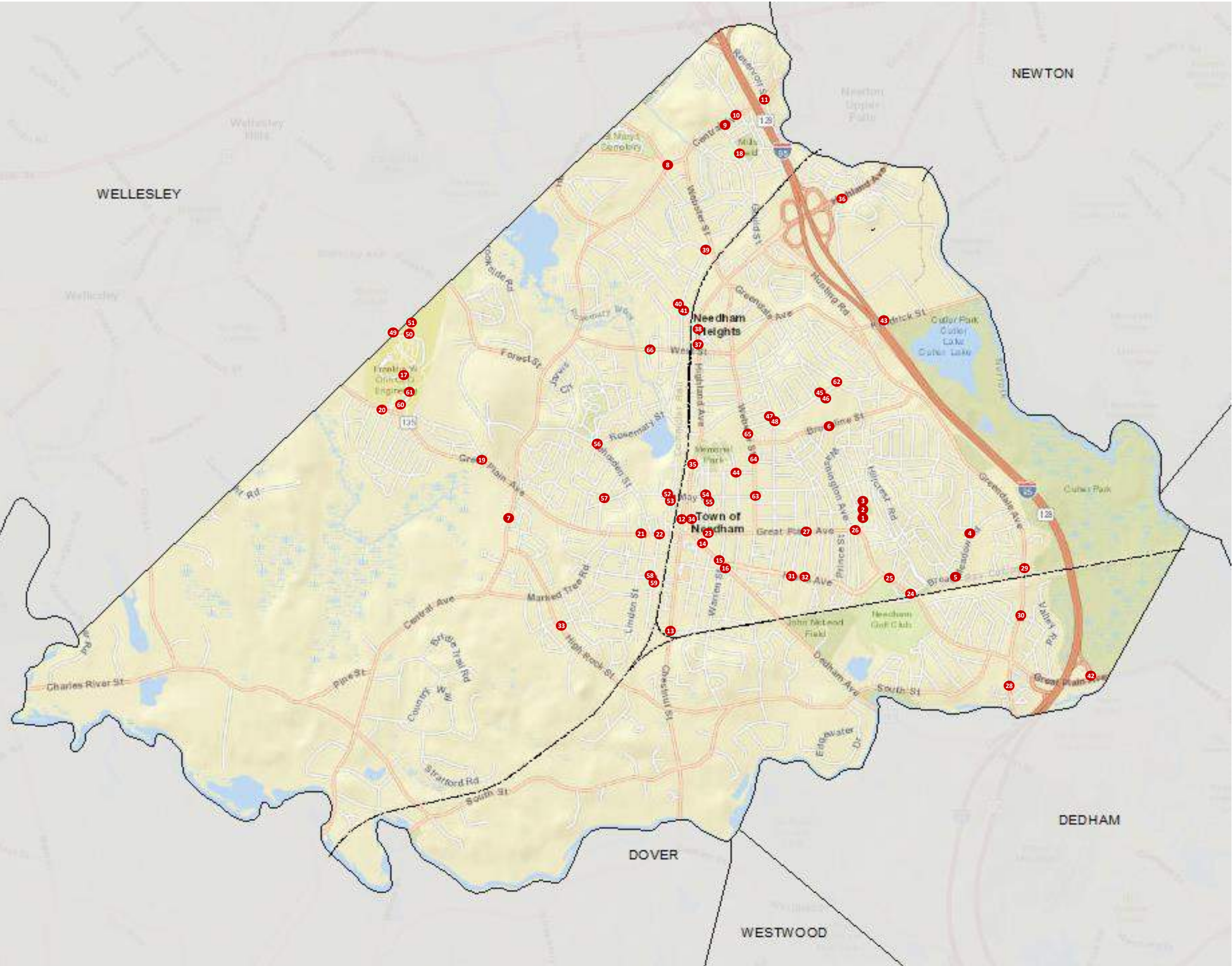




Crosswalk ID	Street	Stop, Signal, Uncontrolled, Parking Lot?	Nearest Landmark	Location Description	Direction
UN-001	Beaufort Avenue	Uncontrolled	Perry Park	Hawthorn Avenue	Southwest-Northeast
UN-002	Beaufort Avenue	Uncontrolled	Perry Park	Just north of Hawthorn Avenue	East-West
UN-003	Beaufort Avenue	Uncontrolled	Perry Park	Just north of Sargent Street	East-West
UN-004	Bird Street	Uncontrolled	Broadmeadow Elementary School	Broad Meadow Rd	East-West
UN-005	Broad Meadow Road	Uncontrolled	Broadmeadow Elementary School	Dawson Drive to Grosvenor Road	Northwest-Southeast
UN-006	Brookline Street	Uncontrolled	Mitchell Elementary School	130 feet west of Dell Avenue	North-South
UN-007	Central Avenue	Uncontrolled	Newman Elementary School	Just north of Newman Elementary School Driveway	East-West
UN-008	Central Avenue	Uncontrolled	John Eliot Elementary School	Just south of Cedar Street	Northeast-Southwest
UN-009	Central Avenue	Uncontrolled	<Null>	Just east of Gould Street	North-South
UN-010	Central Avenue	Uncontrolled	<Null>	Just west of St. Mary Street	North-South
UN-011	Central Avenue	Uncontrolled	Panella's Market	Reservoir Street	Northwest-Southeast
UN-012	Chapel Street	Uncontrolled	<Null>	<Null>	<Null>
UN-013	Chestnut Street	Uncontrolled	Needham Junction	Just north of Junction Street	East-West
UN-014	Dedham Avenue	Uncontrolled	Townhall Park	Just southwest of Lincoln Street	Southwest-Northeast
UN-015	Dedham Avenue	Uncontrolled	Vesta Park	Just northwest of Warren Street	Southwest-Northeast
UN-016	Dedham Avenue	Uncontrolled	Vesta Park	Just southeast of Harris Avenue	Southwest-Northeast
UN-017	East Drive	Uncontrolled	Olin College of Engineering	Just northeast of Olin Way	Northwest-Southeast
UN-018	Gould Street	Uncontrolled	Mills Field	Approximately 350 feet northeast of Ellis Street	Southwest-Northeast
UN-019	Great Plain Avenue	Uncontrolled	Newman Elementary School	Just east of North Hill Avenue	North-South
UN-020	Great Plain Avenue	Uncontrolled	Olin College of Engineering	Just east of Stockdale Road	North-South
UN-021	Great Plain Avenue	Uncontrolled	United States Postal Service	Washburn Avenue to Linden Street	North-South
UN-022	Great Plain Avenue	Uncontrolled	Comelia's	Glendoon Road to Maple Street	North-South
UN-023	Great Plain Avenue	Uncontrolled	Greene's Field	Just west of Pickering Street	North-South
UN-024	Great Plain Avenue	Uncontrolled	Hersey Station	Just northwest of Broad Meadow Road	Southwest-Northeast
UN-025	Great Plain Avenue	Uncontrolled	Hazel's Bakery	Just southeast of Hillcrest Road	Southwest-Northeast
UN-026	Great Plain Avenue	Uncontrolled	Perry Park	Just northwest of Wilshire Park	Southwest-Northeast
UN-027	Great Plain Avenue	Uncontrolled	<Null>	Greenwood Avenue to Pinewood Road	North-South
UN-028	Greendale Avenue	Uncontrolled	Saint Sebastian's School	Approximately 210 feet north of Hamlin Lane	East-West
UN-029	Greendale Avenue	Uncontrolled	<Null>	Just south of Grosvenor Road	East-West
UN-030	Greendale Avenue	Uncontrolled	<Null>	Just south of Intervale Road	East-West
UN-031	Harris Avenue	Uncontrolled	Pollard Middle School	Just west of Stevens Road	North-South
UN-032	Harris Avenue	Uncontrolled	Pollard Middle School	Just west of Pinewood Road	North-South
UN-033	High Rock Street	Uncontrolled	Highrock School	Just south of Birchwood Road	Southwest-Northeast
UN-034	Highland Avenue	Uncontrolled	Needham Town Hall	Approximately 325 feet north of Great Plain Avenue	East-West
UN-035	Highland Avenue	Uncontrolled	Needham Memorial Park	Just north of Oakland Avenue	East-West
UN-036	Highland Avenue	Uncontrolled	Interstate 95 Northbund Ramps	Just east 1st Avenue	North-South
UN-037	Highland Avenue	Uncontrolled	Heights Common	Avery Square to Mark Lee Road	East-West
UN-038	Highland Avenue	Uncontrolled	United States Postal Service	Hunnewall Street	East-West
UN-039	Hillside Avenue	Uncontrolled	Cricket Field	Just south of Sunnyside Road	East-West
UN-040	Hunnewell Street	Uncontrolled		Hillside Avenue	Southwest-Northeast
UN-041	Hunnewell Street	Uncontrolled		Hillside Avenue	Southwest-Northwest
UN-042	Interstate 95 On Ramp	Uncontrolled	Interstate 95 Northbound On-Ramp Exit 19B	Interstate 95 Northbound On-Ramp Exit 19B, Just north of Highland Avenue	Southwest-Northeast
UN-043	Interstate-95 On Ramp	Uncontrolled	Interstate 95 Northbound Ramps Exit 18	Northbound On-Ramp, Just north of Great Plain Avenue	East-West
UN-044	Kingsbury Street	Uncontrolled	Needham High School	Just east of Admiral Gracey Drive	North-South
UN-045	Lindbergh Avenue	Uncontrolled	Mitchell Elementary School	Just east of Tower Avenue	North-South
UN-046	Lindbergh Avenue	Uncontrolled	Michell Elementary School	Just west of Tower Avenue	North-South
UN-047	Manning Street	Uncontrolled	Needham High School	Just north of Lindbergh Avenue	East-West
UN-048	Manning Street	Uncontrolled	Needham High School	Just south of Lindbergh Avenue	East-West
UN-049	Map Hill Drive	Uncontrolled	Olin College of Engineering	Coleman Parking Lot	Southwest-Northeast
UN-050	Map Hill Drive	Uncontrolled	Olin College of Engineering	West of East Drive	Northwest-Southeast
UN-051	Map Hill Drive	Uncontrolled	Olin College of Engineering	East of Mandell Family Hall	East-West
UN-052	May Street	Uncontrolled	Needham Center Station	Just west of Garden Street	North-South

UN-053	May Street	Uncontrolled	Needham Center Stattion	Just east of Garden Street	North-South
UN-054	May Street	Uncontrolled	St. Joseph Elementary School	Just west of Pickering Street	North-South
UN-055	May Street	Uncontrolled	St. Jospeh Elementary School	Just east of Pickering Avenue	North-South
UN-056	Nehoiden Street	Uncontrolled	Needham Cementary	Just east of Meadowbrook Road	Southwest-Northeast
UN-057	Newell Avenue	Uncontrolled	<Null>	From Meadowbrook Road to Lewis Street	Northwest-Southeast
UN-058	Oak Street	Uncontrolled	<Null>	Just east of Maple Street	North-South
UN-059	Oak Street	Uncontrolled	<Null>	Just west of Maple Street	North-South
UN-060	Olin Way	Uncontrolled	Olin College of Engineering	Approximately 165 feet north of Great Plain Avenue, from parking lot	East-West
UN-061	Olin Way	Uncontrolled	Olin College of Engineering	From Govoni Field to Parcel B Access Road	East-West
UN-062	Paul Revere Road	Uncontrolled	Mitchell Elementary School	Just northwest of Lindbergh Avenue	East-West
UN-063	Webster Street	Uncontrolled	Needham High School	Just north of May Street	East-West
UN-064	Webster Street	Uncontrolled	Needham High School	Just north of Holland Street	East-West
UN-065	Webster Street	Uncontrolled	Needham High School	Approximately 180 feet south of Lindbergh Avenue	East-West
UN-066	West Street	Uncontrolled	Hillside Elementary School	Just west of Glen Gary Road	North-South

Crosswalk ID	Street
UN-001	Beaufort Avenue
UN-002	Beaufort Avenue
UN-003	Beaufort Avenue
UN-004	Beaufort Avenue
UN-005	Bird Street
UN-006	Broad Meadow Road
UN-007	Brookline Street
UN-008	Central Avenue
UN-009	Central Avenue
UN-010	Central Avenue
UN-011	Central Avenue
UN-012	Chapel Street
UN-013	Chestnut Street
UN-014	Dedham Avenue
UN-015	Dedham Avenue
UN-016	Dedham Avenue
UN-017	East Drive
UN-018	Gould Street
UN-019	Great Plain Avenue
UN-020	Great Plain Avenue
UN-021	Great Plain Avenue
UN-022	Great Plain Avenue
UN-023	Great Plain Avenue
UN-024	Great Plain Avenue
UN-025	Great Plain Avenue
UN-026	Great Plain Avenue
UN-027	Great Plain Avenue
UN-028	Greendale Avenue
UN-029	Greendale Avenue
UN-030	Greendale Avenue
UN-031	Harris Avenue
UN-032	Harris Avenue
UN-033	High Rock Street
UN-034	Highland Avenue
UN-035	Highland Avenue
UN-036	Highland Avenue
UN-037	Highland Avenue
UN-038	Highland Avenue
UN-039	Hillside Avenue
UN-040	Hunnewell Street
UN-041	Hunnewell Street
UN-042	Interstate 95 On Ramp
UN-043	Interstate-95 On Ramp
UN-044	Kingsbury Street
UN-045	Lindbergh Avenue
UN-046	Lindbergh Avenue
UN-047	Manning Street
UN-048	Manning Street
UN-049	Map Hill Drive
UN-050	Map Hill Drive
UN-051	Map Hill Drive
UN-052	May Street
UN-053	May Street
UN-054	May Street
UN-055	May Street
UN-056	Nehoiden Street
UN-057	Newell Avenue
UN-058	Oak Street
UN-059	Oak Street
UN-060	Olin Way
UN-061	Olin Way
UN-062	Paul Revere Road
UN-063	Webster Street
UN-064	Webster Street
UN-065	Webster Street
UN-066	West Street



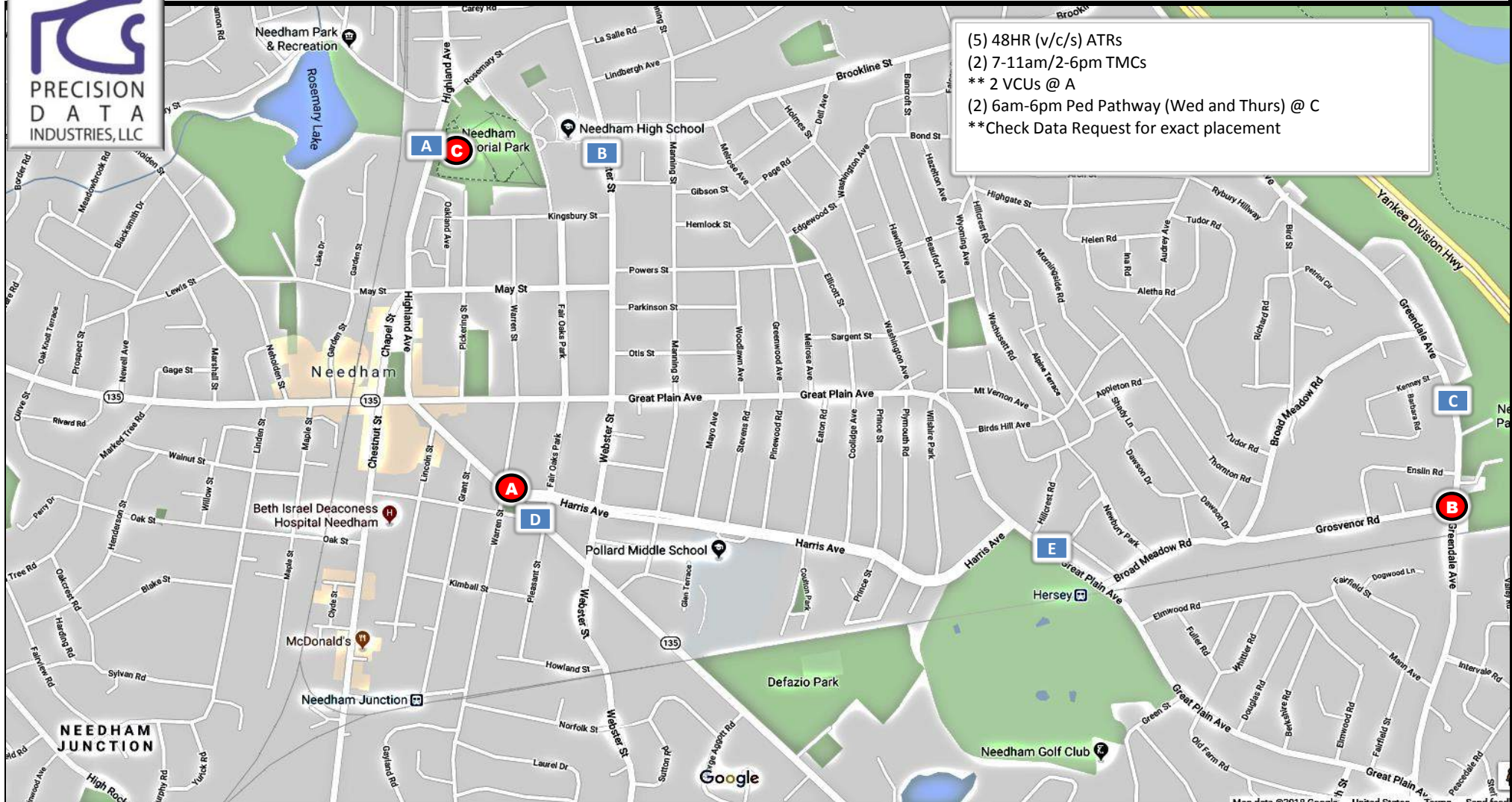
APPENDIX

- A. Preliminary High-Risk Crosswalk Locations Report
- B. Crosswalk Inventory Attribute Lists & Maps
- C. Traffic Counts**
- D. MassDOT Crash Data



Location Map: 186604 Needham, MA

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



Client:
GPI

Engineer:
N. Rogers

Site Code:

Date:

PDI Job #
186604

City, State:
Needham, MA



PRECISION
D A T A
INDUSTRIES, LLC

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

Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 A Class
Site Code: MAX2017099.1

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
11/28/1														
8	0	17	2	0	0	0	0	0	0	0	0	0	0	19
01:00	0	8	0	1	1	0	0	0	0	0	0	0	0	10
02:00	0	2	0	0	0	1	0	0	1	0	0	0	0	4
03:00	0	6	0	1	0	1	0	0	0	0	0	0	0	8
04:00	0	13	3	0	3	1	0	0	0	0	0	0	0	20
05:00	1	44	19	1	1	3	0	2	1	0	0	0	0	72
06:00	0	134	46	2	9	3	1	1	0	0	0	0	0	196
07:00	6	339	68	2	7	4	0	2	0	0	0	0	0	428
08:00	4	356	70	8	20	7	0	1	0	0	0	0	0	466
09:00	2	364	63	5	17	2	0	2	1	0	0	0	0	456
10:00	4	320	54	3	17	1	0	2	3	0	0	0	0	404
11:00	10	297	50	1	6	2	1	3	1	0	0	0	0	371
12 PM	6	373	45	1	9	3	0	1	2	0	0	0	0	440
13:00	4	370	49	3	4	9	0	1	0	0	0	0	0	440
14:00	9	291	44	2	5	4	0	1	1	1	0	0	0	358
15:00	7	338	54	5	7	3	0	0	0	0	0	0	0	414
16:00	1	311	43	2	4	4	1	1	0	0	0	0	0	367
17:00	7	265	40	2	7	2	0	2	0	0	0	0	0	325
18:00	1	287	39	1	3	3	0	0	0	0	0	0	0	334
19:00	0	171	50	1	8	1	0	1	0	0	0	0	0	232
20:00	2	171	17	0	2	0	0	0	0	0	0	0	0	192
21:00	0	129	5	2	1	0	0	0	0	0	0	0	0	137
22:00	1	43	9	0	0	1	0	0	0	0	0	0	0	54
23:00	0	31	6	0	2	0	0	0	0	0	0	0	0	39
Total	65	4680	776	43	133	55	3	20	10	1	0	0	0	5786
Percent	1.1%	80.9%	13.4%	0.7%	2.3%	1.0%	0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	09:00	08:00	08:00	08:00	08:00	06:00	11:00	10:00					08:00
Vol.	10	364	70	8	20	7	1	3	3					466
PM Peak	14:00	12:00	15:00	15:00	12:00	13:00	16:00	17:00	12:00	14:00				12:00
Vol.	9	373	54	5	9	9	1	2	2	1				440



PRECISION
D A T A
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Highland Avenue
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11/29/1														
8	0	9	0	0	1	0	0	0	1	0	0	0	0	11
01:00	0	3	0	0	0	0	0	0	1	0	0	0	0	4
02:00	0	2	2	0	1	0	0	1	0	0	0	0	0	6
03:00	0	6	1	1	0	0	0	0	0	0	0	0	0	8
04:00	0	9	2	1	1	0	0	1	0	0	0	0	0	14
05:00	0	50	15	1	3	2	0	1	2	0	0	0	0	74
06:00	0	135	33	1	12	2	0	0	1	0	0	0	0	184
07:00	9	324	59	2	13	4	0	8	1	0	0	0	0	420
08:00	4	421	75	4	8	6	0	0	1	0	0	0	0	519
09:00	4	356	63	3	4	4	0	1	0	0	0	0	0	435
10:00	2	362	57	3	14	5	0	2	0	0	0	0	0	445
11:00	3	342	36	1	10	7	1	0	0	0	0	0	0	400
12 PM	2	386	60	5	17	5	0	1	0	0	0	0	0	476
13:00	3	365	47	2	11	6	0	1	0	0	0	0	0	435
14:00	9	304	40	2	5	1	0	1	0	0	0	0	0	362
15:00	10	347	41	2	3	2	0	2	0	0	0	0	0	407
16:00	8	329	42	2	3	7	0	0	0	0	0	0	0	391
17:00	10	288	34	1	3	5	0	0	1	0	0	0	0	342
18:00	3	291	23	3	4	2	0	1	0	0	0	0	0	327
19:00	1	215	30	2	1	1	0	0	0	0	0	0	0	250
20:00	1	201	13	0	1	0	0	1	0	0	0	0	0	217
21:00	2	145	13	1	2	0	0	0	0	0	0	0	0	163
22:00	1	51	8	0	1	1	0	0	0	0	0	0	0	62
23:00	1	36	4	0	1	0	0	0	1	0	0	0	0	43
Total	73	4977	698	37	119	60	1	21	9	0	0	0	0	5995
Percent	1.2%	83.0%	11.6%	0.6%	2.0%	1.0%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	10:00	11:00	11:00	07:00	05:00					08:00
Vol.	9	421	75	4	14	7	1	8	2					519
PM Peak	15:00	12:00	12:00	12:00	12:00	16:00		15:00	17:00					12:00
Vol.	10	386	60	5	17	7		2	1					476



PRECISION
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11/28/1														
8	0	17	1	0	0	0	0	0	0	0	0	0	0	18
01:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	3	0	0	0	1	0	0	0	0	0	0	0	4
03:00	0	5	0	0	1	2	0	0	0	0	0	0	0	8
04:00	1	8	0	0	1	2	0	1	1	0	0	0	0	14
05:00	0	43	12	1	4	1	0	1	0	0	0	0	0	62
06:00	2	134	32	4	3	1	0	0	0	0	0	0	0	176
07:00	3	334	38	5	9	5	0	2	0	0	0	0	0	396
08:00	3	301	24	5	9	2	1	0	0	0	0	0	0	345
09:00	4	304	44	6	14	2	0	0	2	0	0	0	0	376
10:00	3	338	40	4	13	2	0	0	0	0	0	0	0	400
11:00	8	366	30	1	9	3	1	1	0	0	0	0	0	419
12 PM	1	392	51	1	6	3	0	0	0	0	0	0	0	454
13:00	3	407	45	5	6	0	0	0	0	0	0	0	0	466
14:00	9	488	47	4	8	2	0	3	0	0	0	1	0	562
15:00	3	411	61	1	5	2	0	3	1	0	0	0	0	487
16:00	3	501	40	4	7	2	0	0	0	0	0	0	0	557
17:00	3	542	40	2	5	1	0	0	0	0	0	0	0	593
18:00	0	517	35	2	5	0	0	0	0	0	0	0	0	559
19:00	0	278	32	1	2	0	0	0	0	0	0	0	0	313
20:00	1	169	16	1	0	0	0	0	0	0	0	0	0	187
21:00	1	130	7	2	1	0	0	0	0	0	0	0	0	141
22:00	1	62	2	0	2	1	0	0	0	0	0	0	0	68
23:00	0	27	4	0	1	0	0	0	0	0	0	0	0	32
Total	49	5784	601	49	111	32	2	11	4	0	0	1	0	6644
Percent	0.7%	87.1%	9.0%	0.7%	1.7%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	09:00	09:00	09:00	07:00	08:00	07:00	09:00					11:00
Vol.	8	366	44	6	14	5	1	2	2					419
PM Peak	14:00	17:00	15:00	13:00	14:00	12:00		14:00	15:00			14:00		17:00
Vol.	9	542	61	5	8	3		3	1			1		593



PRECISION
D A T A
INDUSTRIES, LLC

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

Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 A Class
Site Code: MAX2017099.1

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
11/29/1														
8	0	13	4	0	1	0	0	0	0	0	0	0	0	18
01:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
02:00	0	4	2	0	1	0	0	0	0	0	0	0	0	7
03:00	0	4	0	0	0	0	0	1	0	0	0	0	0	5
04:00	0	9	1	0	1	2	0	1	1	0	0	0	0	15
05:00	1	39	8	0	7	1	0	1	1	0	0	0	0	58
06:00	1	136	35	4	3	3	0	0	0	0	0	0	0	182
07:00	4	345	44	7	8	5	0	3	1	0	0	0	0	417
08:00	3	323	32	5	9	1	0	0	0	0	0	0	0	373
09:00	3	356	42	4	4	4	0	0	1	0	0	0	0	414
10:00	1	352	42	2	12	1	0	0	0	0	0	0	0	410
11:00	1	409	44	2	11	3	0	1	0	0	0	0	0	471
12 PM	0	435	48	5	17	2	0	1	0	0	0	0	0	508
13:00	2	448	41	3	13	4	0	1	0	0	0	0	0	512
14:00	6	380	35	2	4	0	0	0	0	1	0	0	0	428
15:00	3	433	46	2	1	0	1	3	0	0	0	0	0	489
16:00	9	594	32	3	7	4	0	0	0	0	0	0	0	649
17:00	6	499	27	2	5	2	0	1	1	0	0	0	0	543
18:00	0	491	34	3	2	0	0	0	0	0	0	0	0	530
19:00	1	308	19	1	3	1	0	0	0	0	0	0	0	333
20:00	0	201	7	0	2	0	0	0	0	0	0	0	0	210
21:00	0	140	9	0	2	0	0	0	0	0	0	0	0	151
22:00	0	59	2	0	1	0	0	0	0	0	0	0	0	62
23:00	0	44	4	0	0	0	0	0	0	0	0	0	0	48
Total	41	6023	558	45	115	33	1	13	5	1	0	0	0	6835
Percent	0.6%	88.1%	8.2%	0.7%	1.7%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	07:00	07:00	10:00	07:00		07:00	04:00					11:00
Vol.	4	409	44	7	12	5		3	1					471
PM Peak	16:00	16:00	12:00	12:00	12:00	13:00	15:00	15:00	17:00	14:00				16:00
Vol.	9	594	48	5	17	4	1	3	1	1				649



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 A Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	1	1	0	8	4	3	2	0	0	0	0	0	19	42	35
01:00	0	0	1	0	5	2	1	1	0	0	0	0	0	10	41	35
02:00	0	0	0	0	2	2	0	0	0	0	0	0	0	4	37	35
03:00	0	0	1	0	3	2	2	0	0	0	0	0	0	8	41	34
04:00	0	0	1	2	5	6	6	0	0	0	0	0	0	20	41	35
05:00	2	2	1	12	29	24	1	1	0	0	0	0	0	72	37	32
06:00	0	6	17	39	90	38	4	2	0	0	0	0	0	196	35	31
07:00	35	38	97	123	107	25	2	0	0	0	0	0	1	428	32	25
08:00	18	31	108	198	93	14	2	0	0	0	0	1	1	466	31	26
09:00	22	47	109	182	82	11	2	0	0	0	0	0	1	456	30	25
10:00	32	32	110	159	55	11	2	0	0	0	0	0	3	404	29	24
11:00	32	52	118	104	54	5	3	0	0	0	0	0	3	371	29	23
12 PM	20	50	146	156	56	7	3	0	0	0	0	0	2	440	29	24
13:00	18	52	126	168	67	4	1	0	0	1	1	0	2	440	29	25
14:00	45	63	90	110	39	9	0	0	0	0	1	0	1	358	28	22
15:00	43	45	105	150	57	7	2	3	0	0	0	1	1	414	29	24
16:00	42	51	102	122	39	8	0	1	0	0	0	0	2	367	28	23
17:00	31	40	59	123	55	15	1	0	1	0	0	0	0	325	31	24
18:00	5	44	70	101	93	16	2	0	0	1	0	0	2	334	32	26
19:00	1	7	30	79	91	20	3	0	0	0	0	1	0	232	33	29
20:00	7	7	20	71	63	20	2	1	0	1	0	0	0	192	33	29
21:00	1	5	13	45	50	21	2	0	0	0	0	0	0	137	34	30
22:00	2	1	1	13	21	13	2	1	0	0	0	0	0	54	37	31
23:00	1	0	1	5	15	10	6	1	0	0	0	0	0	39	39	34
Total	357	574	1327	1962	1179	294	52	13	1	3	2	3	19	5786		
%	6.2%	9.9%	22.9%	33.9%	20.4%	5.1%	0.9%	0.2%	0.0%	0.1%	0.0%	0.1%	0.3%			
AM Peak	07:00	11:00	11:00	08:00	07:00	06:00	04:00	00:00				08:00	10:00	08:00		
Vol.	35	52	118	198	107	38	6	2				1	3	466		
PM Peak	14:00	14:00	12:00	13:00	18:00	21:00	23:00	15:00	17:00	13:00	13:00	15:00	12:00	12:00		
Vol.	45	63	146	168	93	21	6	3	1	1	1	1	2	440		

Stats

15th Percentile :	18 MPH
50th Percentile :	25 MPH
85th Percentile :	31 MPH
95th Percentile :	35 MPH
Mean Speed(Average) :	25 MPH
10 MPH Pace Speed :	20-29 MPH
Number in Pace :	3289
Percent in Pace :	56.8%
Number of Vehicles > 30 MPH :	1330
Percent of Vehicles > 30 MPH :	23.0%



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 A Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	0	1	0	3	6	1	0	0	0	0	0	0	11	38	35
01:00	0	0	0	0	3	0	1	0	0	0	0	0	0	4	41	35
02:00	0	0	0	3	3	0	0	0	0	0	0	0	0	6	32	30
03:00	0	0	2	2	2	2	0	0	0	0	0	0	0	8	36	29
04:00	0	0	0	2	4	7	0	1	0	0	0	0	0	14	38	35
05:00	0	1	6	14	30	18	5	0	0	0	0	0	0	74	37	32
06:00	2	2	19	40	74	40	7	0	0	0	0	0	0	184	36	31
07:00	38	23	83	166	70	36	0	0	0	0	1	1	2	420	32	26
08:00	14	34	97	196	146	30	0	0	2	0	0	0	0	519	32	27
09:00	18	23	119	174	85	13	2	1	0	0	0	0	0	435	31	26
10:00	18	49	113	153	93	18	1	0	0	0	0	0	0	445	31	25
11:00	26	62	109	126	61	13	0	0	0	0	2	0	1	400	30	24
12 PM	34	48	129	156	88	18	1	1	1	0	0	0	0	476	31	25
13:00	21	48	113	157	87	8	0	0	0	0	0	0	1	435	30	25
14:00	42	44	87	119	58	10	0	0	0	0	0	0	2	362	30	23
15:00	53	61	107	131	43	10	1	0	0	0	0	0	1	407	28	22
16:00	28	52	131	125	45	5	2	0	0	0	0	0	3	391	28	23
17:00	47	50	120	76	43	4	1	0	0	0	0	0	1	342	28	22
18:00	18	39	75	122	60	9	0	0	0	0	0	1	3	327	30	25
19:00	5	22	42	85	73	22	1	0	0	0	0	0	0	250	33	27
20:00	4	12	31	66	78	20	6	0	0	0	0	0	0	217	33	29
21:00	1	4	16	37	80	22	2	1	0	0	0	0	0	163	34	30
22:00	2	1	3	13	23	12	8	0	0	0	0	0	0	62	38	32
23:00	0	0	3	8	21	7	3	1	0	0	0	0	0	43	37	32
Total %	371 6.2%	575 9.6%	1406 23.5%	1971 32.9%	1273 21.2%	330 5.5%	42 0.7%	5 0.1%	3 0.1%	0 0.0%	3 0.1%	2 0.0%	14 0.2%	5995		
AM Peak	07:00	11:00	09:00	08:00	08:00	06:00	06:00	04:00	08:00		11:00	07:00	07:00	08:00		
Vol.	38	62	119	196	146	40	7	1	2		2	1	2	519		
PM Peak	15:00	15:00	16:00	13:00	12:00	19:00	22:00	12:00	12:00			18:00	16:00	12:00		
Vol.	53	61	131	157	88	22	8	1	1			1	3	476		

Stats

15th Percentile :	18 MPH
50th Percentile :	25 MPH
85th Percentile :	31 MPH
95th Percentile :	35 MPH
Mean Speed(Average) :	25 MPH
10 MPH Pace Speed :	20-29 MPH
Number in Pace :	3377
Percent in Pace :	56.3%
Number of Vehicles > 30 MPH :	1417
Percent of Vehicles > 30 MPH :	23.6%



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 A Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	0	0	1	7	6	4	0	0	0	0	0	0	18	40	36
01:00	0	0	0	0	2	5	0	0	0	0	0	0	0	7	37	36
02:00	0	0	0	1	2	1	0	0	0	0	0	0	0	4	36	32
03:00	0	0	0	0	5	1	2	0	0	0	0	0	0	8	41	35
04:00	0	0	2	2	2	6	2	0	0	0	0	0	0	14	38	33
05:00	0	0	8	11	36	7	0	0	0	0	0	0	0	62	33	30
06:00	1	3	24	47	79	18	4	0	0	0	0	0	0	176	33	30
07:00	9	43	154	124	54	9	2	1	0	0	0	0	0	396	29	25
08:00	5	29	114	126	65	6	0	0	0	0	0	0	0	345	30	25
09:00	18	58	115	116	64	5	0	0	0	0	0	0	0	376	29	24
10:00	17	64	103	163	50	3	0	0	0	0	0	0	0	400	28	24
11:00	10	80	153	126	46	3	1	0	0	0	0	0	0	419	28	23
12 PM	36	89	159	124	44	1	1	0	0	0	0	0	0	454	28	22
13:00	14	104	151	138	51	7	1	0	0	0	0	0	0	466	28	23
14:00	32	108	243	149	29	1	0	0	0	0	0	0	0	562	27	22
15:00	20	108	183	143	31	2	0	0	0	0	0	0	0	487	27	22
16:00	21	132	234	140	27	3	0	0	0	0	0	0	0	557	27	22
17:00	25	105	211	205	41	6	0	0	0	0	0	0	0	593	27	23
18:00	4	104	156	203	86	6	0	0	0	0	0	0	0	559	29	24
19:00	2	31	42	99	112	27	0	0	0	0	0	0	0	313	33	28
20:00	1	25	8	64	74	15	0	0	0	0	0	0	0	187	33	28
21:00	0	20	13	41	50	15	2	0	0	0	0	0	0	141	33	28
22:00	0	7	2	8	27	21	3	0	0	0	0	0	0	68	37	32
23:00	0	0	0	5	17	9	1	0	0	0	0	0	0	32	36	33
Total	215	1110	2075	2036	1001	183	23	1	0	0	0	0	0	6644		
%	3.2%	16.7%	31.2%	30.6%	15.1%	2.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	09:00	11:00	07:00	10:00	06:00	06:00	00:00	07:00						11:00		
Vol.	18	80	154	163	79	18	4	1						419		
PM Peak	12:00	16:00	14:00	17:00	19:00	19:00	22:00							17:00		
Vol.	36	132	243	205	112	27	3							593		

Stats

15th Percentile :	17 MPH
50th Percentile :	23 MPH
85th Percentile :	30 MPH
95th Percentile :	33 MPH
Mean Speed(Average) :	24 MPH
10 MPH Pace Speed :	20-29 MPH
Number in Pace :	4111
Percent in Pace :	61.9%
Number of Vehicles > 30 MPH :	1008
Percent of Vehicles > 30 MPH :	15.2%



PRECISION
D A T A
INDUSTRIES, LLC

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Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 A Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	1	1	4	1	8	3	0	0	0	0	0	0	18	39	33
01:00	0	0	0	0	0	2	0	0	0	0	0	0	0	2	38	37
02:00	0	0	0	1	2	2	2	0	0	0	0	0	0	7	41	36
03:00	0	0	1	1	0	3	0	0	0	0	0	0	0	5	37	32
04:00	0	0	0	3	4	5	3	0	0	0	0	0	0	15	40	35
05:00	0	1	1	21	22	12	1	0	0	0	0	0	0	58	35	31
06:00	1	7	18	42	74	35	5	0	0	0	0	0	0	182	35	30
07:00	21	48	147	126	61	14	0	0	0	0	0	0	0	417	30	24
08:00	5	25	75	151	86	28	3	0	0	0	0	0	0	373	32	27
09:00	9	51	134	146	68	6	0	0	0	0	0	0	0	414	29	25
10:00	14	46	110	188	49	2	1	0	0	0	0	0	0	410	28	25
11:00	19	103	150	164	30	5	0	0	0	0	0	0	0	471	27	23
12 PM	18	73	162	173	66	12	4	0	0	0	0	0	0	508	29	24
13:00	13	87	180	172	52	7	1	0	0	0	0	0	0	512	28	24
14:00	26	78	144	133	46	1	0	0	0	0	0	0	0	428	28	23
15:00	37	117	194	108	32	1	0	0	0	0	0	0	0	489	27	21
16:00	53	162	264	138	28	4	0	0	0	0	0	0	0	649	26	21
17:00	20	125	247	128	22	1	0	0	0	0	0	0	0	543	26	22
18:00	6	87	196	181	55	5	0	0	0	0	0	0	0	530	28	24
19:00	3	31	34	122	119	22	2	0	0	0	0	0	0	333	32	28
20:00	2	22	14	47	93	31	0	1	0	0	0	0	0	210	34	29
21:00	1	15	12	40	64	16	3	0	0	0	0	0	0	151	33	29
22:00	0	4	3	12	25	14	2	1	1	0	0	0	0	62	37	32
23:00	0	1	1	10	19	15	2	0	0	0	0	0	0	48	37	32
Total	248	1084	2088	2111	1018	251	32	2	1	0	0	0	0	6835		
%	3.6%	15.9%	30.5%	30.9%	14.9%	3.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	11:00	11:00	10:00	08:00	06:00	06:00							11:00		
Vol.	21	103	150	188	86	35	5							471		
PM Peak	16:00	16:00	16:00	18:00	19:00	20:00	12:00	20:00	22:00					16:00		
Vol.	53	162	264	181	119	31	4	1	1					649		

Stats

15th Percentile :	17 MPH
50th Percentile :	23 MPH
85th Percentile :	30 MPH
95th Percentile :	33 MPH
Mean Speed(Average) :	24 MPH
10 MPH Pace Speed :	20-29 MPH
Number in Pace :	4199
Percent in Pace :	61.4%
Number of Vehicles > 30 MPH :	1100
Percent of Vehicles > 30 MPH :	16.1%



PRECISION
D A T A
INDUSTRIES, LLC

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Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers

186604 A Volume
Site Code: MAX2017099.1

Start	NB				SB				Combin ed		11/28/20 18 Wed	
Time	A.M.		P.M.		A.M.		P.M.		A.M.	P.M.		
12:00	8		119		6		130		14	249		
12:15	2		109		5		107		7	216		
12:30	7		112		3		116		10	228		
12:45	2	19	100	440	4	18	101	454	6	201	894	
01:00	3		105		1		110		4	215		
01:15	3		125		4		94		7	219		
01:30	3		116		2		113		5	229		
01:45	1	10	94	440	0	7	149	466	1	243	906	
02:00	1		94		1		118		2	212		
02:15	0		89		1		128		1	217		
02:30	1		89		2		159		3	248		
02:45	2	4	86	358	0	4	157	562	2	243	920	
03:00	2		103		0		138		2	241		
03:15	1		118		1		122		2	240		
03:30	2		91		5		94		7	185		
03:45	3	8	102	414	2	8	133	487	5	235	901	
04:00	4		100		3		150		7	250		
04:15	7		98		1		125		8	223		
04:30	2		67		7		130		9	197		
04:45	7	20	102	367	3	14	152	557	10	254	924	
05:00	6		93		5		147		11	240		
05:15	18		74		18		128		36	202		
05:30	19		81		20		145		39	226		
05:45	29	72	77	325	19	62	173	593	48	250	918	
06:00	23		93		39		152		62	245		
06:15	46		88		33		164		79	252		
06:30	55		76		50		118		105	194		
06:45	72	196	77	334	54	176	125	559	126	202	893	
07:00	107		60		72		91		179	151		
07:15	80		67		91		106		171	173		
07:30	134		45		141		59		275	104		
07:45	107	428	60	232	92	396	57	313	199	117	545	
08:00	116		66		107		47		223	113		
08:15	109		50		72		50		181	100		
08:30	126		42		99		53		225	95		
08:45	115	466	34	192	67	345	37	187	182	71	379	
09:00	120		47		95		54		215	101		
09:15	135		34		87		38		222	72		
09:30	102		37		97		23		199	60		
09:45	99	456	19	137	97	376	26	141	196	45	278	
10:00	79		19		76		24		155	43		
10:15	108		13		105		16		213	29		
10:30	114		12		104		17		218	29		
10:45	103	404	10	54	115	400	11	68	218	21	122	
11:00	94		8		98		13		192	21		
11:15	98		11		83		11		181	22		
11:30	86		11		88		4		174	15		
11:45	93	371	9	39	150	419	4	32	243	13	71	
Total	2454		3332		2225		4419		4679	7751		
Percent	52.4%		43.0%		47.6%		57.0%					
Day Total		5786			6644				12430			
Peak	08:30	-	00:45	-	07:15	-	05:30	-	07:30	-	05:30	-
Vol.	496	-	446	-	431	-	634	-	878	-	973	-
P.H.F.	0.919		0.892		0.764		0.916		0.798		0.958	



PRECISION
D A T A
INDUSTRIES, LLC

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

Highland Avenue
south of Rosemary Street (between stairways)
City, State: Needham, MA
Client: GPI/N.Rogers

186604 A Volume
Site Code: MAX2017099.1

Start	NB		SB		Combin		ed		11/29/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Thu
12:00	3	109	7	138	10	247				
12:15	4	116	4	123	8	239				
12:30	2	118	4	126	6	244				
12:45	2	113	3	121	5	254	29	984		
01:00	3	108	0	128	3	236				
01:15	0	122	1	122	1	244				
01:30	0	119	0	126	0	245				
01:45	1	86	1	136	2	222	6	947		
02:00	2	111	2	122	4	233				
02:15	2	105	3	138	5	243				
02:30	1	88	1	102	2	190				
02:45	1	58	1	66	2	124	13	790		
03:00	0	105	0	121	0	226				
03:15	3	97	1	147	4	244				
03:30	4	100	1	118	5	218				
03:45	1	105	3	103	4	208	13	896		
04:00	2	101	4	171	6	272				
04:15	3	117	6	173	9	290				
04:30	4	85	4	149	8	234				
04:45	5	88	1	156	6	244	29	1040		
05:00	4	65	7	116	11	181				
05:15	22	97	13	153	35	250				
05:30	20	74	15	89	35	163				
05:45	28	106	23	185	51	291	132	885		
06:00	26	87	37	141	63	228				
06:15	48	83	38	130	86	213				
06:30	40	80	39	154	79	234				
06:45	70	77	68	105	138	182	366	857		
07:00	100	71	80	90	180	161				
07:15	96	52	100	84	196	136				
07:30	122	71	131	79	253	150				
07:45	102	56	106	80	208	136	837	583		
08:00	155	55	98	43	253	98				
08:15	132	64	104	59	236	123				
08:30	114	54	77	60	191	114				
08:45	118	44	94	48	212	92	892	427		
09:00	103	48	97	48	200	96				
09:15	110	43	110	41	220	84				
09:30	116	48	113	42	229	90				
09:45	106	24	94	20	200	44	849	314		
10:00	108	25	93	20	201	45				
10:15	96	9	88	16	184	25				
10:30	97	13	105	14	202	27				
10:45	144	15	124	12	268	27	855	124		
11:00	113	14	130	16	243	30				
11:15	92	16	96	18	188	34				
11:30	98	8	143	7	241	15				
11:45	97	5	102	7	199	12	871	91		
Total	2520	3475	2372	4463	4892	7938				
Percent	51.5%	43.8%	48.5%	56.2%						
Day Total		5995		6835		12830				
Peak	08:00	-	00:45	-	10:45	-	07:30	-	04:00	-
Vol.	519	-	482	-	493	-	950	-	1040	-
P.H.F.	0.837	-	0.906	-	0.862	-	0.938	-	0.897	-



PRECISION
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INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 B Class
Site Code: MAX2017099.1

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
11/28/1														
8	0	11	0	0	0	0	0	0	0	0	0	0	0	11
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
04:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
05:00	0	17	4	0	1	0	0	0	0	0	0	0	0	22
06:00	0	80	17	0	1	0	0	1	0	0	0	0	0	99
07:00	7	244	25	9	1	6	0	0	0	0	0	0	0	292
08:00	6	228	34	1	4	1	0	0	0	0	0	0	0	274
09:00	0	259	36	1	6	0	0	1	0	0	0	0	0	303
10:00	1	211	38	0	4	1	0	0	0	0	0	0	0	255
11:00	0	287	28	0	1	0	0	1	0	0	0	0	0	317
12 PM	1	307	38	1	5	0	0	2	0	0	0	0	0	354
13:00	1	273	32	0	3	0	0	2	0	0	0	0	0	311
14:00	2	369	46	3	1	0	0	0	0	0	0	0	0	421
15:00	3	402	37	5	6	1	0	0	0	0	0	0	0	454
16:00	5	490	28	0	3	0	0	1	0	0	0	0	0	527
17:00	4	622	23	0	1	0	0	2	0	0	0	0	0	652
18:00	0	519	17	0	1	0	0	1	0	0	0	0	0	538
19:00	0	295	12	0	0	0	0	0	0	0	0	0	0	307
20:00	0	187	11	1	1	0	0	0	0	0	0	0	0	200
21:00	0	90	4	0	0	0	0	0	0	0	0	0	0	94
22:00	0	58	3	0	0	0	0	0	0	0	0	0	0	61
23:00	0	23	0	0	0	0	0	0	0	0	0	0	0	23
Total	30	4986	435	21	39	9	0	11	0	0	0	0	0	5531
Percent	0.5%	90.1%	7.9%	0.4%	0.7%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	10:00	07:00	09:00	07:00		06:00						11:00
Vol.	7	287	38	9	6	6		1						317
PM Peak	16:00	17:00	14:00	15:00	15:00	15:00		12:00						17:00
Vol.	5	622	46	5	6	1		2						652



PRECISION
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 B Class
Site Code: MAX2017099.1

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
11/29/1														
8	0	14	0	0	0	0	0	0	0	0	0	0	0	14
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
03:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
04:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
05:00	0	25	3	0	0	0	0	0	0	0	0	0	0	28
06:00	0	73	14	1	2	0	0	0	0	0	0	0	0	90
07:00	7	225	18	2	0	3	2	0	1	0	0	0	0	258
08:00	1	215	25	1	4	1	0	1	0	0	0	0	0	248
09:00	0	239	34	0	7	2	0	1	0	0	0	0	0	283
10:00	0	238	32	0	7	0	0	0	0	0	0	0	0	277
11:00	1	282	38	1	4	0	0	0	0	0	0	0	0	326
12 PM	3	295	33	1	4	0	0	1	0	0	0	0	0	337
13:00	1	278	42	0	6	1	1	1	0	0	0	0	0	330
14:00	4	356	43	1	3	3	0	1	0	0	0	0	0	411
15:00	4	451	46	1	5	1	0	0	0	0	0	0	0	508
16:00	7	522	34	0	4	0	0	0	1	0	0	0	0	568
17:00	3	659	23	0	1	1	0	0	1	0	0	0	0	688
18:00	2	529	23	0	3	0	0	0	0	0	0	0	0	557
19:00	0	289	9	0	1	0	0	0	0	0	0	0	0	299
20:00	3	185	9	0	0	1	0	0	0	0	0	0	0	198
21:00	0	134	1	0	0	0	0	0	0	0	0	0	0	135
22:00	0	71	2	0	0	0	0	0	0	0	0	0	0	73
23:00	0	34	2	0	0	0	0	0	0	0	0	0	0	36
Total	36	5133	432	8	52	13	3	5	3	0	0	0	0	5685
Percent	0.6%	90.3%	7.6%	0.1%	0.9%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	11:00	07:00	09:00	07:00	07:00	08:00	07:00					11:00
Vol.	7	282	38	2	7	3	2	1	1					326
PM Peak	16:00	17:00	15:00	12:00	13:00	14:00	13:00	12:00	16:00					17:00
Vol.	7	659	46	1	6	3	1	1	1					688



PRECISION
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 B Class
Site Code: MAX2017099.1

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
11/28/1														
8	0	4	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	16	4	1	0	0	0	0	0	0	0	0	0	21
05:00	0	60	12	0	0	0	0	0	0	0	0	0	0	72
06:00	0	218	26	1	4	1	0	0	0	0	0	0	0	250
07:00	5	356	36	4	6	0	0	3	0	1	0	0	0	411
08:00	2	642	45	2	6	1	0	2	0	0	0	0	0	700
09:00	0	394	37	1	7	0	0	0	0	0	0	0	0	439
10:00	0	297	41	0	6	2	0	1	0	0	0	0	0	347
11:00	0	259	42	1	4	1	0	1	0	0	0	0	0	308
12 PM	1	289	30	0	10	0	0	1	0	0	0	0	0	331
13:00	1	267	46	2	5	1	0	0	0	0	0	0	0	322
14:00	1	279	29	8	5	0	0	2	0	0	0	0	0	324
15:00	6	391	30	2	3	2	0	1	0	0	0	0	0	435
16:00	2	376	26	0	2	1	0	1	0	0	0	0	0	408
17:00	3	375	23	0	3	1	0	0	0	0	0	0	0	405
18:00	0	302	17	0	2	1	0	1	0	0	0	0	0	323
19:00	0	248	15	0	0	0	0	0	0	0	0	0	0	263
20:00	0	175	8	0	0	0	0	0	0	0	0	0	0	183
21:00	0	92	4	0	0	0	0	0	0	0	0	0	0	96
22:00	0	39	4	0	0	0	0	0	0	0	0	0	0	43
23:00	0	19	1	0	0	0	0	0	0	0	0	0	0	20
Total	21	5107	476	22	63	11	0	13	0	1	0	0	0	5714
Percent	0.4%	89.4%	8.3%	0.4%	1.1%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	07:00	09:00	10:00		07:00		07:00				08:00
Vol.	5	642	45	4	7	2		3		1				700
PM Peak	15:00	15:00	13:00	14:00	12:00	15:00		14:00						15:00
Vol.	6	391	46	8	10	2		2						435



PRECISION
D A T A
INDUSTRIES, LLC

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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 B Class
Site Code: MAX2017099.1

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
11/29/1														
8	0	5	1	0	1	0	0	0	0	0	0	0	0	7
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	10	2	0	1	0	0	0	0	0	0	0	0	13
05:00	0	63	8	0	0	0	0	0	0	0	0	0	0	71
06:00	0	194	17	1	3	2	0	0	0	0	0	0	0	217
07:00	5	295	30	5	5	1	0	3	0	0	0	0	0	344
08:00	2	622	47	0	8	0	0	1	0	0	0	0	0	680
09:00	0	400	56	3	7	4	0	2	0	0	0	0	0	472
10:00	0	269	43	1	12	0	0	4	1	0	0	0	0	330
11:00	1	287	38	1	8	3	0	0	0	0	0	0	0	338
12 PM	1	296	39	1	8	0	0	0	0	0	0	0	0	345
13:00	0	309	39	1	6	0	0	1	0	0	0	0	0	356
14:00	1	283	41	6	4	1	0	1	0	0	0	0	0	337
15:00	1	391	49	2	1	0	0	1	0	0	0	0	0	445
16:00	4	364	28	0	3	1	0	0	0	0	0	0	0	400
17:00	1	411	23	0	4	1	0	0	0	0	0	0	0	440
18:00	1	333	16	0	1	0	0	0	0	0	0	0	0	351
19:00	0	252	8	0	0	0	0	0	0	0	0	0	0	260
20:00	1	192	9	0	1	0	0	0	0	0	0	0	0	203
21:00	0	103	4	0	0	0	0	0	0	0	0	0	0	107
22:00	0	39	5	0	0	0	0	0	0	0	0	0	0	44
23:00	0	23	1	0	0	0	0	0	0	0	0	0	0	24
Total	18	5150	505	21	73	13	0	13	1	0	0	0	0	5794
Percent	0.3%	88.9%	8.7%	0.4%	1.3%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	09:00	07:00	10:00	09:00		10:00	10:00					08:00
Vol.	5	622	56	5	12	4		4	1					680
PM Peak	16:00	17:00	15:00	14:00	12:00	14:00		13:00						15:00
Vol.	4	411	49	6	8	1		1						445



PRECISION
D A T A
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 B Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	0	1	3	4	3	0	0	0	0	0	0	0	11	36	31
01:00	0	0	0	2	0	0	0	0	0	0	0	0	0	2	28	27
02:00	0	0	0	0	1	2	0	0	0	0	0	0	0	3	37	35
03:00	0	0	0	0	2	2	1	0	0	0	0	0	0	5	40	36
04:00	0	0	0	3	1	1	0	1	0	0	0	0	0	6	44	33
05:00	0	0	1	9	9	3	0	0	0	0	0	0	0	22	33	30
06:00	0	1	4	40	47	5	0	0	0	0	0	0	2	99	32	30
07:00	96	37	69	65	21	2	0	0	1	0	0	0	1	292	27	19
08:00	17	2	21	104	103	21	2	0	1	1	0	0	2	274	33	28
09:00	4	2	29	114	133	17	3	1	0	0	0	0	0	303	33	29
10:00	1	4	23	114	93	19	1	0	0	0	0	0	0	255	33	29
11:00	2	3	24	166	102	20	0	0	0	0	0	0	0	317	32	29
12 PM	3	9	30	170	125	14	1	0	0	0	0	0	2	354	32	28
13:00	3	4	29	142	112	21	0	0	0	0	0	0	0	311	32	29
14:00	50	56	80	164	63	6	2	0	0	0	0	0	0	421	29	23
15:00	42	29	90	218	72	1	2	0	0	0	0	0	0	454	29	24
16:00	26	22	151	273	52	2	0	0	0	1	0	0	0	527	28	25
17:00	16	36	221	314	60	1	0	0	0	0	1	0	3	652	28	25
18:00	6	13	127	297	88	7	0	0	0	0	0	0	0	538	29	26
19:00	1	2	34	192	68	8	1	0	0	0	0	0	1	307	31	28
20:00	1	0	20	111	61	7	0	0	0	0	0	0	0	200	32	28
21:00	0	0	10	42	34	8	0	0	0	0	0	0	0	94	33	29
22:00	0	0	2	24	31	3	1	0	0	0	0	0	0	61	33	30
23:00	0	0	3	3	12	4	1	0	0	0	0	0	0	23	35	31
Total	268	220	969	2570	1294	177	15	2	2	2	1	0	11	5531		
%	4.8%	4.0%	17.5%	46.5%	23.4%	3.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%			
AM Peak	07:00	07:00	07:00	11:00	09:00	08:00	09:00	04:00	07:00	08:00			06:00	11:00		
Vol.	96	37	69	166	133	21	3	1	1	1			2	317		
PM Peak	14:00	14:00	17:00	17:00	12:00	13:00	14:00			16:00	17:00		17:00	17:00		
Vol.	50	56	221	314	125	21	2			1	1		3	652		

Stats

15th Percentile : 20 MPH
50th Percentile : 26 MPH
85th Percentile : 31 MPH
95th Percentile : 33 MPH

Mean Speed(Average) : 26 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 3864
Percent in Pace : 69.9%
Number of Vehicles > 30 MPH : 1245
Percent of Vehicles > 30 MPH : 22.5%



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 B Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	0	0	7	5	1	1	0	0	0	0	0	0	14	33	31
01:00	0	0	0	0	3	0	0	0	0	0	0	0	0	3	33	32
02:00	0	0	1	3	1	1	0	0	0	0	0	0	0	6	34	29
03:00	0	0	0	2	2	0	0	0	0	0	0	0	0	4	32	30
04:00	1	0	0	4	3	0	0	0	0	0	0	0	0	8	32	26
05:00	0	0	2	10	12	4	0	0	0	0	0	0	0	28	33	30
06:00	0	2	6	44	33	5	0	0	0	0	0	0	0	90	32	29
07:00	98	37	41	56	26	0	0	0	0	0	0	0	0	258	27	18
08:00	23	14	19	84	87	20	0	0	0	0	0	0	1	248	33	27
09:00	7	13	21	100	122	18	1	0	0	0	0	0	1	283	33	29
10:00	2	8	22	119	104	21	1	0	0	0	0	0	0	277	33	29
11:00	2	4	16	146	138	19	0	0	0	0	0	0	1	326	32	29
12 PM	6	7	38	169	104	12	0	0	0	0	0	0	1	337	32	28
13:00	7	3	47	173	91	8	1	0	0	0	0	0	0	330	31	27
14:00	40	25	94	188	58	6	0	0	0	0	0	0	0	411	29	24
15:00	19	21	90	259	107	7	0	2	1	0	1	0	1	508	30	26
16:00	26	28	135	299	73	5	0	0	0	0	0	1	1	568	28	25
17:00	30	40	278	294	40	3	0	1	0	0	0	0	2	688	27	24
18:00	6	17	153	300	78	3	0	0	0	0	0	0	0	557	28	26
19:00	3	5	23	173	87	5	1	0	0	0	0	0	2	299	31	28
20:00	15	3	36	90	49	3	2	0	0	0	0	0	0	198	31	26
21:00	0	0	12	70	49	4	0	0	0	0	0	0	0	135	32	29
22:00	0	1	4	32	32	4	0	0	0	0	0	0	0	73	32	29
23:00	0	0	0	12	19	5	0	0	0	0	0	0	0	36	33	31
Total	285	228	1038	2634	1323	154	7	3	1	0	1	1	10	5685		
%	5.0%	4.0%	18.3%	46.3%	23.3%	2.7%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%			
AM Peak	07:00	07:00	07:00	11:00	11:00	10:00	00:00						08:00	11:00		
Vol.	98	37	41	146	138	21	1						1	326		
PM Peak	14:00	17:00	17:00	18:00	15:00	12:00	20:00	15:00	15:00		15:00	16:00	17:00	17:00		
Vol.	40	40	278	300	107	12	2	2	1		1	1	2	688		

Stats

15th Percentile :	20 MPH
50th Percentile :	26 MPH
85th Percentile :	31 MPH
95th Percentile :	33 MPH
Mean Speed(Average) :	26 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	3957
Percent in Pace :	69.6%
Number of Vehicles > 30 MPH :	1235
Percent of Vehicles > 30 MPH :	21.7%



PRECISION
D A T A
INDUSTRIES, LLC

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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers
NB

186604 B Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	1	1	0	1	1	0	0	0	0	0	0	0	4	36	27
01:00	0	0	0	2	2	0	0	0	0	0	0	0	0	4	32	30
02:00	0	0	0	0	1	0	1	0	0	0	0	0	0	2	42	37
03:00	0	0	1	0	1	1	0	0	0	0	0	0	0	3	36	30
04:00	0	0	1	2	11	4	3	0	0	0	0	0	0	21	38	33
05:00	0	1	5	8	40	17	1	0	0	0	0	0	0	72	36	32
06:00	1	1	8	97	123	20	0	0	0	0	0	0	0	250	33	30
07:00	15	93	140	91	61	10	1	0	0	0	0	0	0	411	29	23
08:00	0	4	67	318	281	28	2	0	0	0	0	0	0	700	32	29
09:00	0	3	22	143	225	44	2	0	0	0	0	0	0	439	33	30
10:00	0	3	40	127	155	22	0	0	0	0	0	0	0	347	33	29
11:00	0	9	17	135	133	14	0	0	0	0	0	0	0	308	32	29
12 PM	3	5	34	146	122	21	0	0	0	0	0	0	0	331	32	29
13:00	1	3	39	140	115	23	1	0	0	0	0	0	0	322	32	29
14:00	3	33	87	116	67	18	0	0	0	0	0	0	0	324	31	26
15:00	10	25	101	215	78	4	2	0	0	0	0	0	0	435	30	26
16:00	0	13	107	214	67	7	0	0	0	0	0	0	0	408	29	26
17:00	4	5	118	221	52	5	0	0	0	0	0	0	0	405	28	26
18:00	1	10	45	177	83	7	0	0	0	0	0	0	0	323	31	27
19:00	0	1	28	136	82	15	0	1	0	0	0	0	0	263	32	29
20:00	0	7	22	77	70	7	0	0	0	0	0	0	0	183	32	28
21:00	0	4	9	46	29	8	0	0	0	0	0	0	0	96	32	28
22:00	0	1	4	12	24	2	0	0	0	0	0	0	0	43	33	30
23:00	0	0	4	4	8	4	0	0	0	0	0	0	0	20	35	30
Total %	38 0.7%	222 3.9%	900 15.8%	2427 42.5%	1831 32.0%	282 4.9%	13 0.2%	1 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	5714		
AM Peak	07:00	07:00	07:00	08:00	08:00	09:00	04:00							08:00		
Vol.	15	93	140	318	281	44	3							700		
PM Peak	15:00	14:00	17:00	17:00	12:00	13:00	15:00	19:00						15:00		
Vol.	10	33	118	221	122	23	2	1						435		

Stats

15th Percentile :	22 MPH
50th Percentile :	27 MPH
85th Percentile :	32 MPH
95th Percentile :	34 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	4258
Percent in Pace :	74.5%
Number of Vehicles > 30 MPH :	1761
Percent of Vehicles > 30 MPH :	30.8%



PRECISION
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INDUSTRIES, LLC

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642 Webster Street
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NB

186604 B Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	0	1	1	2	3	0	0	0	0	0	0	0	7	37	32
01:00	0	0	1	1	2	0	0	0	0	0	0	0	0	4	32	28
02:00	0	0	1	1	0	0	0	0	0	0	0	0	0	2	27	25
03:00	1	0	1	0	2	0	0	0	0	0	0	0	0	4	32	23
04:00	1	0	0	3	5	4	0	0	0	0	0	0	0	13	36	30
05:00	0	1	0	17	40	11	2	0	0	0	0	0	0	71	35	32
06:00	1	2	10	78	105	20	1	0	0	0	0	0	0	217	33	30
07:00	3	37	105	121	74	4	0	0	0	0	0	0	0	344	30	25
08:00	5	12	108	300	225	29	1	0	0	0	0	0	0	680	32	28
09:00	0	0	36	198	197	39	2	0	0	0	0	0	0	472	33	30
10:00	0	0	20	143	141	26	0	0	0	0	0	0	0	330	33	30
11:00	0	5	33	126	147	26	1	0	0	0	0	0	0	338	33	29
12 PM	2	7	31	168	125	11	1	0	0	0	0	0	0	345	32	28
13:00	1	7	41	145	138	22	2	0	0	0	0	0	0	356	32	29
14:00	7	22	96	123	80	8	1	0	0	0	0	0	0	337	31	26
15:00	1	25	117	220	76	6	0	0	0	0	0	0	0	445	30	26
16:00	7	21	129	184	55	4	0	0	0	0	0	0	0	400	28	25
17:00	0	13	157	214	50	6	0	0	0	0	0	0	0	440	28	26
18:00	3	4	51	214	75	2	2	0	0	0	0	0	0	351	30	27
19:00	0	13	39	134	70	4	0	0	0	0	0	0	0	260	31	27
20:00	5	15	42	97	41	3	0	0	0	0	0	0	0	203	30	26
21:00	0	2	10	45	40	10	0	0	0	0	0	0	0	107	33	29
22:00	0	0	2	12	24	6	0	0	0	0	0	0	0	44	33	31
23:00	0	0	1	3	12	5	3	0	0	0	0	0	0	24	38	33
Total	37	186	1032	2548	1726	249	16	0	0	0	0	0	0	5794		
%	0.6%	3.2%	17.8%	44.0%	29.8%	4.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	07:00	08:00	08:00	08:00	09:00	05:00							08:00		
Vol.	5	37	108	300	225	39	2							680		
PM Peak	14:00	15:00	17:00	15:00	13:00	13:00	23:00							15:00		
Vol.	7	25	157	220	138	22	3							445		

Stats

15th Percentile :	22 MPH
50th Percentile :	27 MPH
85th Percentile :	32 MPH
95th Percentile :	33 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	4274
Percent in Pace :	73.8%
Number of Vehicles > 30 MPH :	1646
Percent of Vehicles > 30 MPH :	28.4%



PRECISION
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INDUSTRIES, LLC

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642 Webster Street
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City, State: Needham, MA
Client: GPI/N.Rogers

186604 B Volume
Site Code: MAX2017099.1

Start	SB		NB		Combin		11/28/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Wed
12:00	3	95	2	86	5	181		
12:15	1	74	0	71	1	145		
12:30	3	101	0	88	3	189		
12:45	4	84	2	86	6	170	685	
01:00	1	65	1	75	2	140		
01:15	0	82	0	91	0	173		
01:30	1	72	2	75	3	147		
01:45	0	92	1	81	1	173	633	
02:00	0	91	0	67	0	158		
02:15	2	112	1	88	3	200		
02:30	0	93	1	66	1	159		
02:45	1	125	0	103	1	228	745	
03:00	1	108	1	97	2	205		
03:15	1	84	0	113	1	197		
03:30	2	125	0	122	2	247		
03:45	1	137	2	103	3	240	889	
04:00	1	146	3	115	4	261		
04:15	1	102	3	97	4	199		
04:30	1	129	2	82	3	211		
04:45	3	150	13	114	16	264	935	
05:00	0	177	10	101	10	278		
05:15	8	172	12	96	20	268		
05:30	5	168	20	111	25	279		
05:45	9	135	30	97	39	232	1057	
06:00	14	154	31	95	45	249		
06:15	20	158	47	81	67	239		
06:30	20	116	75	66	95	182		
06:45	45	110	97	81	142	191	861	
07:00	69	84	120	79	189	163		
07:15	96	86	121	59	217	145		
07:30	85	68	80	59	165	127		
07:45	42	69	90	66	132	135	570	
08:00	55	68	110	64	165	132		
08:15	70	54	188	47	258	101		
08:30	76	37	173	43	249	80		
08:45	73	41	229	29	302	70	383	
09:00	68	31	166	36	234	67		
09:15	79	26	102	28	181	54		
09:30	70	19	88	20	158	39		
09:45	86	18	83	12	169	30	190	
10:00	64	17	86	13	150	30		
10:15	50	23	88	13	138	36		
10:30	70	11	78	8	148	19		
10:45	71	10	95	9	166	19	104	
11:00	64	12	69	7	133	19		
11:15	74	5	78	5	152	10		
11:30	70	3	83	4	153	7		
11:45	109	3	78	4	187	7	43	
Total	1589	3942	2561	3153	4150	7095		
Percent	38.3%	55.6%	61.7%	44.4%				
Day Total		5531		5714		11245		
Peak	11:00	-	04:45	-	08:15	-	04:45	-
Vol.	317	-	667	-	756	-	1089	-
P.H.F.	0.727	-	0.942	-	0.825	-	0.976	-



PRECISION
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642 Webster Street
south of Brookline Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 B Volume
Site Code: MAX2017099.1

Start	SB		NB		Combin		11/29/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Thu
12:00	4	77	3	75	7	152		
12:15	4	79	1	78	5	157		
12:30	5	88	3	89	8	177		
12:45	1	93	0	103	1	196	682	
01:00	2	74	1	98	3	172		
01:15	0	94	0	89	0	183		
01:30	1	77	0	88	1	165		
01:45	0	85	3	81	3	166	686	
02:00	2	102	0	70	2	172		
02:15	1	120	1	76	2	196		
02:30	3	85	0	97	3	182		
02:45	0	104	1	94	1	198	748	
03:00	0	119	0	114	0	233		
03:15	1	105	2	104	3	209		
03:30	2	166	0	112	2	278		
03:45	1	118	2	115	3	233	953	
04:00	1	138	2	96	3	234		
04:15	2	157	2	109	4	266		
04:30	2	123	1	83	3	206		
04:45	3	150	8	112	11	262	968	
05:00	5	173	9	117	14	290		
05:15	4	164	14	96	18	260		
05:30	6	186	18	122	24	308		
05:45	13	165	30	105	43	270	1128	
06:00	7	154	24	105	31	259		
06:15	16	139	38	99	54	238		
06:30	19	128	64	74	83	202		
06:45	48	136	91	73	139	209	908	
07:00	59	82	125	71	184	153		
07:15	80	68	97	57	177	125		
07:30	75	77	50	65	125	142		
07:45	44	72	72	67	116	139	559	
08:00	58	70	164	47	222	117		
08:15	53	47	173	56	226	103		
08:30	57	47	168	62	225	109		
08:45	80	34	175	38	255	72	401	
09:00	71	32	141	39	212	71		
09:15	73	34	122	32	195	66		
09:30	70	41	122	19	192	60		
09:45	69	28	87	17	156	45	242	
10:00	70	30	93	18	163	48		
10:15	69	17	75	15	144	32		
10:30	75	13	65	6	140	19		
10:45	63	13	97	5	160	18	117	
11:00	83	12	86	7	169	19		
11:15	73	9	85	9	158	18		
11:30	88	6	91	6	179	12		
11:45	82	9	76	338	2	158	664	60
Total	1545	4140	2482	3312	4027	7452		
Percent	38.4%	55.6%	61.6%	44.4%				
Day Total		5685		5794		11479		
Peak	11:00	-	05:00	-	08:00	-	05:00	-
Vol.	326	-	688	-	680	-	1128	-
P.H.F.	0.926	-	0.925	-	0.971	-	0.916	-



PRECISION
D A T A
INDUSTRIES, LLC

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900 Greendale Avenue
north of Enslin Road
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 C CLASS
Site Code: MAX2017099.1

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
11/28/1														
8	0	7	1	0	0	0	0	0	0	0	0	0	0	8
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	10	3	0	0	0	0	0	0	0	0	0	0	13
06:00	0	37	7	0	2	0	0	1	0	0	0	0	0	47
07:00	0	146	24	1	3	1	0	1	0	0	0	0	0	176
08:00	0	155	42	4	2	3	0	0	0	0	0	0	0	206
09:00	4	84	27	0	6	2	0	0	0	0	0	0	0	123
10:00	1	69	39	0	16	0	0	2	0	0	0	0	0	127
11:00	2	119	27	0	12	0	1	0	0	0	0	0	0	161
12 PM	0	124	27	2	12	1	0	0	0	0	0	0	0	166
13:00	1	131	23	1	14	1	0	3	0	0	0	0	0	174
14:00	2	207	56	2	15	1	0	0	0	0	0	0	0	283
15:00	0	348	97	1	26	2	0	2	1	0	0	0	0	477
16:00	3	541	125	3	25	2	0	0	1	0	0	0	0	700
17:00	3	626	90	0	16	1	0	2	0	0	0	0	0	738
18:00	2	269	39	0	5	0	0	0	0	0	0	0	0	315
19:00	0	113	24	0	3	0	0	0	0	0	0	0	0	140
20:00	1	84	8	0	2	0	0	0	0	0	0	0	0	95
21:00	0	47	12	0	0	0	0	0	0	0	0	0	0	59
22:00	0	39	3	0	0	0	0	0	0	0	0	0	0	42
23:00	0	16	4	0	0	0	0	0	0	0	0	0	0	20
Percent	0.5%	78.0%	16.6%	0.3%	3.9%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	08:00	08:00	10:00	08:00	11:00	10:00						08:00
Vol.	4	155	42	4	16	3	1	2						206
PM Peak	16:00	17:00	16:00	16:00	15:00	15:00		13:00	15:00					17:00
Vol.	3	626	125	3	26	2		3	1					738



PRECISION
D A T A
INDUSTRIES, LLC

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

900 Greendale Avenue
north of Enslin Road
City, State: Needham, MA
Client: GPI/N.Rogers
SB

186604 C CLASS
Site Code: MAX2017099.1

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
11/29/1														
8	0	6	0	0	2	0	0	0	0	0	0	0	0	8
01:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	1	1	0	0	0	0	0	0	0	3
05:00	0	9	2	0	0	0	0	0	0	0	0	0	0	11
06:00	0	42	11	0	5	0	0	0	0	0	0	0	0	58
07:00	0	132	27	1	7	0	0	0	0	0	0	0	0	167
08:00	5	138	61	2	5	2	0	0	0	0	0	0	0	213
09:00	0	101	33	1	15	2	0	1	0	0	0	0	0	153
10:00	2	82	27	2	9	0	0	0	0	0	0	0	0	122
11:00	2	93	26	0	7	1	0	0	0	0	0	0	0	129
12 PM	0	109	42	2	10	0	0	1	0	0	0	0	0	164
13:00	0	105	31	0	11	1	0	0	0	0	0	0	0	148
14:00	6	203	56	2	10	1	0	0	0	0	0	0	0	278
15:00	1	451	107	3	35	0	1	0	0	0	0	0	0	598
16:00	0	557	137	4	36	1	0	4	0	0	0	0	0	739
17:00	3	492	75	1	18	1	0	0	0	0	0	0	0	590
18:00	1	271	44	0	3	0	0	0	0	0	0	0	0	319
19:00	1	121	21	0	7	0	0	0	0	0	0	0	0	150
20:00	1	85	21	0	3	0	0	0	0	0	0	0	0	110
21:00	1	62	5	0	1	0	0	0	0	0	0	0	0	69
22:00	0	38	3	0	0	0	0	0	0	0	0	0	0	41
23:00	0	18	3	0	0	0	0	0	0	0	0	0	0	21
Percent	0.6%	76.2%	17.9%	0.4%	4.5%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	08:00	09:00	08:00		09:00						08:00
Vol.	5	138	61	2	15	2		1						213
PM Peak	14:00	16:00	16:00	16:00	16:00	13:00	15:00	16:00						16:00
Vol.	6	557	137	4	36	1	1	4						739



PRECISION
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NB

186604 C CLASS
Site Code: MAX2017099.1

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
11/28/1														
8	0	6	1	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
04:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	29	6	0	0	0	0	0	0	0	0	0	0	35
06:00	1	137	21	1	2	0	0	0	1	0	0	0	0	163
07:00	2	444	45	5	7	4	0	2	0	0	0	0	0	509
08:00	3	690	66	3	3	0	0	2	0	0	0	0	0	767
09:00	0	195	37	1	2	1	0	1	0	0	0	0	0	237
10:00	1	133	23	1	3	0	0	0	0	0	0	0	0	161
11:00	0	151	20	2	1	1	0	2	0	0	0	0	0	177
12 PM	0	146	16	0	6	2	0	0	0	0	0	0	0	170
13:00	0	149	19	0	2	0	1	0	0	0	0	0	0	171
14:00	2	170	19	5	1	0	0	0	0	0	0	0	0	197
15:00	2	163	19	3	2	1	0	1	0	0	0	0	0	191
16:00	1	177	11	0	2	0	0	1	0	0	0	0	0	192
17:00	4	169	3	0	1	0	0	0	0	0	0	0	0	177
18:00	1	178	4	0	0	0	0	0	0	0	0	0	0	183
19:00	2	86	8	0	2	0	0	0	0	0	0	0	0	98
20:00	1	71	8	0	0	0	0	0	0	0	0	0	0	80
21:00	1	46	2	0	0	0	0	0	0	0	0	0	0	49
22:00	0	27	1	0	0	0	0	0	0	0	0	0	0	28
23:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
Percent	0.6%	88.2%	9.2%	0.6%	0.9%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	07:00	07:00	07:00		07:00	06:00					08:00
Vol.	3	690	66	5	7	4		2	1					767
PM Peak	17:00	18:00	13:00	14:00	12:00	12:00	13:00	15:00						14:00
Vol.	4	178	19	5	6	2	1	1						197



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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
11/29/1														
8	0	6	1	0	1	0	0	0	0	0	0	0	0	8
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	0	0	1	1	0	0	0	0	0	0	0	5
05:00	0	27	3	0	0	0	0	0	0	0	0	0	0	30
06:00	2	146	26	0	0	1	0	0	0	0	0	0	0	175
07:00	0	436	37	5	8	0	0	3	0	0	0	0	0	489
08:00	4	508	66	5	2	0	0	0	0	0	0	0	0	585
09:00	1	218	29	1	5	1	0	0	0	0	0	0	0	255
10:00	1	153	26	0	4	0	0	0	0	0	0	0	0	184
11:00	1	141	18	0	5	0	0	3	0	0	0	0	0	168
12 PM	0	113	20	0	2	0	0	0	0	0	0	0	0	135
13:00	1	124	23	0	0	2	0	0	0	0	0	0	0	150
14:00	1	174	16	2	0	0	0	0	0	0	0	0	0	193
15:00	1	162	17	3	3	1	0	0	0	0	0	0	0	187
16:00	1	140	12	1	5	0	0	0	0	0	0	0	0	159
17:00	1	177	10	0	2	0	0	0	0	0	0	0	0	190
18:00	0	136	2	0	0	0	0	0	0	0	0	0	0	138
19:00	0	95	6	0	0	0	0	0	0	0	0	0	0	101
20:00	1	101	3	0	1	0	0	0	0	0	0	0	0	106
21:00	1	45	4	0	0	0	0	0	0	0	0	0	0	50
22:00	0	43	0	0	0	0	0	0	0	0	0	0	0	43
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
Percent	0.5%	88.0%	9.5%	0.5%	1.2%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	07:00	07:00	04:00		07:00						08:00
Vol.	4	508	66	5	8	1		3						585
PM Peak	13:00	17:00	13:00	15:00	16:00	13:00								14:00
Vol.	1	177	23	3	5	2								193



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SB

186604 C SPEED
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	0	0	0	2	3	2	1	0	0	0	0	0	8	43	38
01:00	0	0	0	1	0	1	1	0	0	0	0	0	0	3	41	35
02:00	0	0	0	0	0	0	2	0	0	0	0	0	0	2	43	42
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	32
04:00	0	0	0	1	0	0	1	0	0	0	0	0	0	2	42	35
05:00	0	1	0	0	2	3	5	1	1	0	0	0	0	13	44	39
06:00	0	0	4	5	1	15	15	6	1	0	0	0	0	47	43	38
07:00	2	2	1	7	18	56	62	21	5	0	1	0	1	176	44	39
08:00	2	2	3	6	44	79	63	6	0	0	0	0	1	206	42	37
09:00	5	0	5	1	7	41	48	11	4	1	0	0	0	123	43	38
10:00	2	0	0	4	9	37	50	21	3	0	0	0	1	127	45	40
11:00	5	1	0	3	18	66	58	9	1	0	0	0	0	161	42	38
12 PM	3	1	1	5	28	53	48	25	0	1	0	0	1	166	44	38
13:00	0	1	3	8	24	60	64	11	1	1	0	0	1	174	42	38
14:00	6	5	3	25	44	97	82	19	2	0	0	0	0	283	42	36
15:00	3	2	7	15	93	190	145	22	2	0	0	0	0	479	42	37
16:00	6	4	4	28	162	330	151	11	2	1	0	0	1	700	40	36
17:00	5	1	11	55	247	297	109	10	1	1	0	0	1	738	39	35
18:00	4	1	8	21	63	131	73	11	3	0	0	1	0	316	41	36
19:00	3	1	3	6	34	54	31	6	2	0	0	0	0	140	41	36
20:00	7	2	0	3	21	36	21	5	1	0	0	0	0	96	41	35
21:00	1	0	0	1	7	26	17	7	0	1	0	0	0	60	43	39
22:00	1	0	1	7	7	13	9	3	1	0	0	0	0	42	42	36
23:00	0	0	0	4	5	4	6	1	0	0	0	0	0	20	42	36
Total	55	24	54	206	837	1592	1063	207	30	6	1	1	7	4083		
%	1.3%	0.6%	1.3%	5.0%	20.5%	39.0%	26.0%	5.1%	0.7%	0.1%	0.0%	0.0%	0.2%			
AM Peak	09:00	07:00	09:00	07:00	08:00	08:00	08:00	07:00	07:00	09:00	07:00		07:00	08:00		
Vol.	5	2	5	7	44	79	63	21	5	1	1		1	206		
PM Peak	20:00	14:00	17:00	17:00	17:00	16:00	16:00	12:00	18:00	12:00		18:00	12:00	17:00		
Vol.	7	5	11	55	247	330	151	25	3	1		1	1	738		

Stats

15th Percentile : 30 MPH
50th Percentile : 36 MPH
85th Percentile : 42 MPH
95th Percentile : 44 MPH

Mean Speed(Average) : 37 MPH
10 MPH Pace Speed : 35-44 MPH
Number in Pace : 2655
Percent in Pace : 65.0%
Number of Vehicles > 35 MPH : 2589
Percent of Vehicles > 35 MPH : 63.4%



PRECISION
D A T A
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186604 C SPEED
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	0	0	3	1	2	1	1	0	0	0	0	0	8	42	35
01:00	0	0	0	0	0	0	2	0	0	0	0	0	0	2	43	42
02:00	0	0	0	0	1	0	1	0	0	0	0	0	0	2	42	37
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	1	0	1	0	1	0	0	0	0	0	0	3	41	32
05:00	0	0	0	1	1	5	0	3	0	1	0	0	0	11	47	40
06:00	0	0	1	6	4	24	19	4	0	0	0	0	0	58	42	38
07:00	1	1	2	6	26	56	60	14	1	0	0	0	0	167	43	38
08:00	4	2	2	13	33	73	67	19	0	0	0	0	0	213	43	37
09:00	2	0	3	5	12	45	61	22	3	0	0	0	0	153	44	39
10:00	2	2	3	5	21	28	43	17	0	0	0	0	1	122	43	38
11:00	5	0	1	7	11	36	55	12	1	1	0	0	1	130	43	38
12 PM	2	2	1	2	28	54	56	16	2	0	0	0	1	164	43	38
13:00	0	1	2	5	12	50	63	12	3	0	0	0	0	148	43	39
14:00	11	3	2	14	61	101	80	7	0	0	0	0	0	279	41	36
15:00	6	7	8	13	45	218	248	41	7	1	1	1	2	598	43	39
16:00	3	2	4	27	147	376	166	13	0	0	0	0	2	740	41	37
17:00	8	6	5	20	151	280	110	9	0	0	1	0	1	591	40	36
18:00	2	1	3	13	76	145	70	8	0	0	0	0	1	319	41	36
19:00	1	0	9	7	14	68	46	5	0	0	0	0	0	150	42	37
20:00	5	1	0	8	13	41	37	5	0	0	0	0	0	110	42	36
21:00	7	0	0	2	11	25	16	7	2	0	0	0	0	70	43	36
22:00	1	1	1	7	8	13	9	1	0	0	0	0	0	41	41	34
23:00	0	1	1	2	1	12	4	0	0	0	0	0	0	21	40	35
Total	60	30	49	166	678	1652	1215	216	19	3	2	1	9	4100		
%	1.5%	0.7%	1.2%	4.0%	16.5%	40.3%	29.6%	5.3%	0.5%	0.1%	0.0%	0.0%	0.2%			
AM Peak	11:00	08:00	09:00	08:00	08:00	08:00	08:00	09:00	09:00	05:00			10:00	08:00		
Vol.	5	2	3	13	33	73	67	22	3	1			1	213		
PM Peak	14:00	15:00	19:00	16:00	17:00	16:00	15:00	15:00	15:00	15:00	15:00	15:00	15:00	16:00		
Vol.	11	7	9	27	151	376	248	41	7	1	1	1	2	740		

Stats

15th Percentile : 31 MPH
 50th Percentile : 37 MPH
 85th Percentile : 42 MPH
 95th Percentile : 44 MPH

Mean Speed(Average) : 37 MPH
 10 MPH Pace Speed : 35-44 MPH
 Number in Pace : 2867
 Percent in Pace : 69.9%
 Number of Vehicles > 35 MPH : 2787
 Percent of Vehicles > 35 MPH : 68.0%



PRECISION
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186604 C SPEED
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	0	0	0	1	4	2	0	0	0	0	0	0	7	41	38
01:00	0	0	0	0	0	0	1	0	0	0	0	0	0	1	43	42
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	32
03:00	0	0	0	0	1	3	0	0	0	0	0	0	0	4	38	36
04:00	0	0	0	0	0	3	1	0	0	0	0	0	0	4	41	38
05:00	0	0	1	2	7	18	7	0	0	0	0	0	0	35	40	36
06:00	2	0	7	7	31	88	26	1	1	0	0	0	0	163	39	36
07:00	5	0	5	30	158	271	38	2	0	0	0	0	0	509	38	35
08:00	6	0	1	48	264	392	56	1	0	0	0	0	0	768	38	35
09:00	0	2	3	10	57	128	35	2	0	0	0	0	0	237	39	36
10:00	3	0	1	3	29	85	39	1	0	0	0	0	0	161	41	37
11:00	1	0	1	12	43	91	28	1	0	0	0	0	0	177	39	36
12 PM	2	0	0	7	51	85	23	3	0	0	0	0	0	171	39	36
13:00	0	0	1	17	48	80	25	0	0	0	0	0	0	171	38	35
14:00	2	0	2	22	62	79	29	1	0	0	0	0	0	197	39	35
15:00	2	0	1	14	48	106	19	1	0	0	0	0	0	191	38	35
16:00	2	0	6	21	77	75	11	0	0	0	0	0	0	192	37	33
17:00	1	0	1	16	84	67	8	0	0	0	0	0	0	177	37	34
18:00	2	1	0	10	77	80	10	3	0	0	0	0	0	183	38	34
19:00	5	1	0	8	37	39	9	0	0	0	0	0	0	99	38	33
20:00	2	0	0	6	22	42	7	1	0	0	0	0	0	80	38	35
21:00	1	0	0	9	12	18	8	1	0	0	0	0	0	49	40	34
22:00	0	0	1	3	10	12	2	0	0	0	0	0	0	28	38	34
23:00	0	0	0	1	3	4	3	1	0	0	0	0	0	12	42	37
Total	36	4	31	246	1123	1770	387	19	1	0	0	0	0	3617		
%	1.0%	0.1%	0.9%	6.8%	31.0%	48.9%	10.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	09:00	06:00	08:00	08:00	08:00	08:00	07:00	06:00					08:00		
Vol.	6	2	7	48	264	392	56	2	1					768		
PM Peak	19:00	18:00	16:00	14:00	17:00	15:00	14:00	12:00						14:00		
Vol.	5	1	6	22	84	106	29	3						197		

Stats

15th Percentile :	30 MPH
50th Percentile :	35 MPH
85th Percentile :	38 MPH
95th Percentile :	41 MPH
Mean Speed(Average) :	35 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	2893
Percent in Pace :	80.0%
Number of Vehicles > 35 MPH :	1823
Percent of Vehicles > 35 MPH :	50.4%



PRECISION
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186604 C SPEED
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/29/ 18	0	0	1	1	1	4	1	0	0	0	0	0	0	8	38	34
01:00	0	0	0	0	0	1	1	0	0	0	0	0	0	2	42	40
02:00	0	0	0	0	1	2	0	1	0	0	0	0	0	4	46	38
03:00	0	0	0	0	0	2	0	0	0	0	0	0	0	2	38	37
04:00	0	0	0	1	2	1	1	0	0	0	0	0	0	5	40	34
05:00	1	0	0	3	7	13	6	0	0	0	0	0	0	30	40	35
06:00	4	1	2	15	31	94	27	1	0	0	0	0	0	175	39	35
07:00	0	0	6	20	156	268	39	0	0	0	0	0	0	489	38	35
08:00	6	0	6	33	199	295	46	0	0	0	0	0	0	585	38	35
09:00	3	0	1	7	52	158	32	2	0	0	0	0	0	255	38	36
10:00	3	0	2	5	44	99	30	1	0	0	0	0	0	184	39	36
11:00	2	0	1	15	47	75	26	2	0	0	0	0	0	168	39	35
12 PM	0	1	3	2	27	88	13	1	0	0	0	0	0	135	38	36
13:00	1	0	0	7	44	73	25	0	0	0	0	0	0	150	39	36
14:00	0	0	3	17	57	97	18	1	0	0	0	0	0	193	38	35
15:00	1	0	2	11	46	104	23	0	0	0	0	0	0	187	38	35
16:00	2	0	0	15	58	68	12	4	0	0	0	0	0	159	38	34
17:00	2	1	1	20	85	74	7	0	0	0	0	0	0	190	37	33
18:00	0	0	2	12	54	61	9	0	0	0	0	0	0	138	38	34
19:00	0	2	0	3	42	45	9	0	0	0	0	0	0	101	38	35
20:00	1	1	2	11	37	44	9	1	0	0	0	0	0	106	38	34
21:00	1	0	1	5	17	21	5	0	0	0	0	0	0	50	38	34
22:00	1	1	1	5	12	17	6	0	0	0	0	0	0	43	38	34
23:00	0	0	0	1	2	5	2	1	0	0	0	0	0	11	42	37
Total	28	7	34	209	1021	1709	347	15	0	0	0	0	0	3370		
%	0.8%	0.2%	1.0%	6.2%	30.3%	50.7%	10.3%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	06:00	07:00	08:00	08:00	08:00	08:00	09:00						08:00		
Vol.	6	1	6	33	199	295	46	2						585		
PM Peak	16:00	19:00	12:00	17:00	17:00	15:00	13:00	16:00						14:00		
Vol.	2	2	3	20	85	104	25	4						193		

Stats

15th Percentile :	30 MPH
50th Percentile :	35 MPH
85th Percentile :	38 MPH
95th Percentile :	41 MPH
Mean Speed(Average) :	35 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	2730
Percent in Pace :	81.0%
Number of Vehicles > 35 MPH :	1729
Percent of Vehicles > 35 MPH :	51.3%



PRECISION
D A T A
INDUSTRIES, LLC

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

900 Greendale Avenue
north of Enslin Road
City, State: Needham, MA
Client: GPI/N.Rogers

186604 C VOLUME
Site Code: MAX2017099.1

Start		SB		NB		Combin		11/28/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	ed	18	Wed
12:00	3	52	3	37	6	89			
12:15	3	37	2	53	5	90			
12:30	1	38	1	39	2	77			
12:45	1	39	1	42	2	81	15	337	
01:00	1	48	1	31	2	79			
01:15	1	38	0	52	1	90			
01:30	0	40	0	44	0	84			
01:45	1	48	0	44	1	92	4	345	
02:00	2	63	1	46	3	109			
02:15	0	55	0	38	0	93			
02:30	0	70	0	53	0	123			
02:45	0	95	0	60	0	155	3	480	
03:00	0	73	1	48	1	121			
03:15	1	79	0	52	1	131			
03:30	0	141	3	55	3	196			
03:45	0	186	0	36	0	222	5	670	
04:00	0	171	0	49	0	220			
04:15	0	186	1	56	1	242			
04:30	0	176	0	45	0	221			
04:45	2	167	3	42	5	209	6	892	
05:00	2	179	5	41	7	220			
05:15	3	168	4	44	7	212			
05:30	2	185	11	41	13	226			
05:45	6	206	15	51	21	257	48	915	
06:00	5	115	20	55	25	170			
06:15	8	84	23	45	31	129			
06:30	12	67	48	41	60	108			
06:45	22	50	72	42	94	92	210	499	
07:00	27	43	96	28	123	71			
07:15	42	41	100	20	142	61			
07:30	54	28	151	25	205	53			
07:45	53	28	162	26	215	54	685	239	
08:00	69	29	185	21	254	50			
08:15	62	31	149	26	211	57			
08:30	24	15	237	16	261	31			
08:45	51	21	197	17	248	38	974	176	
09:00	35	15	71	19	106	34			
09:15	42	16	64	12	106	28			
09:30	25	13	51	11	76	24			
09:45	21	16	51	7	72	23	360	109	
10:00	26	18	43	13	69	31			
10:15	28	14	41	5	69	19			
10:30	29	4	36	7	65	11			
10:45	44	6	41	3	85	9	288	70	
11:00	49	6	37	8	86	14			
11:15	24	7	47	1	71	8			
11:30	48	5	41	0	89	5			
11:45	40	2	52	3	92	5	338	32	
Total	869	3214	2067	1550	2936	4764			
Percent	29.6%	67.5%	70.4%	32.5%					
Day Total		4083		3617		7700			
Peak	07:30	-	05:00	-	08:00	-	05:00	-	-
Vol.	238	-	738	-	768	-	915	-	-
P.H.F.	0.862	-	0.896	-	0.810	-	0.896	-	-



PRECISION
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900 Greendale Avenue
north of Enslin Road
City, State: Needham, MA
Client: GPI/N.Rogers

186604 C VOLUME
Site Code: MAX2017099.1

Start	SB		NB		Combin		11/29/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Thu
12:00	2	49	3	39	5	88		
12:15	2	37	1	35	3	72		
12:30	2	42	3	32	5	74		
12:45	2	8	36	164	1	8	29	299
01:00	1	32	1	35	2	67		
01:15	0	38	1	44	1	82		
01:30	0	45	0	27	0	72		
01:45	1	2	33	148	0	2	44	150
02:00	1	47	2	41	3	88		
02:15	1	49	0	52	1	101		
02:30	0	58	1	55	1	113		
02:45	0	2	125	279	1	4	45	193
03:00	0	114	0	51	0	165		
03:15	0	143	1	51	1	194		
03:30	0	155	0	41	0	196		
03:45	0	0	186	598	1	2	44	187
04:00	0	239	0	36	0	275		
04:15	2	203	3	43	5	246		
04:30	0	144	0	42	0	186		
04:45	1	3	154	740	2	5	38	159
05:00	3	158	8	32	11	190		
05:15	2	153	3	55	5	208		
05:30	2	169	5	56	7	225		
05:45	4	11	111	591	14	30	47	190
06:00	12	119	17	38	29	157		
06:15	14	88	31	45	45	133		
06:30	17	61	45	30	62	91		
06:45	15	58	51	319	82	175	25	138
07:00	35	44	92	21	127	65		
07:15	38	53	110	28	148	81		
07:30	49	32	131	25	180	57		
07:45	45	167	21	150	156	489	27	101
08:00	78	29	172	26	250	55		
08:15	57	26	146	21	203	47		
08:30	42	21	135	29	177	50		
08:45	36	213	34	110	132	585	30	106
09:00	39	12	83	16	122	28		
09:15	35	27	72	17	107	44		
09:30	39	16	58	8	97	24		
09:45	40	153	15	70	42	255	9	50
10:00	28	22	52	14	80	36		
10:15	30	7	61	9	91	16		
10:30	39	5	31	11	70	16		
10:45	25	122	7	41	40	184	9	43
11:00	30	11	27	7	57	18		
11:15	39	3	55	3	94	6		
11:30	26	3	41	0	67	3		
11:45	35	130	4	21	45	168	1	11
Total	869	3231	1907	1463	2776	4694		
Percent	31.3%	68.8%	68.7%	31.2%				
Day Total		4100		3370		7470		
Peak	07:30	-	03:30	-	07:45	-	02:15	-
Vol.	229	-	783	-	609	-	203	-
P.H.F.	0.734	-	0.819	-	0.885	-	0.923	-



PRECISION
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INDUSTRIES, LLC

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Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 D Class
Site Code: MAX2014099.1

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
11/28/1														
8	0	10	2	1	0	0	0	0	0	0	0	0	0	13
01:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
02:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
03:00	0	2	3	1	0	0	0	0	0	0	0	0	0	6
04:00	1	7	1	0	2	0	0	0	0	0	0	0	0	11
05:00	1	25	2	0	1	0	0	0	3	0	0	0	0	32
06:00	2	77	17	0	8	1	0	0	0	0	0	0	0	105
07:00	5	159	46	3	11	0	0	0	1	0	0	0	0	225
08:00	5	176	50	4	16	2	0	0	1	0	0	0	0	254
09:00	3	156	39	3	15	0	1	1	0	0	0	0	0	218
10:00	3	129	28	0	15	1	0	1	0	0	0	0	0	177
11:00	1	173	43	4	14	2	1	2	2	0	0	0	0	242
12 PM	0	167	47	0	15	1	0	1	0	0	0	0	0	231
13:00	1	186	40	3	17	5	1	3	1	0	0	0	0	257
14:00	2	225	66	1	26	5	0	1	0	0	0	0	0	326
15:00	0	252	54	2	16	1	0	0	3	0	0	0	0	328
16:00	2	312	61	1	10	0	0	0	0	0	0	0	0	386
17:00	1	307	45	0	11	0	0	0	0	0	0	0	0	364
18:00	0	229	26	0	3	0	0	0	0	0	0	0	0	258
19:00	0	158	22	0	2	0	0	1	0	0	0	0	0	183
20:00	1	111	16	1	2	0	0	0	0	0	0	0	0	131
21:00	0	95	11	1	4	0	0	1	0	0	0	0	0	112
22:00	0	51	5	1	3	0	0	0	0	0	0	0	0	60
23:00	0	43	8	0	1	0	0	0	0	0	0	0	0	52
Total	28	3058	635	26	192	18	3	11	11	0	0	0	0	3982
Percent	0.7%	76.8%	15.9%	0.7%	4.8%	0.5%	0.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	08:00	08:00	09:00	11:00	05:00					08:00
Vol.	5	176	50	4	16	2	1	2	3					254
PM Peak	14:00	16:00	14:00	13:00	14:00	13:00	13:00	13:00	15:00					16:00
Vol.	2	312	66	3	26	5	1	3	3					386



PRECISION
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Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 D Class
Site Code: MAX2014099.1

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
11/29/1														
8	0	19	6	1	2	0	0	0	0	0	0	0	0	28
01:00	0	1	3	0	0	0	0	0	0	0	0	0	0	4
02:00	0	5	0	1	0	0	0	0	0	0	0	0	0	6
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
04:00	0	5	0	0	3	0	0	0	0	0	0	0	0	8
05:00	0	25	3	1	5	0	0	0	3	0	0	0	0	37
06:00	3	71	17	0	9	1	0	0	0	0	0	0	0	101
07:00	0	177	40	3	5	3	0	4	0	0	0	0	0	232
08:00	0	186	41	4	11	2	0	1	1	0	0	0	0	246
09:00	4	155	33	4	10	3	0	0	2	0	0	0	0	211
10:00	2	155	38	1	12	1	0	0	3	0	0	0	0	212
11:00	0	180	43	4	18	1	0	1	0	0	0	0	0	247
12 PM	1	180	33	2	8	4	0	3	1	0	0	0	0	232
13:00	0	169	36	0	16	2	0	3	0	0	0	0	0	226
14:00	5	208	57	3	16	1	0	1	0	0	0	0	0	291
15:00	2	281	67	3	16	5	0	0	0	0	0	0	0	374
16:00	2	305	61	0	13	4	0	4	0	0	0	0	0	389
17:00	1	284	38	2	9	0	0	0	0	0	0	0	0	334
18:00	0	212	20	1	7	0	0	0	0	0	0	0	0	240
19:00	0	162	24	0	6	0	0	1	0	0	0	0	0	193
20:00	0	122	11	0	3	0	0	0	0	0	0	0	0	136
21:00	0	103	16	0	0	0	0	0	0	0	0	0	0	119
22:00	0	47	8	1	3	0	0	0	0	0	0	0	0	59
23:00	0	51	8	0	1	0	0	0	0	0	0	0	0	60
Total	20	3105	604	31	173	27	0	18	10	0	0	0	0	3988
Percent	0.5%	77.9%	15.1%	0.8%	4.3%	0.7%	0.0%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	11:00	08:00	11:00	07:00		07:00	05:00					11:00
Vol.	4	186	43	4	18	3		4	3					247
PM Peak	14:00	16:00	15:00	14:00	13:00	15:00		16:00	12:00					16:00
Vol.	5	305	67	3	16	5		4	1					389



PRECISION
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Dedham Avenue
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City, State: Needham, MA
Client: GPI/N.Rogers
WB

186604 D Class
Site Code: MAX2014099.1

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
11/28/1														
8	0	7	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	1	1	0	0	0	0	0	0	0	0	0	4
03:00	0	7	1	0	0	1	0	0	0	0	0	0	0	9
04:00	0	21	5	1	4	1	0	0	0	0	0	0	0	32
05:00	0	70	24	0	5	0	0	0	1	1	0	0	0	101
06:00	1	181	37	0	10	5	0	0	0	0	0	0	0	234
07:00	4	246	54	1	9	3	4	4	0	0	1	0	0	326
08:00	2	298	43	6	11	5	0	2	2	0	0	0	0	369
09:00	0	239	39	1	15	0	1	4	1	0	0	0	0	300
10:00	2	182	35	2	9	5	0	1	1	0	0	0	0	237
11:00	1	194	32	1	7	5	2	0	1	0	0	0	0	243
12 PM	1	178	26	0	4	4	0	0	1	0	0	0	0	214
13:00	1	180	23	0	10	1	0	2	0	0	0	0	0	217
14:00	3	202	29	2	1	4	1	1	1	0	0	0	0	244
15:00	0	233	27	2	3	1	0	0	0	0	0	0	0	266
16:00	0	176	20	0	2	0	0	0	0	0	0	0	0	198
17:00	0	190	18	0	2	1	0	1	0	0	0	0	0	212
18:00	2	178	15	0	2	1	0	0	0	0	0	0	0	198
19:00	0	103	7	0	0	0	0	0	0	0	0	0	0	110
20:00	0	58	7	0	0	0	0	0	0	0	0	0	0	65
21:00	0	47	8	0	1	0	0	0	0	0	0	0	0	56
22:00	1	42	7	0	2	1	0	0	0	0	0	0	0	53
23:00	0	25	3	0	0	0	0	0	0	0	0	0	0	28
Total	18	3063	461	17	97	38	8	15	8	1	1	0	0	3727
Percent	0.5%	82.2%	12.4%	0.5%	2.6%	1.0%	0.2%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	07:00	08:00	09:00	06:00	07:00	07:00	08:00	05:00	07:00			08:00
Vol.	4	298	54	6	15	5	4	4	2	1	1			369
PM Peak	14:00	15:00	14:00	14:00	13:00	12:00	14:00	13:00	12:00					15:00
Vol.	3	233	29	2	10	4	1	2	1					266



PRECISION
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186604 D Class
Site Code: MAX2014099.1

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
11/29/1														
8	0	3	0	0	1	0	0	0	0	0	0	0	0	4
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3
03:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
04:00	0	19	1	1	0	0	0	0	0	0	0	0	0	21
05:00	1	73	21	0	5	2	0	0	1	0	0	0	0	103
06:00	0	151	38	2	10	6	0	2	1	0	0	0	0	210
07:00	2	259	36	0	9	2	0	0	2	0	0	0	0	310
08:00	0	339	64	2	8	0	1	3	1	0	0	0	0	418
09:00	4	252	32	2	18	2	0	3	1	0	0	0	0	314
10:00	0	190	24	5	10	2	1	1	1	0	0	0	0	234
11:00	2	190	26	2	5	3	1	0	0	0	0	0	0	229
12 PM	5	207	40	0	7	1	0	1	0	0	0	0	0	261
13:00	1	171	34	3	4	0	0	1	1	0	0	0	0	215
14:00	2	217	36	2	3	3	1	0	1	0	0	0	0	265
15:00	3	197	30	0	6	1	0	0	0	0	0	0	0	237
16:00	0	192	13	1	0	1	0	0	0	0	0	0	0	207
17:00	1	233	6	0	3	2	0	0	0	0	0	0	0	245
18:00	0	173	11	0	2	0	0	0	0	0	0	0	0	186
19:00	0	112	11	0	0	0	0	0	0	0	0	0	0	123
20:00	0	84	6	0	0	0	0	0	0	0	0	0	0	90
21:00	0	51	8	1	1	0	0	0	0	0	0	0	0	61
22:00	0	50	2	0	1	0	0	0	2	0	0	0	0	55
23:00	0	14	1	0	0	0	0	0	0	0	0	0	0	15
Total	21	3185	443	21	93	25	4	11	11	0	0	0	0	3814
Percent	0.6%	83.5%	11.6%	0.6%	2.4%	0.7%	0.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	08:00	10:00	09:00	06:00	08:00	08:00	07:00					08:00
Vol.	4	339	64	5	18	6	1	3	2					418
PM Peak	12:00	17:00	12:00	13:00	12:00	14:00	14:00	12:00	22:00					14:00
Vol.	5	233	40	3	7	3	1	1	2					265



PRECISION
D A T A
INDUSTRIES, LLC

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

Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 D Speed
Site Code: MAX2014099.1

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
11/28/18	0	1	0	1	3	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	39	35	
01:00	0	0	1	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	44	36	
02:00	0	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	45	38	
03:00	0	0	0	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	39	34	
04:00	0	1	1	0	1	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	40	35	
05:00	0	0	1	5	9	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	38	34	
06:00	3	0	2	6	44	41	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	38	34	
07:00	16	5	34	74	73	20	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	33	27	
08:00	11	5	15	54	121	44	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	35	30	
09:00	3	3	12	44	90	56	7	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	218	36	32	
10:00	5	0	7	30	95	35	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	35	31	
11:00	1	0	14	62	121	37	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	242	35	31	
12 PM	1	0	9	68	108	41	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231	35	31	
13:00	3	0	10	55	123	59	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257	36	32	
14:00	4	11	36	130	112	28	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	326	33	29		
15:00	1	6	39	116	127	34	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	328	33	29	
16:00	3	8	40	120	170	42	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	386	33	30	
17:00	6	20	44	124	140	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	364	33	28		
18:00	1	1	9	89	114	39	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	258	34	31	
19:00	0	1	2	40	96	34	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	183	36	32		
20:00	0	0	2	25	58	40	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	131	37	33	
21:00	0	1	0	16	41	42	9	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	112	38	34		
22:00	0	0	0	12	24	20	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	37	33	
23:00	0	0	2	6	12	20	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	41	36	
Total	58	63	280	1079	1685	692	97	17	1	3	0	0	0	0	0	0	0	0	0	0	0	0	7	3982				
%	1.5%	1.6%	7.0%	27.1%	42.3%	17.4%	2.4%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%					
AM Peak	07:00	07:00	07:00	07:00	08:00	09:00	06:00	00:00	09:00	09:00														09:00	08:00			
Vol.	16	5	34	74	121	56	8	1	1	1													1	254				
PM Peak	17:00	17:00	17:00	14:00	16:00	13:00	21:00	23:00		15:00														17:00	16:00			
Vol.	6	20	44	130	170	59	9	3		1													2	386				

Stats

15th Percentile :	24 MPH
50th Percentile :	30 MPH
85th Percentile :	35 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	2764
Percent in Pace :	69.4%
Number of Vehicles > 30 MPH :	2165
Percent of Vehicles > 30 MPH :	54.4%



PRECISION
D A T A
INDUSTRIES, LLC

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Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 D Speed
Site Code: MAX2014099.1

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 % ile	Ave Speed
11/29/ 18	0	1	0	1	8	13	5	0	0	0	0	0	0	28	39	35
01:00	0	0	0	0	1	2	1	0	0	0	0	0	0	4	41	37
02:00	0	0	0	1	4	1	0	0	0	0	0	0	0	6	34	32
03:00	0	0	0	0	1	2	0	0	0	0	0	0	0	3	37	35
04:00	0	0	0	0	3	3	2	0	0	0	0	0	0	8	41	36
05:00	0	0	0	5	19	11	1	1	0	0	0	0	0	37	37	33
06:00	4	0	4	11	37	34	9	2	0	0	0	0	0	101	38	33
07:00	10	8	32	86	77	17	1	0	0	0	0	0	1	232	32	28
08:00	0	3	15	65	112	42	7	1	0	1	0	0	0	246	35	31
09:00	7	1	7	44	96	49	7	0	0	0	0	0	0	211	36	31
10:00	0	1	8	51	101	40	10	0	0	0	0	0	1	212	36	32
11:00	4	2	8	54	112	61	4	0	0	1	0	0	1	247	36	32
12 PM	3	1	9	47	102	62	7	1	0	0	0	0	0	232	36	32
13:00	1	0	6	49	103	60	6	0	1	0	0	0	0	226	36	32
14:00	8	6	41	102	90	41	3	0	0	0	0	0	0	291	34	29
15:00	8	6	33	144	142	40	1	0	0	0	0	0	0	374	33	29
16:00	9	12	49	134	141	39	5	0	0	0	0	0	0	389	33	29
17:00	6	2	41	121	127	29	6	0	0	1	0	0	1	334	33	29
18:00	0	0	18	91	90	35	4	1	0	0	0	0	1	240	34	30
19:00	1	0	5	51	88	41	5	2	0	0	0	0	0	193	36	32
20:00	0	1	2	32	64	30	7	0	0	0	0	0	0	136	36	32
21:00	0	0	0	22	48	36	12	1	0	0	0	0	0	119	38	34
22:00	0	0	2	8	23	22	4	0	0	0	0	0	0	59	37	34
23:00	0	0	1	5	13	25	16	0	0	0	0	0	0	60	41	36
Total %	61 1.5%	44 1.1%	281 7.0%	1124 28.2%	1602 40.2%	735 18.4%	123 3.1%	9 0.2%	1 0.0%	3 0.1%	0 0.0%	0 0.0%	5 0.1%	3988		
AM Peak	07:00	07:00	07:00	07:00	08:00	11:00	10:00	06:00		08:00			07:00	11:00		
Vol.	10	8	32	86	112	61	10	2		1			1	247		
PM Peak	16:00	16:00	16:00	15:00	15:00	12:00	23:00	19:00	13:00	17:00			17:00	16:00		
Vol.	9	12	49	144	142	62	16	2	1	1			1	389		

Stats

15th Percentile :	24 MPH
50th Percentile :	30 MPH
85th Percentile :	35 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	2726
Percent in Pace :	68.4%
Number of Vehicles > 30 MPH :	2158
Percent of Vehicles > 30 MPH :	54.1%



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
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Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers
WB

186604 D Speed
Site Code: MAX2014099.1

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 % ile	Ave Speed
11/28/ 18	0	0	0	0	3	1	2	1	0	0	0	0	0	7	43	38
01:00	0	0	0	0	3	1	0	0	0	0	0	0	0	4	36	33
02:00	0	0	2	1	0	1	0	0	0	0	0	0	0	4	36	27
03:00	0	0	0	1	3	1	2	2	0	0	0	0	0	9	45	38
04:00	0	0	0	2	14	15	1	0	0	0	0	0	0	32	37	34
05:00	0	0	1	27	48	23	2	0	0	0	0	0	0	101	36	32
06:00	1	1	11	101	102	17	1	0	0	0	0	0	0	234	33	30
07:00	71	41	98	82	29	5	0	0	0	0	0	0	0	326	28	21
08:00	12	17	91	150	87	12	0	0	0	0	0	0	0	369	31	26
09:00	3	1	40	121	111	22	2	0	0	0	0	0	0	300	33	29
10:00	4	4	24	95	100	10	0	0	0	0	0	0	0	237	32	29
11:00	4	6	32	110	77	13	1	0	0	0	0	0	0	243	32	28
12 PM	0	0	25	112	68	8	1	0	0	0	0	0	0	214	32	28
13:00	0	1	21	115	68	11	1	0	0	0	0	0	0	217	32	29
14:00	9	25	63	104	42	1	0	0	0	0	0	0	0	244	29	25
15:00	4	17	70	117	53	5	0	0	0	0	0	0	0	266	30	26
16:00	2	3	49	115	26	3	0	0	0	0	0	0	0	198	28	26
17:00	1	8	67	110	20	6	0	0	0	0	0	0	0	212	28	26
18:00	0	5	61	91	38	3	0	0	0	0	0	0	0	198	30	26
19:00	0	2	13	49	36	10	0	0	0	0	0	0	0	110	33	29
20:00	0	1	6	25	28	5	0	0	0	0	0	0	0	65	33	29
21:00	0	0	3	18	33	2	0	0	0	0	0	0	0	56	33	30
22:00	0	3	7	8	28	6	1	0	0	0	0	0	0	53	33	30
23:00	0	0	2	10	8	8	0	0	0	0	0	0	0	28	36	31
Total	111	135	686	1564	1025	189	14	3	0	0	0	0	0	3727		
%	3.0%	3.6%	18.4%	42.0%	27.5%	5.1%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	08:00	09:00	05:00	00:00	03:00						08:00		
Vol.	71	41	98	150	111	23	2	2						369		
PM Peak	14:00	14:00	15:00	15:00	12:00	13:00	12:00							15:00		
Vol.	9	25	70	117	68	11	1							266		

Stats

15th Percentile :	21 MPH
50th Percentile :	26 MPH
85th Percentile :	32 MPH
95th Percentile :	34 MPH
Mean Speed(Average) :	27 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	2589
Percent in Pace :	69.5%
Number of Vehicles > 30 MPH :	1026
Percent of Vehicles > 30 MPH :	27.5%



PRECISION
D A T A
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WB

186604 D Speed
Site Code: MAX2014099.1

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 % ile	Ave Speed
11/29/ 18	0	0	0	2	1	0	1	0	0	0	0	0	0	4	41	32
01:00	0	0	0	1	0	1	0	0	0	0	0	0	0	2	37	32
02:00	0	0	0	0	1	1	1	0	0	0	0	0	0	3	41	37
03:00	0	0	0	1	1	3	1	0	0	0	0	0	0	6	39	35
04:00	0	0	0	3	10	5	3	0	0	0	0	0	0	21	38	34
05:00	2	2	0	20	56	17	6	0	0	0	0	0	0	103	36	32
06:00	2	0	13	79	94	19	3	0	0	0	0	0	0	210	33	30
07:00	31	34	80	125	36	4	0	0	0	0	0	0	0	310	28	23
08:00	0	3	72	188	143	11	1	0	0	0	0	0	0	418	32	28
09:00	0	1	38	128	129	18	0	0	0	0	0	0	0	314	32	29
10:00	1	9	33	92	83	15	1	0	0	0	0	0	0	234	32	28
11:00	1	5	14	102	89	17	1	0	0	0	0	0	0	229	33	29
12 PM	6	5	37	110	89	12	2	0	0	0	0	0	0	261	32	28
13:00	1	4	15	86	88	20	1	0	0	0	0	0	0	215	33	29
14:00	17	19	64	119	42	4	0	0	0	0	0	0	0	265	29	25
15:00	10	8	57	120	37	4	1	0	0	0	0	0	0	237	29	26
16:00	1	11	33	110	47	5	0	0	0	0	0	0	0	207	31	27
17:00	0	9	68	134	33	1	0	0	0	0	0	0	0	245	28	26
18:00	0	9	38	103	35	1	0	0	0	0	0	0	0	186	30	26
19:00	1	1	22	50	47	2	0	0	0	0	0	0	0	123	32	28
20:00	0	1	10	42	34	2	1	0	0	0	0	0	0	90	32	29
21:00	0	0	2	23	27	8	1	0	0	0	0	0	0	61	33	31
22:00	0	0	3	28	20	4	0	0	0	0	0	0	0	55	32	29
23:00	0	0	0	3	7	3	1	1	0	0	0	0	0	15	38	34
Total	73	121	599	1669	1149	177	25	1	0	0	0	0	0	3814		
%	1.9%	3.2%	15.7%	43.8%	30.1%	4.6%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	08:00	08:00	06:00	05:00							08:00		
Vol.	31	34	80	188	143	19	6							418		
PM Peak	14:00	14:00	17:00	17:00	12:00	13:00	12:00	23:00						14:00		
Vol.	17	19	68	134	89	20	2	1						265		

Stats

15th Percentile : 22 MPH
50th Percentile : 27 MPH
85th Percentile : 32 MPH
95th Percentile : 34 MPH

Mean Speed(Average) : 28 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 2818
Percent in Pace : 73.9%
Number of Vehicles > 30 MPH : 1122
Percent of Vehicles > 30 MPH : 29.4%



PRECISION
D A T A
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Dedham Avenue
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186604 D Volume
Site Code: MAX2014099.1

Start	EB		WB		Combin		11/28/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Wed
12:00	1	65	3	49	4	114		
12:15	2	66	1	58	3	124		
12:30	1	50	3	60	4	110		
12:45	9	50	0	47	9	97	445	
01:00	2	57	3	53	5	110		
01:15	3	73	0	49	3	122		
01:30	1	66	1	48	2	114		
01:45	0	61	0	67	0	128	474	
02:00	2	75	2	64	4	139		
02:15	1	73	0	52	1	125		
02:30	2	75	0	68	2	143		
02:45	0	103	2	60	2	163	570	
03:00	0	77	1	72	1	149		
03:15	0	80	3	63	3	143		
03:30	1	82	3	67	4	149		
03:45	5	89	2	64	7	153	594	
04:00	1	109	7	46	8	155		
04:15	4	101	3	58	7	159		
04:30	4	93	11	45	15	138		
04:45	2	83	11	49	13	132	584	
05:00	8	118	5	68	13	186		
05:15	6	85	20	48	26	133		
05:30	10	88	41	43	51	131		
05:45	8	73	35	53	43	126	576	
06:00	14	71	43	64	57	135		
06:15	20	70	54	46	74	116		
06:30	44	70	65	46	109	116		
06:45	27	47	72	42	99	89	456	
07:00	55	54	67	27	122	81		
07:15	45	37	73	25	118	62		
07:30	58	50	100	26	158	76		
07:45	67	42	86	32	153	74	293	
08:00	76	46	95	25	171	71		
08:15	61	30	103	11	164	41		
08:30	56	24	84	15	140	39		
08:45	61	31	87	14	148	45	196	
09:00	45	46	65	13	110	59		
09:15	56	24	88	15	144	39		
09:30	53	24	75	15	128	39		
09:45	64	18	72	13	136	31	168	
10:00	48	28	50	16	98	44		
10:15	44	15	59	15	103	30		
10:30	47	10	68	13	115	23		
10:45	38	7	60	9	98	16	113	
11:00	66	14	62	11	128	25		
11:15	46	20	64	6	110	26		
11:30	63	10	63	6	126	16		
11:45	67	8	54	5	121	13	80	
Total	1294	2688	1866	1861	3160	4549		
Percent	40.9%	59.1%	59.1%	40.9%				
Day Total		3982		3727		7709		
Peak	07:30	-	04:15	-	07:30	-	03:30	-
Vol.	262	-	395	-	384	-	616	-
P.H.F.	0.862	-	0.837	-	0.932	-	0.969	-



PRECISION
D A T A
INDUSTRIES, LLC

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

Dedham Avenue
east of School Street
City, State: Needham, MA
Client: GPI/N.Rogers

186604 D Volume
Site Code: MAX2014099.1

Start	EB		WB		Combin		11/29/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Thu
12:00	8	50	2	65	10	115		
12:15	6	68	1	70	7	138		
12:30	7	50	1	60	8	110		
12:45	7	64	0	66	7	130	493	
01:00	2	64	1	72	3	136		
01:15	0	38	1	42	1	80		
01:30	1	65	0	47	1	112		
01:45	1	59	0	54	1	113	441	
02:00	0	67	1	61	1	128		
02:15	4	66	1	71	5	137		
02:30	1	69	0	68	1	137		
02:45	1	89	1	65	2	154	556	
03:00	1	120	0	50	1	170		
03:15	0	91	2	60	2	151		
03:30	1	80	2	55	3	135		
03:45	1	83	2	72	3	155	611	
04:00	3	131	2	59	5	190		
04:15	1	100	4	49	5	149		
04:30	2	76	6	49	8	125		
04:45	2	82	9	50	11	132	596	
05:00	3	95	12	69	15	164		
05:15	8	89	18	63	26	152		
05:30	10	72	31	61	41	133		
05:45	16	78	42	52	58	130	579	
06:00	8	68	46	51	54	119		
06:15	22	54	45	47	67	101		
06:30	38	64	67	42	105	106		
06:45	33	54	52	46	85	100	426	
07:00	47	65	57	32	104	97		
07:15	49	49	68	36	117	85		
07:30	59	36	78	33	137	69		
07:45	77	43	107	22	184	65	316	
08:00	69	38	104	30	173	68		
08:15	65	33	112	23	177	56		
08:30	52	31	96	20	148	51		
08:45	60	34	106	17	166	51	226	
09:00	67	32	80	18	147	50		
09:15	45	38	77	13	122	51		
09:30	39	25	87	17	126	42		
09:45	60	24	70	13	130	37	180	
10:00	56	23	74	18	130	41		
10:15	52	15	60	15	112	30		
10:30	58	16	42	13	100	29		
10:45	46	5	58	9	104	14	114	
11:00	53	18	52	5	105	23		
11:15	64	24	61	3	125	27		
11:30	61	10	58	6	119	16		
11:45	69	8	58	1	127	9	75	
Total	1335	2653	1854	1960	3189	4613		
Percent	41.9%	57.5%	58.1%	42.5%				
Day Total		3988		3814		7802		
Peak	07:30	-	03:30	-	07:45	-	03:15	-
Vol.	270	-	394	-	419	-	631	-
P.H.F.	0.877	-	0.752	-	0.935	-	0.830	-



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Great Plain Avenue
just east of Ridgeway Avenue
City, State: Needham, MA
Client: GPI/N.Rogers
WB

186604 E Class
Site Code: MAX2017099.1

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
11/28/1														
8	0	4	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	4	1	1	0	0	0	0	0	0	0	0	0	6
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10
05:00	0	29	4	0	0	0	0	0	0	0	0	0	0	33
06:00	2	93	19	0	4	0	1	0	0	0	0	0	0	119
07:00	5	340	33	1	6	0	40	1	0	0	0	0	0	386
08:00	0	350	55	2	4	0	0	2	0	0	0	0	0	413
09:00	1	228	32	0	6	0	0	0	0	0	0	0	0	267
10:00	1	186	36	2	8	1	0	1	0	0	0	0	0	235
11:00	0	206	48	2	4	2	0	1	0	0	0	0	0	263
12 PM	0	225	34	0	2	1	0	0	0	0	0	0	0	262
13:00	2	234	36	0	6	1	0	0	0	0	0	0	0	279
14:00	1	298	37	3	3	0	0	2	0	0	0	0	0	344
15:00	2	339	35	2	3	2	0	0	0	0	0	0	0	383
16:00	2	315	21	2	2	0	0	1	0	0	0	0	0	343
17:00	0	318	25	0	2	0	0	1	0	0	0	0	0	346
18:00	2	321	21	2	1	1	0	0	0	0	0	0	0	348
19:00	0	202	9	0	1	0	0	0	0	0	0	0	0	212
20:00	0	111	6	0	0	0	0	0	0	0	0	0	0	117
21:00	0	62	4	0	0	0	0	0	0	0	0	0	0	66
22:00	0	38	2	0	0	0	0	0	0	0	0	0	0	40
23:00	0	12	0	0	0	0	0	0	0	0	0	0	0	12
Total	18	3927	460	17	52	8	1	9	0	0	0	0	0	4492
Percent	0.4%	87.4%	10.2%	0.4%	1.2%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	10:00	11:00	06:00	08:00						08:00
Vol.	5	350	55	2	8	2	1	2						413
PM Peak	13:00	15:00	14:00	14:00	13:00	15:00		14:00						15:00
Vol.	2	339	37	3	6	2		2						383



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11/29/1														
8	0	2	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	3	1	2	0	0	0	0	0	0	0	0	0	6
04:00	0	5	3	0	1	0	0	0	0	0	0	0	0	9
05:00	0	36	4	0	0	0	0	0	0	0	0	0	0	40
06:00	0	99	21	0	2	1	0	0	0	0	0	0	0	123
07:00	4	330	36	1	6	0	0	1	0	0	0	0	0	378
08:00	4	352	39	4	4	1	0	0	1	0	0	0	0	405
09:00	1	210	52	1	5	1	0	1	0	0	0	0	0	271
10:00	0	220	42	1	9	0	0	2	0	0	0	0	0	274
11:00	1	218	39	2	2	0	0	1	0	0	0	0	0	263
12 PM	0	257	33	1	2	0	0	0	0	0	0	0	0	293
13:00	0	234	29	2	4	0	0	0	0	0	0	0	0	269
14:00	1	309	40	2	7	0	0	4	0	0	0	0	0	363
15:00	3	298	33	1	3	0	1	2	0	0	0	0	0	341
16:00	2	288	28	0	3	0	0	0	0	0	0	0	0	321
17:00	0	354	29	1	0	0	0	0	0	0	0	0	0	384
18:00	0	270	15	0	1	0	0	0	0	0	0	0	0	286
19:00	0	195	7	0	0	0	0	0	0	0	0	0	0	202
20:00	0	163	12	0	1	0	0	0	0	0	0	0	0	176
21:00	0	99	6	0	0	0	0	0	0	0	0	0	0	105
22:00	0	44	0	0	0	0	0	0	0	0	0	0	0	44
23:00	0	22	2	0	0	0	0	0	0	0	0	0	0	24
Total	16	4012	471	18	50	3	1	11	1	0	0	0	0	4583
Percent	0.3%	87.5%	10.3%	0.4%	1.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	09:00	08:00	10:00	06:00		10:00	08:00					08:00
Vol.	4	352	52	4	9	1		2	1					405
PM Peak	15:00	17:00	14:00	13:00	14:00		15:00	14:00						17:00
Vol.	3	354	40	2	7		1	4						384



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186604 E Class
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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
11/28/1														
8	0	3	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	4	0	0	1	0	0	0	0	0	0	0	0	5
05:00	0	19	5	0	0	0	0	0	0	0	0	0	0	24
06:00	0	87	14	2	2	0	0	0	0	0	0	0	0	105
07:00	3	264	16	4	3	1	1	0	0	0	0	0	0	292
08:00	3	238	31	3	3	0	0	1	0	0	0	0	0	279
09:00	2	174	37	0	10	0	0	0	0	0	0	0	0	223
10:00	0	150	34	1	7	0	0	0	0	0	0	0	0	192
11:00	1	201	27	1	6	0	0	0	0	0	0	0	0	236
12 PM	2	231	30	0	10	0	0	1	0	0	0	0	0	274
13:00	0	188	23	1	5	1	0	0	0	0	0	0	0	218
14:00	2	286	44	8	5	1	0	0	0	0	0	0	0	346
15:00	2	377	40	1	6	0	0	0	0	0	0	0	0	426
16:00	0	332	31	0	1	0	0	2	0	0	0	0	0	366
17:00	0	353	18	1	7	0	0	0	0	0	0	0	0	379
18:00	3	290	9	0	2	0	0	0	0	0	0	0	0	304
19:00	0	224	15	0	2	0	0	0	0	0	0	0	0	241
20:00	0	133	7	0	2	0	0	0	0	0	0	0	0	142
21:00	0	85	3	0	0	0	0	0	0	0	0	0	0	88
22:00	0	34	4	0	0	0	0	0	0	0	0	0	0	38
23:00	0	14	0	0	0	0	0	0	0	0	0	0	0	14
Total	18	3691	388	22	72	3	1	4	0	0	0	0	0	4199
Percent	0.4%	87.9%	9.2%	0.5%	1.7%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	09:00	07:00	09:00	07:00	07:00	08:00						07:00
Vol.	3	264	37	4	10	1	1	1						292
PM Peak	18:00	15:00	14:00	14:00	12:00	13:00		16:00						15:00
Vol.	3	377	44	8	10	1		2						426



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11/29/1														
8	0	5	1	0	1	0	0	0	0	0	0	0	0	7
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	1	1	2	0	0	0	0	0	0	0	0	6
05:00	0	23	6	0	0	0	0	0	0	0	0	0	0	29
06:00	0	88	7	2	1	0	0	0	0	0	0	0	0	98
07:00	4	280	32	1	2	2	0	2	0	0	0	0	0	323
08:00	2	240	33	2	5	0	0	0	0	0	0	0	0	282
09:00	3	201	40	0	4	0	0	0	0	0	0	0	0	248
10:00	1	170	29	1	6	0	0	0	0	0	0	0	0	207
11:00	3	191	39	4	8	1	0	2	1	0	0	0	0	249
12 PM	2	221	32	1	7	0	0	0	0	0	0	0	0	263
13:00	0	219	29	0	2	0	0	1	0	0	0	0	0	251
14:00	2	295	35	8	5	0	0	2	0	0	0	0	0	347
15:00	3	292	28	2	4	1	0	0	0	0	0	0	0	330
16:00	2	306	32	0	5	0	0	1	0	0	0	0	0	346
17:00	0	345	28	0	5	0	0	0	0	0	0	0	0	378
18:00	2	302	25	2	1	0	0	0	0	0	0	0	0	332
19:00	0	197	6	0	0	0	0	0	0	0	0	0	0	203
20:00	0	198	9	0	2	0	0	0	0	0	0	0	0	209
21:00	0	121	5	0	0	0	0	0	0	0	0	0	0	126
22:00	0	43	1	0	0	0	0	0	0	0	0	0	0	44
23:00	0	15	0	0	0	0	0	0	0	0	0	0	0	15
Total	24	3756	419	24	60	4	0	8	1	0	0	0	0	4296
Percent	0.6%	87.4%	9.8%	0.6%	1.4%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	09:00	11:00	11:00	07:00		07:00	11:00					07:00
Vol.	4	280	40	4	8	2		2	1					323
PM Peak	15:00	17:00	14:00	14:00	12:00	15:00		14:00						17:00
Vol.	3	345	35	8	7	1		2						378



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186604 E Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed
11/28/ 18	0	0	0	0	3	1	0	0	0	0	0	0	0	4	36	33
01:00	0	0	0	1	5	0	0	0	0	0	0	0	0	6	33	31
02:00	0	0	0	0	0	2	1	0	0	0	0	0	0	3	41	39
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	32
04:00	0	1	0	2	4	1	2	0	0	0	0	0	0	10	40	32
05:00	0	2	1	5	16	8	1	0	0	0	0	0	0	33	36	32
06:00	19	9	7	28	49	6	1	0	0	0	0	0	0	119	32	26
07:00	51	16	72	146	91	8	0	0	0	0	0	0	2	386	31	24
08:00	34	24	62	169	116	5	2	0	0	0	0	0	1	413	31	26
09:00	14	15	40	92	89	16	0	0	0	0	0	0	1	267	32	27
10:00	19	8	27	76	88	16	1	0	0	0	0	0	0	235	32	27
11:00	16	11	27	104	91	13	0	0	0	0	0	0	1	263	32	27
12 PM	11	21	19	99	102	8	1	0	0	0	0	0	1	262	32	27
13:00	13	9	13	103	110	27	4	0	0	0	0	0	0	279	33	29
14:00	14	21	46	151	92	16	1	1	0	0	0	0	2	344	32	27
15:00	32	18	44	181	92	14	2	0	0	0	0	0	0	383	31	26
16:00	25	7	41	158	100	10	2	0	0	0	0	0	0	343	32	27
17:00	28	7	45	164	91	9	1	1	0	0	0	0	0	346	31	26
18:00	32	13	57	147	91	7	0	0	1	0	0	0	0	348	31	26
19:00	9	6	13	61	99	21	3	0	0	0	0	0	0	212	33	29
20:00	8	1	4	42	50	12	0	0	0	0	0	0	0	117	33	29
21:00	1	2	0	17	34	12	0	0	0	0	0	0	0	66	34	31
22:00	1	1	2	9	21	6	0	0	0	0	0	0	0	40	34	30
23:00	2	0	0	1	6	3	0	0	0	0	0	0	0	12	36	29
Total	329	192	520	1756	1441	221	22	2	1	0	0	0	8	4492		
%	7.3%	4.3%	11.6%	39.1%	32.1%	4.9%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%			
AM Peak	07:00	08:00	07:00	08:00	08:00	09:00	04:00						07:00	08:00		
Vol.	51	24	72	169	116	16	2						2	413		
PM Peak	15:00	12:00	18:00	15:00	13:00	13:00	13:00	14:00	18:00				14:00	15:00		
Vol.	32	21	57	181	110	27	4	1	1				2	383		

Stats

15th Percentile : 20 MPH
50th Percentile : 27 MPH
85th Percentile : 32 MPH
95th Percentile : 34 MPH

Mean Speed(Average) : 27 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 3197
Percent in Pace : 71.2%
Number of Vehicles > 25 MPH : 3100
Percent of Vehicles > 25 MPH : 69.0%



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186604 E Speed
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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 % ile	Ave Speed
11/29/ 18	0	0	0	1	1	0	0	0	0	0	0	0	0	2	32	30
01:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	28	27
02:00	0	0	0	0	0	1	2	0	0	0	0	0	0	3	42	40
03:00	0	1	0	3	2	0	0	0	0	0	0	0	0	6	31	27
04:00	0	0	0	1	4	2	2	0	0	0	0	0	0	9	40	35
05:00	0	1	1	9	16	12	1	0	0	0	0	0	0	40	36	32
06:00	9	7	6	37	49	15	0	0	0	0	0	0	0	123	33	28
07:00	41	31	65	136	95	8	1	0	0	0	0	0	1	378	31	25
08:00	41	25	69	150	100	14	3	1	0	0	0	0	2	405	31	25
09:00	25	11	17	88	107	23	0	0	0	0	0	0	0	271	33	27
10:00	18	11	31	105	94	15	0	0	0	0	0	0	0	274	32	27
11:00	16	10	24	106	83	21	2	0	0	0	0	0	1	263	33	27
12 PM	16	8	29	117	103	17	1	0	0	0	1	0	1	293	32	28
13:00	10	7	20	119	107	6	0	0	0	0	0	0	0	269	32	28
14:00	30	7	33	158	120	13	1	0	0	0	0	0	1	363	32	27
15:00	27	5	22	145	123	15	4	0	0	0	0	0	0	341	32	27
16:00	12	11	25	143	120	10	0	0	0	0	0	0	0	321	32	28
17:00	19	10	42	175	125	12	0	0	0	0	1	0	0	384	32	27
18:00	13	5	33	104	111	18	1	0	1	0	0	0	0	286	32	28
19:00	4	2	0	50	107	31	4	1	0	0	0	0	3	202	34	31
20:00	3	0	6	60	90	15	2	0	0	0	0	0	0	176	33	30
21:00	7	0	3	23	50	18	4	0	0	0	0	0	0	105	35	30
22:00	0	1	1	13	22	6	1	0	0	0	0	0	0	44	34	31
23:00	0	0	0	2	18	2	1	1	0	0	0	0	0	24	35	33
Total %	291 6.3%	153 3.3%	427 9.3%	1746 38.1%	1647 35.9%	274 6.0%	30 0.7%	3 0.1%	1 0.0%	0 0.0%	2 0.0%	0 0.0%	9 0.2%	4583		
AM Peak	07:00	07:00	08:00	08:00	09:00	09:00	08:00	08:00					08:00	08:00		
Vol.	41	31	69	150	107	23	3	1					2	405		
PM Peak	14:00	16:00	17:00	17:00	17:00	19:00	15:00	19:00	18:00		12:00		19:00	17:00		
Vol.	30	11	42	175	125	31	4	1	1		1		3	384		

Stats

15th Percentile : 21 MPH
50th Percentile : 28 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 27 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 3393
Percent in Pace : 74.0%
Number of Vehicles > 25 MPH : 3363
Percent of Vehicles > 25 MPH : 73.4%



PRECISION
D A T A
INDUSTRIES, LLC

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

Great Plain Avenue
just east of Ridgeway Avenue
City, State: Needham, MA
Client: GPI/N.Rogers

186604 E Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed		
11/28/ 18	0	0	0	2	0	1	0	0	0	0	0	0	0	3	36	30		
01:00	0	0	0	1	1	1	0	0	0	0	0	0	0	3	36	32		
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*		
03:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	28	27		
04:00	0	0	0	0	2	1	1	1	0	0	0	0	0	5	45	38		
05:00	0	0	1	5	13	5	0	0	0	0	0	0	0	24	35	32		
06:00	10	3	7	40	35	9	0	1	0	0	0	0	0	105	33	27		
07:00	19	28	92	106	37	9	1	0	0	0	0	0	0	292	29	24		
08:00	24	10	58	123	58	6	0	0	0	0	0	0	0	279	30	25		
09:00	15	9	32	65	83	17	2	0	0	0	0	0	0	223	33	27		
10:00	7	6	13	52	85	28	1	0	0	0	0	0	0	192	34	29		
11:00	6	3	13	81	110	23	0	0	0	0	0	0	0	236	33	29		
12 PM	16	7	29	82	102	36	1	0	1	0	0	0	0	274	33	28		
13:00	10	1	7	69	99	31	1	0	0	0	0	0	0	218	33	30		
14:00	14	10	49	157	86	28	1	0	0	0	0	1	0	346	32	27		
15:00	22	13	50	189	129	20	3	0	0	0	0	0	0	426	32	27		
16:00	11	7	35	177	118	16	2	0	0	0	0	0	0	366	32	28		
17:00	18	7	58	185	98	11	2	0	0	0	0	0	0	379	31	27		
18:00	24	17	61	127	60	14	1	0	0	0	0	0	0	304	31	25		
19:00	10	2	18	94	93	22	2	0	0	0	0	0	0	241	33	29		
20:00	6	1	6	45	59	25	0	0	0	0	0	0	0	142	34	30		
21:00	4	1	1	23	44	14	1	0	0	0	0	0	0	88	34	30		
22:00	5	0	2	5	13	11	2	0	0	0	0	0	0	38	37	30		
23:00	1	0	0	2	6	4	1	0	0	0	0	0	0	14	37	32		
Total %	222 5.3%	125 3.0%	532 12.7%	1631 38.8%	1331 31.7%	332 7.9%	22 0.5%	2 0.0%	1 0.0%	0 0.0%	0 0.0%	1 0.0%	0 0.0%	4199				
AM Peak	08:00	07:00	07:00	08:00	11:00	10:00	09:00	04:00								07:00		
Vol.	24	28	92	123	110	28	2	1								292		
PM Peak	18:00	18:00	18:00	15:00	15:00	12:00	15:00	12:00			14:00			15:00				
Vol.	24	17	61	189	129	36	3	1			1			426				

Stats

15th Percentile : 21 MPH
50th Percentile : 27 MPH
85th Percentile : 32 MPH
95th Percentile : 36 MPH

Mean Speed(Average) : 28 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 2962
Percent in Pace : 70.5%
Number of Vehicles > 25 MPH : 2994
Percent of Vehicles > 25 MPH : 71.3%



PRECISION
D A T A
INDUSTRIES, LLC

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Office: 508-875-0100 Fax: 508-875-0118
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Great Plain Avenue
just east of Ridgeway Avenue
City, State: Needham, MA
Client: GPI/N.Rogers

186604 E Speed
Site Code: MAX2017099.1

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 % ile	Ave Speed			
11/29/ 18	0	0	0	1	3	2	1	0	0	0	0	0	0	7	38	34			
01:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	28	27			
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	32			
03:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	28	27			
04:00	0	0	0	1	3	0	2	0	0	0	0	0	0	6	41	34			
05:00	0	0	0	4	14	6	5	0	0	0	0	0	0	29	39	34			
06:00	8	1	3	28	38	20	0	0	0	0	0	0	0	98	35	29			
07:00	31	60	118	83	24	6	1	0	0	0	0	0	0	323	27	22			
08:00	25	13	70	116	48	8	1	1	0	0	0	0	0	282	30	25			
09:00	15	3	20	82	97	29	2	0	0	0	0	0	0	248	33	29			
10:00	17	1	15	66	76	28	4	0	0	0	0	0	0	207	34	28			
11:00	11	6	26	89	87	29	1	0	0	0	0	0	0	249	33	28			
12 PM	9	4	19	83	105	38	5	0	0	0	0	0	0	263	34	30			
13:00	4	0	20	92	91	38	5	1	0	0	0	0	0	251	34	30			
14:00	10	6	49	149	116	15	2	0	0	0	0	0	0	347	32	28			
15:00	14	7	48	103	131	24	3	0	0	0	0	0	0	330	33	28			
16:00	9	6	32	136	133	26	4	0	0	0	0	0	0	346	33	29			
17:00	14	9	51	172	123	9	0	0	0	0	0	0	0	378	32	27			
18:00	19	13	60	125	100	14	1	0	0	0	0	0	0	332	32	27			
19:00	10	0	2	63	95	31	2	0	0	0	0	0	0	203	34	30			
20:00	4	1	6	72	103	21	2	0	0	0	0	0	0	209	33	30			
21:00	1	1	2	25	76	19	2	0	0	0	0	0	0	126	34	31			
22:00	0	1	0	9	20	12	2	0	0	0	0	0	0	44	37	32			
23:00	0	1	0	5	5	4	0	0	0	0	0	0	0	15	36	31			
Total %	201 4.7%	133 3.1%	541 12.6%	1506 35.1%	1489 34.7%	379 8.8%	45 1.0%	2 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	4296					
AM Peak	07:00	07:00	07:00	08:00	09:00	09:00	05:00	08:00									07:00		
Vol.	31	60	118	116	97	29	5	1									323		
PM Peak	18:00	18:00	18:00	17:00	16:00	12:00	12:00	13:00									17:00		
Vol.	19	13	60	172	133	38	5	1									378		

Stats

15th Percentile :	21 MPH
50th Percentile :	28 MPH
85th Percentile :	33 MPH
95th Percentile :	36 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	2995
Percent in Pace :	69.7%
Number of Vehicles > 25 MPH :	3120
Percent of Vehicles > 25 MPH :	72.6%



PRECISION
D A T A
INDUSTRIES, LLC

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Great Plain Avenue
just east of Ridgeway Avenue
City, State: Needham, MA
Client: GPI/N.Rogers

186604 E Volume
Site Code: MAX2017099.1

Start	WB				EB				Combin ed		11/28/20 18 Wed	
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.	
12:00	2		60		2		72		4		132	
12:15	1		61		0		70		1		131	
12:30	1		66		0		60		1		126	
12:45	0	4	75	262	1	3	72	274	1	7	147	536
01:00	4		63		2		42		6		105	
01:15	2		74		0		49		2		123	
01:30	0		68		0		59		0		127	
01:45	0	6	74	279	1	3	68	218	1	9	142	497
02:00	1		84		0		62		1		146	
02:15	1		94		0		70		1		164	
02:30	0		64		0		104		0		168	
02:45	1	3	102	344	0	0	110	346	1	3	212	690
03:00	0		93		0		108		0		201	
03:15	0		106		0		104		0		210	
03:30	0		84		0		114		0		198	
03:45	1	1	100	383	1	1	100	426	2	2	200	809
04:00	2		93		0		84		2		177	
04:15	3		89		0		115		3		204	
04:30	2		95		0		71		2		166	
04:45	3	10	66	343	5	5	96	366	8	15	162	709
05:00	3		77		4		107		7		184	
05:15	2		94		4		95		6		189	
05:30	8		77		6		94		14		171	
05:45	20	33	98	346	10	24	83	379	30	57	181	725
06:00	16		102		15		98		31		200	
06:15	24		81		16		71		40		152	
06:30	26		77		33		80		59		157	
06:45	53	119	88	348	41	105	55	304	94	224	143	652
07:00	71		50		50		57		121		107	
07:15	95		54		76		72		171		126	
07:30	105		51		94		42		199		93	
07:45	115	386	57	212	72	292	70	241	187	678	127	453
08:00	136		39		84		48		220		87	
08:15	123		30		70		29		193		59	
08:30	76		23		65		32		141		55	
08:45	78	413	25	117	60	279	33	142	138	692	58	259
09:00	58		22		50		27		108		49	
09:15	78		19		57		24		135		43	
09:30	62		9		61		26		123		35	
09:45	69	267	16	66	55	223	11	88	124	490	27	154
10:00	63		11		51		11		114		22	
10:15	60		11		40		16		100		27	
10:30	54		7		48		4		102		11	
10:45	58	235	11	40	53	192	7	38	111	427	18	78
11:00	52		4		61		7		113		11	
11:15	79		4		54		4		133		8	
11:30	66		1		57		2		123		3	
11:45	66	263	3	12	64	236	1	14	130	499	4	26
Total	1740		2752		1363		2836		3103		5588	
Percent	56.1%		49.2%		43.9%		50.8%					
Day Total			4492				4199				8691	
Peak	07:30	-	02:45	-	07:15	-	02:45	-	07:30	-	02:45	-
Vol.	479	-	385	-	326	-	436	-	799	-	821	-
P.H.F.	0.881		0.908		0.867		0.956		0.908		0.968	



PRECISION
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INDUSTRIES, LLC

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Great Plain Avenue
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Client: GPI/N.Rogers

186604 E Volume
Site Code: MAX2017099.1

Start	WB		EB		Combin		ed		11/29/20	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	18	Thu
12:00	1	76	4	62	5	138				
12:15	0	78	1	66	1	144				
12:30	0	81	1	69	1	150				
12:45	1	58	1	66	2	124	556			
01:00	0	79	0	63	0	142				
01:15	1	64	0	59	1	123				
01:30	0	65	0	58	0	123				
01:45	0	61	1	71	1	132	520			
02:00	0	85	0	64	0	149				
02:15	1	84	0	69	1	153				
02:30	0	81	1	104	1	185				
02:45	2	113	0	110	2	223	710			
03:00	1	86	0	102	1	188				
03:15	0	102	0	66	0	168				
03:30	4	87	0	94	4	181				
03:45	1	66	1	68	2	134	671			
04:00	0	70	0	85	0	155				
04:15	2	72	4	85	6	157				
04:30	5	80	0	91	5	171				
04:45	2	99	2	85	4	184	667			
05:00	1	86	6	110	7	196				
05:15	5	98	3	87	8	185				
05:30	13	103	6	79	19	182				
05:45	21	97	14	102	35	199	762			
06:00	27	71	18	104	45	175				
06:15	16	79	13	92	29	171				
06:30	30	68	21	76	51	144				
06:45	50	68	46	60	96	128	618			
07:00	70	50	42	58	112	108				
07:15	90	65	73	53	163	118				
07:30	121	45	112	57	233	102				
07:45	97	42	96	35	193	77	405			
08:00	105	39	82	65	187	104				
08:15	124	41	56	62	180	103				
08:30	74	43	63	39	137	82				
08:45	102	53	81	43	183	96	385			
09:00	72	39	69	42	141	81				
09:15	72	23	55	36	127	59				
09:30	72	26	65	28	137	54				
09:45	55	17	59	20	114	37	231			
10:00	68	8	47	15	115	23				
10:15	68	15	47	13	115	28				
10:30	69	11	53	8	122	19				
10:45	69	10	60	8	129	18	88			
11:00	59	5	63	7	122	12				
11:15	63	7	57	4	120	11				
11:30	64	8	69	1	133	9				
11:45	77	4	60	3	137	7	39			
Total	1775	2808	1452	2844	3227	5652				
Percent	55.0%	49.7%	45.0%	50.3%						
Day Total		4583		4296		8879				
Peak	07:30	-	02:45	-	07:15	-	02:15	-	07:30	-
Vol.	447	-	388	-	363	-	385	-	793	-
P.H.F.	0.901	-	0.858	-	0.810	-	0.875	-	0.851	-



PRECISION
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Highland Avenue
High School North Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 C Path
Site Code : 2017099
Start Date : 11/29/2018
Page No : 1

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway			
From North			
Start Time	EB	WB	Int. Total
06:00 AM	0	0	0
06:15 AM	0	0	0
06:30 AM	0	0	0
06:45 AM	0	0	0
Total	0	0	0
07:00 AM	0	0	0
07:15 AM	0	0	0
07:30 AM	0	0	0
07:45 AM	0	1	1
Total	0	1	1
08:00 AM	0	0	0
08:15 AM	0	0	0
08:30 AM	0	0	0
08:45 AM	0	0	0
Total	0	0	0
09:00 AM	0	0	0
09:15 AM	0	0	0
09:30 AM	0	0	0
09:45 AM	0	0	0
Total	0	0	0
10:00 AM	0	0	0
10:15 AM	0	0	0
10:30 AM	0	1	1
10:45 AM	0	0	0
Total	0	1	1
11:00 AM	0	0	0
11:15 AM	0	2	2
11:30 AM	0	3	3
11:45 AM	1	2	3
Total	1	7	8
12:00 PM	1	0	1
12:15 PM	0	10	10
12:30 PM	3	0	3
12:45 PM	0	0	0
Total	4	10	14
01:00 PM	0	0	0
01:15 PM	0	0	0
01:30 PM	0	0	0
01:45 PM	0	1	1
Total	0	1	1
02:00 PM	0	0	0
02:15 PM	0	0	0
02:30 PM	0	2	2
02:45 PM	1	5	6
Total	1	7	8
03:00 PM	1	1	2
03:15 PM	0	0	0
03:30 PM	0	1	1
03:45 PM	1	1	2
Total	2	3	5



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Highland Avenue
High School North Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 C Path
Site Code : 2017099
Start Date : 11/29/2018
Page No : 2

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway From North			
Start Time	EB	WB	Int. Total
04:00 PM	0	3	3
04:15 PM	0	0	0
04:30 PM	0	0	0
04:45 PM	0	0	0
Total	0	3	3
05:00 PM	0	0	0
05:15 PM	0	0	0
05:30 PM	0	0	0
05:45 PM	0	0	0
Total	0	0	0
Grand Total	8	33	41
Apprch %	19.5	80.5	
Total %	19.5	80.5	
Pedestrians	8	33	41
% Pedestrians	100	100	100
Bicycles	0	0	0
% Bicycles	0	0	0

	Highland Avenue at North Stairway From North			
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 07:00 AM				
07:00 AM	0	0	0	0
07:15 AM	0	0	0	0
07:30 AM	0	0	0	0
07:45 AM	0	1	1	1
Total Volume	0	1	1	1
% App. Total	0	100		
PHF	.000	.250	.250	.250
Pedestrians	0	1	1	1
% Pedestrians	0	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 11:30 AM

11:30 AM	0	3	3	3
11:45 AM	1	2	3	3
12:00 PM	1	0	1	1
12:15 PM	0	10	10	10
Total Volume	2	15	17	17
% App. Total	11.8	88.2		
PHF	.500	.375	.425	.425
Pedestrians	2	15	17	17
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0



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Highland Avenue
High School North Stairway
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File Name : 186604 C Path
Site Code : 2017099
Start Date : 11/29/2018
Page No : 3

Highland Avenue at North Stairway From North				
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 02:15 PM				
02:15 PM	0	0	0	0
02:30 PM	0	2	2	2
02:45 PM	1	5	6	6
03:00 PM	1	1	2	2
Total Volume	2	8	10	10
% App. Total	20	80		
PHF	.500	.400	.417	.417
Pedestrians	2	8	10	10
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0



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Highland Avenue
High School North Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 CC Path
Site Code : 2017099
Start Date : 12/1/2018
Page No : 1

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway			
From North			
Start Time	EB	WB	Int. Total
06:00 AM	0	0	0
06:15 AM	0	0	0
06:30 AM	0	0	0
06:45 AM	0	0	0
Total	0	0	0
07:00 AM	0	0	0
07:15 AM	0	0	0
07:30 AM	0	0	0
07:45 AM	0	0	0
Total	0	0	0
08:00 AM	0	0	0
08:15 AM	0	0	0
08:30 AM	0	0	0
08:45 AM	0	0	0
Total	0	0	0
09:00 AM	0	1	1
09:15 AM	0	0	0
09:30 AM	0	1	1
09:45 AM	0	0	0
Total	0	2	2
10:00 AM	0	0	0
10:15 AM	0	0	0
10:30 AM	0	0	0
10:45 AM	0	0	0
Total	0	0	0
11:00 AM	0	0	0
11:15 AM	0	0	0
11:30 AM	0	0	0
11:45 AM	0	0	0
Total	0	0	0
12:00 PM	0	0	0
12:15 PM	0	0	0
12:30 PM	0	0	0
12:45 PM	1	1	2
Total	1	1	2
01:00 PM	0	0	0
01:15 PM	1	0	1
01:30 PM	0	0	0
01:45 PM	0	0	0
Total	1	0	1
02:00 PM	0	0	0
02:15 PM	0	5	5
02:30 PM	0	0	0
02:45 PM	0	0	0
Total	0	5	5
03:00 PM	0	0	0
03:15 PM	0	0	0
03:30 PM	0	0	0
03:45 PM	0	0	0
Total	0	0	0



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Highland Avenue
High School North Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 CC Path
Site Code : 2017099
Start Date : 12/1/2018
Page No : 2

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway From North			
Start Time	EB	WB	Int. Total
04:00 PM	0	0	0
04:15 PM	0	0	0
04:30 PM	0	0	0
04:45 PM	0	0	0
Total	0	0	0
05:00 PM	0	0	0
05:15 PM	0	0	0
05:30 PM	0	0	0
05:45 PM	0	0	0
Total	0	0	0
Grand Total	2	8	10
Apprch %	20	80	
Total %	20	80	
Pedestrians	2	7	9
% Pedestrians	100	87.5	90
Bicycles	0	1	1
% Bicycles	0	12.5	10

	Highland Avenue at North Stairway From North			
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 08:45 AM				
08:45 AM	0	0	0	0
09:00 AM	0	1	1	1
09:15 AM	0	0	0	0
09:30 AM	0	1	1	1
Total Volume	0	2	2	2
% App. Total	0	100		
PHF	.000	.500	.500	.500
Pedestrians	0	2	2	2
% Pedestrians	0	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:30 PM

12:30 PM	0	0	0	0
12:45 PM	1	1	2	2
01:00 PM	0	0	0	0
01:15 PM	1	0	1	1
Total Volume	2	1	3	3
% App. Total	66.7	33.3		
PHF	.500	.250	.375	.375
Pedestrians	2	1	3	3
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Highland Avenue
 High School North Stairway
 City, State: Needham, MA
 Client: GPI/ N. Rogers



File Name : 186604 CC Path
 Site Code : 2017099
 Start Date : 12/1/2018
 Page No : 3

	Highland Avenue at North Stairway From North			
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 02:00 PM				
02:00 PM	0	0	0	0
02:15 PM	0	5	5	5
02:30 PM	0	0	0	0
02:45 PM	0	0	0	0
Total Volume	0	5	5	5
% App. Total	0	100		
PHF	.000	.250	.250	.250
Pedestrians	0	4	4	4
% Pedestrians	0	80.0	80.0	80.0
Bicycles	0	1	1	1
% Bicycles	0	20.0	20.0	20.0



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Highland Avenue
High School South Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 D Path
Site Code : 2017099
Start Date : 11/29/2018
Page No : 1

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway From North			
Start Time	EB	WB	Int. Total
06:00 AM	0	0	0
06:15 AM	0	0	0
06:30 AM	0	0	0
06:45 AM	0	0	0
Total	0	0	0
07:00 AM	0	0	0
07:15 AM	0	2	2
07:30 AM	0	1	1
07:45 AM	4	0	4
Total	4	3	7
08:00 AM	0	0	0
08:15 AM	0	0	0
08:30 AM	0	0	0
08:45 AM	0	0	0
Total	0	0	0
09:00 AM	0	2	2
09:15 AM	0	0	0
09:30 AM	0	0	0
09:45 AM	0	0	0
Total	0	2	2
10:00 AM	0	0	0
10:15 AM	0	0	0
10:30 AM	0	0	0
10:45 AM	3	0	3
Total	3	0	3
11:00 AM	0	0	0
11:15 AM	0	5	5
11:30 AM	0	0	0
11:45 AM	4	1	5
Total	4	6	10
12:00 PM	0	0	0
12:15 PM	0	5	5
12:30 PM	0	0	0
12:45 PM	0	1	1
Total	0	6	6
01:00 PM	0	0	0
01:15 PM	0	1	1
01:30 PM	0	1	1
01:45 PM	0	1	1
Total	0	3	3
02:00 PM	1	0	1
02:15 PM	0	0	0
02:30 PM	0	4	4
02:45 PM	0	1	1
Total	1	5	6
03:00 PM	2	1	3
03:15 PM	0	1	1
03:30 PM	0	0	0
03:45 PM	0	0	0
Total	2	2	4



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Highland Avenue
High School South Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 D Path
Site Code : 2017099
Start Date : 11/29/2018
Page No : 2

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway From North			
Start Time	EB	WB	Int. Total
04:00 PM	0	1	1
04:15 PM	0	0	0
04:30 PM	0	0	0
04:45 PM	0	1	1
Total	0	2	2
05:00 PM	1	1	2
05:15 PM	0	0	0
05:30 PM	0	0	0
05:45 PM	0	1	1
Total	1	2	3
Grand Total	15	31	46
Apprch %	32.6	67.4	
Total %	32.6	67.4	
Pedestrians	15	31	46
% Pedestrians	100	100	100
Bicycles	0	0	0
% Bicycles	0	0	0

	Highland Avenue at North Stairway From North			
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 07:00 AM				
07:00 AM	0	0	0	0
07:15 AM	0	2	2	2
07:30 AM	0	1	1	1
07:45 AM	4	0	4	4
Total Volume	4	3	7	7
% App. Total	57.1	42.9		
PHF	.250	.375	.438	.438
Pedestrians	4	3	7	7
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 11:00 AM

11:00 AM	0	0	0	0
11:15 AM	0	5	5	5
11:30 AM	0	0	0	0
11:45 AM	4	1	5	5
Total Volume	4	6	10	10
% App. Total	40	60		
PHF	.250	.300	.500	.500
Pedestrians	4	6	10	10
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Highland Avenue
 High School South Stairway
 City, State: Needham, MA
 Client: GPI/ N. Rogers



File Name : 186604 D Path
 Site Code : 2017099
 Start Date : 11/29/2018
 Page No : 3

	Highland Avenue at North Stairway From North			
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 02:30 PM				
02:30 PM	0	4	4	4
02:45 PM	0	1	1	1
03:00 PM	2	1	3	3
03:15 PM	0	1	1	1
Total Volume	2	7	9	9
% App. Total	22.2	77.8		
PHF	.250	.438	.563	.563
Pedestrians	2	7	9	9
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0



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Highland Avenue
High School South Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 DD Path
Site Code : 2017099
Start Date : 12/1/2018
Page No : 1

Groups Printed- Pedestrians - Bicycles

Highland Avenue at North Stairway			
From North			
Start Time	EB	WB	Int. Total
06:00 AM	0	0	0
06:15 AM	0	0	0
06:30 AM	0	0	0
06:45 AM	0	0	0
Total	0	0	0
07:00 AM	0	0	0
07:15 AM	0	0	0
07:30 AM	0	0	0
07:45 AM	0	0	0
Total	0	0	0
08:00 AM	0	0	0
08:15 AM	0	0	0
08:30 AM	0	0	0
08:45 AM	0	1	1
Total	0	1	1
09:00 AM	0	0	0
09:15 AM	0	0	0
09:30 AM	0	0	0
09:45 AM	0	0	0
Total	0	0	0
10:00 AM	1	0	1
10:15 AM	0	0	0
10:30 AM	0	2	2
10:45 AM	1	0	1
Total	2	2	4
11:00 AM	0	0	0
11:15 AM	1	1	2
11:30 AM	0	1	1
11:45 AM	0	0	0
Total	1	2	3
12:00 PM	0	0	0
12:15 PM	0	0	0
12:30 PM	0	0	0
12:45 PM	0	1	1
Total	0	1	1
01:00 PM	0	0	0
01:15 PM	2	2	4
01:30 PM	0	4	4
01:45 PM	0	0	0
Total	2	6	8
02:00 PM	0	0	0
02:15 PM	0	0	0
02:30 PM	1	0	1
02:45 PM	0	0	0
Total	1	0	1
03:00 PM	0	2	2
03:15 PM	3	1	4
03:30 PM	1	0	1
03:45 PM	0	1	1
Total	4	4	8



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Highland Avenue
High School South Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 DD Path
Site Code : 2017099
Start Date : 12/1/2018
Page No : 2

Groups Printed- Pedestrians - Bicycles

		Highland Avenue at North Stairway From North		
Start Time	EB	WB	Int. Total	
04:00 PM	0	0	0	
04:15 PM	0	0	0	
04:30 PM	0	1	1	
04:45 PM	0	1	1	
Total	0	2	2	
05:00 PM	1	0	1	
05:15 PM	0	0	0	
05:30 PM	0	0	0	
05:45 PM	0	0	0	
Total	1	0	1	
Grand Total	11	18	29	
Apprch %	37.9	62.1		
Total %	37.9	62.1		
Pedestrians	11	18	29	
% Pedestrians	100	100	100	
Bicycles	0	0	0	
% Bicycles	0	0	0	

		Highland Avenue at North Stairway From North		
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 08:00 AM				
08:00 AM	0	0	0	0
08:15 AM	0	0	0	0
08:30 AM	0	0	0	0
08:45 AM	0	1	1	1
Total Volume	0	1	1	1
% App. Total	0	100		
PHF	.000	.250	.250	.250
Pedestrians	0	1	1	1
% Pedestrians	0	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:45 PM

12:45 PM	0	1	1	1
01:00 PM	0	0	0	0
01:15 PM	2	2	4	4
01:30 PM	0	4	4	4
Total Volume	2	7	9	9
% App. Total	22.2	77.8		
PHF	.250	.438	.563	.563
Pedestrians	2	7	9	9
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0



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Highland Avenue
High School South Stairway
City, State: Needham, MA
Client: GPI/ N. Rogers

File Name : 186604 DD Path
Site Code : 2017099
Start Date : 12/1/2018
Page No : 3

Highland Avenue at North Stairway From North				
Start Time	EB	WB	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1				
Peak Hour for Entire Intersection Begins at 03:00 PM				
03:00 PM	0	2	2	2
03:15 PM	3	1	4	4
03:30 PM	1	0	1	1
03:45 PM	0	1	1	1
Total Volume	4	4	8	8
% App. Total	50	50		
PHF	.333	.500	.500	.500
Pedestrians	4	4	8	8
% Pedestrians	100	100	100	100
Bicycles	0	0	0	0
% Bicycles	0	0	0	0

PDI File #: **186604 A**
 Location: **N: Warren Street S: Warren Street NE: Harris Avenue**
 Location: **E: Dedham Avenue W: Dedham Avenue**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:

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Cars and Heavy Vehicles (Combined)

	Warren Street												Harris Avenue												Dedham Avenue												Warren Street												Dedham Avenue												Total
	from North						from Northeast						from East						from South						from West																																				
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total																															
Total Exiting Leg	50						151						413						206						352						1172																														

PDI File #: **186604 A**
 Location: **N: Warren Street S: Warren Street NE: Harris Avenue**
 Location: **E: Dedham Avenue W: Dedham Avenue**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:

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

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total		
	from North						from Northeast						from East						from South						from West								
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total			
Single-Unit Trucks	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	6	0	0	6	0	0	0	1	0	1	0	9	0	0	0	0	9	18
Single-Unit %	100.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	75.0	0.0	0.0	75.0	0.0	0.0	0.0	100.0	0.0	7.7	0.0	90.0	0.0	0.0	0.0	60.0	43.9		
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1		
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4		
Buses	0	1	1	0	0	2	0	0	1	0	0	1	0	0	1	0	0	1	0	12	0	0	0	12	0	1	4	1	0	6	22		
Single-Unit Trucks	1	0	0	0	0	1	0	0	1	0	0	1	0	0	6	0	0	6	0	0	0	1	0	1	0	9	0	0	0	9	18		
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1		
Total Entering Leg	1	1	1	0	0	3	0	0	2	0	0	2	0	0	8	0	0	8	0	12	0	1	0	13	0	10	4	1	0	15	41		
Buses						1						16						2						2						1	22		
Single-Unit Trucks						0						0						9						1						8	18		
Articulated Trucks						0						0						0						0						1	1		
Total Exiting Leg						1						16						11						3						10	41		

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, November 29, 2018
Start Time: 2:00 PM
End Time: 6:00 PM
Class:

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Cars

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
2:00 PM	1	4	8	0	0	13	1	10	11	0	0	22	0	5	46	0	0	51	0	17	4	0	0	21	1	48	11	7	0	67	174
2:15 PM	4	5	2	0	0	11	0	7	24	0	0	31	0	9	53	2	0	64	1	17	12	0	0	30	3	46	9	1	0	59	195
2:30 PM	2	2	1	0	0	5	1	9	26	0	1	37	0	9	54	0	0	63	0	24	7	1	0	32	2	61	13	3	0	79	216
2:45 PM	11	20	8	0	0	39	1	21	34	0	0	56	0	2	73	2	0	77	0	27	3	0	0	30	4	87	23	4	0	118	320
Total	18	31	19	0	0	68	3	47	95	0	1	146	0	25	226	4	0	255	1	85	26	1	0	113	10	242	56	15	0	323	905
3:00 PM	6	8	12	1	0	27	2	14	38	0	0	54	0	3	44	0	0	47	0	31	11	3	0	45	2	91	6	3	0	102	275
3:15 PM	5	16	1	0	0	22	0	12	25	0	0	37	0	3	61	2	0	66	1	15	3	3	0	22	2	81	11	1	0	95	242
3:30 PM	9	9	4	0	0	22	1	16	16	0	0	33	0	3	48	0	0	51	0	16	3	2	0	21	5	76	10	1	0	92	219
3:45 PM	3	11	4	0	0	18	0	6	22	0	0	28	2	5	55	0	0	62	0	30	8	1	0	39	1	80	14	2	0	97	244
Total	23	44	21	1	0	89	3	48	101	0	0	152	2	14	208	2	0	226	1	92	25	9	0	127	10	328	41	7	0	386	980
4:00 PM	6	7	16	0	0	29	0	15	18	0	0	33	1	7	51	1	0	60	0	17	5	1	0	23	4	102	7	0	0	113	258
4:15 PM	3	9	9	0	0	21	0	6	24	0	0	30	0	3	44	0	0	47	0	12	1	2	0	15	4	84	9	1	0	98	211
4:30 PM	7	12	2	0	0	21	0	7	28	0	0	35	0	3	48	0	0	51	2	23	2	0	0	27	5	74	9	4	0	92	226
4:45 PM	6	10	9	0	0	25	0	11	30	0	0	41	1	2	50	1	0	54	0	22	7	0	0	29	9	72	4	4	0	89	238
Total	22	38	36	0	0	96	0	39	100	0	0	139	2	15	193	2	0	212	2	74	15	3	0	94	22	332	29	9	0	392	933
5:00 PM	12	21	3	0	0	36	0	9	38	0	0	47	0	3	66	0	0	69	0	29	5	1	0	35	3	88	10	0	0	101	288
5:15 PM	9	17	3	0	0	29	1	11	30	0	0	42	1	3	57	1	0	62	0	17	4	1	0	22	2	82	6	2	0	92	247
5:30 PM	6	12	5	0	0	23	0	17	35	0	0	52	1	7	54	0	0	62	1	32	2	1	0	36	5	65	19	3	0	92	265
5:45 PM	17	8	6	2	0	33	1	23	41	0	0	65	0	6	47	0	0	53	0	32	4	1	0	37	5	65	33	4	0	107	295
Total	44	58	17	2	0	121	2	60	144	0	0	206	2	19	224	1	0	246	1	110	15	4	0	130	15	300	68	9	0	392	1095
Grand Total	107	171	93	3	0	374	8	194	440	0	1	643	6	73	851	9	0	939	5	361	81	17	0	464	57	1202	194	40	0	1493	3913
Approach %	28.6	45.7	24.9	0.8	0.0		1.2	30.2	68.4	0.0	0.2		0.6	7.8	90.6	1.0	0.0		1.1	77.8	17.5	3.7	0.0		3.8	80.5	13.0	2.7	0.0		
Total %	2.7	4.4	2.4	0.1	0.0	9.6	0.2	5.0	11.2	0.0	0.0	16.4	0.2	1.9	21.7	0.2	0.0	24.0	0.1	9.2	2.1	0.4	0.0	11.9	1.5	30.7	5.0	1.0	0.0	38.2	
Exiting Leg Total	202						565						1300						677						1169						3913

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

5:00 PM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
5:00 PM	12	21	3	0	0	36	0	9	38	0	0	47	0	3	66	0	0	69	0	29	5	1	0	35	3	88	10	0	0	101	288
5:15 PM	9	17	3	0	0	29	1	11	30	0	0	42	1	3	57	1	0	62	0	17	4	1	0	22	2	82	6	2	0	92	247
5:30 PM	6	12	5	0	0	23	0	17	35	0	0	52	1	7	54	0	0	62	1	32	2	1	0	36	5	65	19	3	0	92	265
5:45 PM	17	8	6	2	0	33	1	23	41	0	0	65	0	6	47	0	0	53	0	32	4	1	0	37	5	65	33	4	0	107	295
Total Volume	44	58	17	2	0	121	2	60	144	0	0	206	2	19	224	1	0	246	1	110	15	4	0	130	15	300	68	9	0	392	1095
% Approach Total	36.4	47.9	14.0	1.7	0.0		1.0	29.1	69.9	0.0	0.0		0.8	7.7	91.1	0.4	0.0		0.8	84.6	11.5	3.1	0.0		3.8	76.5	17.3	2.3	0.0		
PHF	0.647	0.690	0.708	0.250	0.000	0.840	0.500	0.652	0.878	0.000	0.000	0.792	0.500	0.679	0.848	0.250	0.000	0.891	0.250	0.859	0.750	1.000	0.000	0.878	0.750	0.852	0.515	0.563	0.000	0.916	0.928
Entering Leg	44	58	17	2	0	121	2	60	144	0	0	206	2	19	224	1	0	246	1	110	15	4	0	130	15	300	68	9	0	392	1095
Exiting Leg	45						182						318						218						332						1095
Total	166						388						564						348						724						2190

PDI File #: **186604 A**
 Location: **N: Warren Street S: Warren Street NE: Harris Avenue**
 Location: **E: Dedham Avenue W: Dedham Avenue**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:

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

Light Goods Vehicle

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
2:00 PM	1	0	0	0	0	1	0	0	1	0	0	1	0	1	5	0	0	6	0	2	0	0	0	2	0	13	1	0	0	14	24
2:15 PM	1	1	0	0	0	2	0	0	1	0	0	1	0	1	6	0	0	7	0	1	0	0	0	1	0	11	0	0	0	11	22
2:30 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	3	0	0	4	0	3	0	0	0	3	0	9	0	0	0	9	18
2:45 PM	0	1	1	0	0	2	0	0	3	0	0	3	0	1	3	0	0	4	0	0	0	0	0	0	0	9	2	0	0	11	20
Total	2	3	2	0	0	7	0	0	5	0	0	5	0	4	17	0	0	21	0	6	0	0	0	6	0	42	3	0	0	45	84
3:00 PM	1	2	2	0	0	5	0	1	2	0	0	3	0	1	1	0	0	2	0	3	0	0	0	3	0	9	2	0	0	11	24
3:15 PM	0	1	0	0	0	1	0	1	4	1	0	6	0	0	3	0	0	3	0	1	2	0	0	3	0	9	0	0	0	9	22
3:30 PM	0	3	1	0	0	4	0	1	3	0	0	4	0	0	6	0	0	6	0	0	0	0	0	0	0	5	0	0	0	5	19
3:45 PM	0	0	0	0	0	0	0	0	3	0	0	3	0	1	6	0	0	7	0	2	0	0	0	2	0	8	1	0	0	9	21
Total	1	6	3	0	0	10	0	3	12	1	0	16	0	2	16	0	0	18	0	6	2	0	0	8	0	31	3	0	0	34	86
4:00 PM	0	1	1	0	0	2	0	1	0	0	0	1	0	0	2	0	0	2	0	4	0	0	0	4	1	6	0	0	0	7	16
4:15 PM	1	0	0	0	0	1	0	0	1	0	0	1	0	0	2	0	0	2	0	2	0	0	0	2	0	7	0	1	0	8	14
4:30 PM	0	1	0	0	0	1	0	4	1	0	0	5	0	0	2	0	0	2	0	0	1	0	0	1	1	5	1	1	0	8	17
4:45 PM	2	0	1	0	0	3	0	0	3	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	3	1	0	0	4	11
Total	3	2	2	0	0	7	0	5	5	0	0	10	0	0	6	0	0	6	0	7	1	0	0	8	2	21	2	2	0	27	58
5:00 PM	2	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	8	11
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	3	0	0	0	3	5
5:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0	2	0	1	0	0	0	1	0	1	1	1	0	3	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Total	2	1	0	0	0	3	0	0	2	0	0	2	0	0	3	0	0	3	0	1	1	0	0	2	0	13	2	1	0	16	26
Grand Total	8	12	7	0	0	27	0	8	24	1	0	33	0	6	42	0	0	48	0	20	4	0	0	24	2	107	10	3	0	122	254
Approach %	29.6	44.4	25.9	0.0	0.0		0.0	24.2	72.7	3.0	0.0		0.0	12.5	87.5	0.0	0.0		0.0	83.3	16.7	0.0	0.0		1.6	87.7	8.2	2.5	0.0		
Total %	3.1	4.7	2.8	0.0	0.0	10.6	0.0	3.1	9.4	0.4	0.0	13.0	0.0	2.4	16.5	0.0	0.0	18.9	0.0	7.9	1.6	0.0	0.0	9.4	0.8	42.1	3.9	1.2	0.0	48.0	
Exiting Leg Total	13						30						115						38						58						254

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:00 PM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
3:00 PM	1	2	2	0	0	5	0	1	2	0	0	3	0	1	1	0	0	2	0	3	0	0	0	3	0	9	2	0	0	11	24
3:15 PM	0	1	0	0	0	1	0	1	4	1	0	6	0	0	3	0	0	3	0	1	2	0	0	3	0	9	0	0	0	9	22
3:30 PM	0	3	1	0	0	4	0	1	3	0	0	4	0	0	6	0	0	6	0	0	0	0	0	0	0	5	0	0	0	5	19
3:45 PM	0	0	0	0	0	0	0	0	3	0	0	3	0	1	6	0	0	7	0	2	0	0	0	2	0	8	1	0	0	9	21
Total Volume	1	6	3	0	0	10	0	3	12	1	0	16	0	2	16	0	0	18	0	6	2	0	0	8	0	31	3	0	0	34	86
% Approach Total	10.0	60.0	30.0	0.0	0.0		0.0	18.8	75.0	6.3	0.0		0.0	11.1	88.9	0.0	0.0		0.0	75.0	25.0	0.0	0.0		0.0	91.2	8.8	0.0	0.0		
PHF	0.250	0.500	0.375	0.000	0.000	0.500	0.000	0.750	0.750	0.250	0.000	0.667	0.000	0.500	0.667	0.000	0.000	0.643	0.000	0.500	0.250	0.000	0.000	0.667	0.000	0.861	0.375	0.000	0.000	0.773	0.896
Entering Leg	1	6	3	0	0	10	0	3	12	1	0	16	0	2	16	0	0	18	0	6	2	0	0	8	0	31	3	0	0	34	86
Exiting Leg	4						9						35						18						20						86
Total	14						25						53						26						54						172

PDI File #: **186604 A**
 Location: **N: Warren Street S: Warren Street NE: Harris Avenue**
 Location: **E: Dedham Avenue W: Dedham Avenue**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:

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

Buses

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total	
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	0	0	0	3	0	0	2	0	0	2	6
2:15 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	0	11	
2:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	
Total	0	1	1	0	0	2	0	0	1	0	0	1	0	0	1	0	0	0	1	0	12	0	0	0	12	0	1	4	1	0	6	22
3:00 PM	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	2	
3:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	4	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
Total	1	1	0	0	0	2	0	0	1	0	0	1	0	0	4	0	0	4	0	1	1	0	0	2	0	1	0	0	0	0	1	10
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0	1	0	0	0	1	1	
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	1	0	0	0	1	1
Grand Total	1	2	1	0	0	4	0	0	2	0	0	2	0	0	6	0	0	6	0	13	1	0	0	14	0	3	4	1	0	8	34	
Approach %	25.0	50.0	25.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	92.9	7.1	0.0	0.0		0.0	37.5	50.0	12.5	0.0			
Total %	2.9	5.9	2.9	0.0	0.0	11.8	0.0	0.0	5.9	0.0	0.0	5.9	0.0	0.0	17.6	0.0	0.0	17.6	0.0	38.2	2.9	0.0	0.0	41.2	0.0	8.8	11.8	2.9	0.0	23.5		
Exiting Leg Total	2						17						4						4						7						34	

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue							
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	0	0	0	3	0	0	2	0	0	2	6
2:15 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	9	0	0	0	9	0	0	0	0	0	0	11	
2:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	
Total Volume	0	1	1	0	0	2	0	0	1	0	0	1	0	0	1	0	0	0	1	0	12	0	0	0	12	0	1	4	1	0	6	22
% Approach Total	0.0	50.0	50.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	16.7	66.7	16.7	0.0			
PHF	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.333	0.000	0.000	0.000	0.333	0.000	0.250	0.500	0.250	0.000	0.750	0.500
Entering Leg	0	1	1	0	0	2	0	0	1	0	0	1	0	0	1	0	0	0	1	0	12	0	0	0	12	0	1	4	1	0	6	22
Exiting Leg	1						16						2						2						1						22	
Total	3						17						3						14						7						44	

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, November 29, 2018
Start Time: 2:00 PM
End Time: 6:00 PM
Class:

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

Single-Unit Trucks

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total		
	from North						from Northeast						from East						from South						from West								
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total			
2:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	1	4	
2:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	4	0	0	0	4	0	0	0	0	0	0	0	2	0	0	0	2	7	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	3	4	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3	
Total	1	0	0	0	0	1	0	0	1	0	0	1	0	0	6	0	0	6	0	0	0	1	0	1	0	9	0	0	0	0	9	18	
3:00 PM	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	7	
3:15 PM	0	0	0	1	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	1	0	0	3	6	
3:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	4	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0	1	3	
Total	0	0	0	1	0	1	0	2	2	0	0	4	0	0	2	1	0	3	0	0	0	0	0	0	0	0	11	0	1	0	0	12	20
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	5	7	
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	
Total	0	0	0	0	0	0	1	0	2	0	0	3	0	0	1	0	0	1	0	0	0	1	0	1	0	7	0	0	0	0	7	12	
5:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	2	1	0	0	0	3	3	
Total	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3	1	0	0	0	4	6	
Grand Total	1	0	1	1	0	3	1	2	5	0	0	8	0	0	10	1	0	11	0	0	0	2	0	2	0	30	1	1	0	0	32	56	
Approach %	33.3	0.0	33.3	33.3	0.0		12.5	25.0	62.5	0.0	0.0		0.0	0.0	90.9	9.1	0.0		0.0	0.0	0.0	100.0	0.0		0.0	93.8	3.1	3.1	0.0				
Total %	1.8	0.0	1.8	1.8	0.0	5.4	1.8	3.6	8.9	0.0	0.0	14.3	0.0	0.0	17.9	1.8	0.0	19.6	0.0	0.0	0.0	3.6	0.0	3.6	0.0	53.6	1.8	1.8	0.0	57.1			
Exiting Leg Total	2						2						31						6						15						56		

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:15 PM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue								
	from North						from Northeast						from East						from South						from West								
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		Total	
2:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	4	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	7
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	3	4
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3	
3:00 PM	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	7	
Total Volume	0	0	0	0	0	0	0	1	2	0	0	3	0	0	5	0	0	5	0	0	0	0	0	0	0	13	0	0	0	0	13	21	
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	33.3	66.7	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0				
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.000	0.375	0.000	0.000	0.313	0.000	0.000	0.313	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650	0.000	0.000	0.000	0.650	0.750		
Entering Leg	0	0	0	0	0	0	0	1	2	0	0	3	0	0	5	0	0	5	0	0	0	0	0	0	0	13	0	0	0	0	13	21	
Exiting Leg	0						0						13						2						6						21		
Total	0						3						18						2						19						42		

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, November 29, 2018
Start Time: 2:00 PM
End Time: 6:00 PM
Class:

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

Articulated Trucks

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0	0	1	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	0	0	0	1	1
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Grand Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	4
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	50.0	
Exiting Leg Total	0						0						2						1						1						4

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:15 PM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
Total Volume	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	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	0.500	0.000	0.000	0.000	0.500	0.375
Entering Leg	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
Exiting Leg	0						0						2						1						0						3
Total	0						1						2						1						2						6

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	1	34	0	35	90	1	0	91	3	1	0	4	130
7:15 AM	2	36	0	38	104	3	0	107	4	3	0	7	152
7:30 AM	4	48	0	52	129	5	0	134	5	3	0	8	194
7:45 AM	5	43	0	48	160	3	0	163	11	3	0	14	225
Total	12	161	0	173	483	12	0	495	23	10	0	33	701
8:00 AM	9	61	0	70	170	7	0	177	7	7	0	14	261
8:15 AM	2	56	0	58	143	2	0	145	9	4	0	13	216
8:30 AM	5	37	0	42	134	5	0	139	0	3	0	3	184
8:45 AM	1	38	0	39	128	1	0	129	2	5	0	7	175
Total	17	192	0	209	575	15	0	590	18	19	0	37	836
9:00 AM	3	39	0	42	74	2	0	76	3	3	0	6	124
9:15 AM	5	31	0	36	67	1	0	68	1	3	0	4	108
9:30 AM	0	43	0	43	58	4	0	62	2	2	0	4	109
9:45 AM	3	35	0	38	41	4	1	46	2	0	0	2	86
Total	11	148	0	159	240	11	1	252	8	8	0	16	427
10:00 AM	1	28	0	29	47	1	0	48	1	2	0	3	80
10:15 AM	2	26	0	28	59	2	0	61	3	0	0	3	92
10:30 AM	1	38	0	39	34	5	0	39	2	0	0	2	80
10:45 AM	0	22	0	22	36	2	0	38	7	1	0	8	68
Total	4	114	0	118	176	10	0	186	13	3	0	16	320
Grand Total	44	615	0	659	1474	48	1	1523	62	40	0	102	2284
Approach %	6.7	93.3	0.0		96.8	3.2	0.1		60.8	39.2	0.0		
Total %	1.9	26.9	0.0	28.9	64.5	2.1	0.0	66.7	2.7	1.8	0.0	4.5	
Exiting Leg Total	1514				678				92				2284
Cars	44	584	0	628	1438	45	1	1484	62	39	0	101	2213
% Cars	100.0	95.0	0.0	95.3	97.6	93.8	100.0	97.4	100.0	97.5	0.0	99.0	96.9
Exiting Leg Total	1477				647				89				2213
Heavy Vehicles	0	31	0	31	36	3	0	39	0	1	0	1	71
% Heavy Vehicles	0.0	5.0	0.0	4.7	2.4	6.3	0.0	2.6	0.0	2.5	0.0	1.0	3.1
Exiting Leg Total	37				31				3				71

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:30 AM	4	48	0	52	129	5	0	134	5	3	0	8	194
7:45 AM	5	43	0	48	160	3	0	163	11	3	0	14	225
8:00 AM	9	61	0	70	170	7	0	177	7	7	0	14	261
8:15 AM	2	56	0	58	143	2	0	145	9	4	0	13	216
Total Volume	20	208	0	228	602	17	0	619	32	17	0	49	896
% Approach Total	8.8	91.2	0.0		97.3	2.7	0.0		65.3	34.7	0.0		
PHF	0.556	0.852	0.000	0.814	0.885	0.607	0.000	0.874	0.727	0.607	0.000	0.875	0.858
Cars	20	197	0	217	587	17	0	604	32	16	0	48	869
Cars %	100.0	94.7	0.0	95.2	97.5	100.0	0.0	97.6	100.0	94.1	0.0	98.0	97.0
Heavy Vehicles	0	11	0	11	15	0	0	15	0	1	0	1	27
Heavy Vehicles %	0.0	5.3	0.0	4.8	2.5	0.0	0.0	2.4	0.0	5.9	0.0	2.0	3.0
Cars Enter Leg	20	197	0	217	587	17	0	604	32	16	0	48	869
Heavy Enter Leg	0	11	0	11	15	0	0	15	0	1	0	1	27
Total Entering Leg	20	208	0	228	602	17	0	619	32	17	0	49	896
Cars Exiting Leg				603				229				37	869
Heavy Exiting Leg				16				11				0	27
Total Exiting Leg				619				240				37	896

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Cars-Combined (Motorcycles, Cars, Light Goods)

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	1	33	0	34	88	1	0	89	3	1	0	4	127
7:15 AM	2	35	0	37	99	3	0	102	4	3	0	7	146
7:30 AM	4	45	0	49	121	5	0	126	5	3	0	8	183
7:45 AM	5	42	0	47	157	3	0	160	11	3	0	14	221
Total	12	155	0	167	465	12	0	477	23	10	0	33	677
8:00 AM	9	57	0	66	166	7	0	173	7	6	0	13	252
8:15 AM	2	53	0	55	143	2	0	145	9	4	0	13	213
8:30 AM	5	36	0	41	133	4	0	137	0	3	0	3	181
8:45 AM	1	37	0	38	127	1	0	128	2	5	0	7	173
Total	17	183	0	200	569	14	0	583	18	18	0	36	819
9:00 AM	3	37	0	40	73	2	0	75	3	3	0	6	121
9:15 AM	5	28	0	33	65	0	0	65	1	3	0	4	102
9:30 AM	0	40	0	40	53	4	0	57	2	2	0	4	101
9:45 AM	3	34	0	37	41	3	1	45	2	0	0	2	84
Total	11	139	0	150	232	9	1	242	8	8	0	16	408
10:00 AM	1	27	0	28	46	1	0	47	1	2	0	3	78
10:15 AM	2	24	0	26	58	2	0	60	3	0	0	3	89
10:30 AM	1	36	0	37	32	5	0	37	2	0	0	2	76
10:45 AM	0	20	0	20	36	2	0	38	7	1	0	8	66
Total	4	107	0	111	172	10	0	182	13	3	0	16	309
Grand Total	44	584	0	628	1438	45	1	1484	62	39	0	101	2213
Approach %	7.0	93.0	0.0		96.9	3.0	0.1		61.4	38.6	0.0		
Total %	2.0	26.4	0.0	28.4	65.0	2.0	0.0	67.1	2.8	1.8	0.0	4.6	
Exiting Leg Total				1477				647				89	2213

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:30 AM	4	45	0	49	121	5	0	126	5	3	0	8	183
7:45 AM	5	42	0	47	157	3	0	160	11	3	0	14	221
8:00 AM	9	57	0	66	166	7	0	173	7	6	0	13	252
8:15 AM	2	53	0	55	143	2	0	145	9	4	0	13	213
Total Volume	20	197	0	217	587	17	0	604	32	16	0	48	869
% Approach Total	9.2	90.8	0.0		97.2	2.8	0.0		66.7	33.3	0.0		
PHF	0.556	0.864	0.000	0.822	0.884	0.607	0.000	0.873	0.727	0.667	0.000	0.857	0.862
Entering Leg	20	197	0	217	587	17	0	604	32	16	0	48	869
Exiting Leg				603				229				37	869
Total				820				833				85	1738

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**



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

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
7:15 AM	0	1	0	1	5	0	0	5	0	0	0	0	6
7:30 AM	0	3	0	3	8	0	0	8	0	0	0	0	11
7:45 AM	0	1	0	1	3	0	0	3	0	0	0	0	4
Total	0	6	0	6	18	0	0	18	0	0	0	0	24
8:00 AM	0	4	0	4	4	0	0	4	0	1	0	1	9
8:15 AM	0	3	0	3	0	0	0	0	0	0	0	0	3
8:30 AM	0	1	0	1	1	1	0	2	0	0	0	0	3
8:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	9	0	9	6	1	0	7	0	1	0	1	17
9:00 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
9:15 AM	0	3	0	3	2	1	0	3	0	0	0	0	6
9:30 AM	0	3	0	3	5	0	0	5	0	0	0	0	8
9:45 AM	0	1	0	1	0	1	0	1	0	0	0	0	2
Total	0	9	0	9	8	2	0	10	0	0	0	0	19
10:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
10:15 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
10:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
10:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	7	0	7	4	0	0	4	0	0	0	0	11
Grand Total	0	31	0	31	36	3	0	39	0	1	0	1	71
Approach %	0.0	100.0	0.0		92.3	7.7	0.0		0.0	100.0	0.0		
Total %	0.0	43.7	0.0	43.7	50.7	4.2	0.0	54.9	0.0	1.4	0.0	1.4	
Exiting Leg Total				37				31				3	71
Buses	0	4	0	4	8	0	0	8	0	1	0	1	13
% Buses	0.0	12.9	0.0	12.9	22.2	0.0	0.0	20.5	0.0	100.0	0.0	100.0	18.3
Exiting Leg Total				9				4				0	13
Single-Unit Trucks	0	25	0	25	24	3	0	27	0	0	0	0	52
% Single-Unit	0.0	80.6	0.0	80.6	66.7	100.0	0.0	69.2	0.0	0.0	0.0	0.0	73.2
Exiting Leg Total				24				25				3	52
Articulated Trucks	0	2	0	2	4	0	0	4	0	0	0	0	6
% Articulated	0.0	6.5	0.0	6.5	11.1	0.0	0.0	10.3	0.0	0.0	0.0	0.0	8.5
Exiting Leg Total				4				2				0	6

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:15 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	0	1	0	1	5	0	0	5	0	0	0	0	6
7:30 AM	0	3	0	3	8	0	0	8	0	0	0	0	11
7:45 AM	0	1	0	1	3	0	0	3	0	0	0	0	4
8:00 AM	0	4	0	4	4	0	0	4	0	1	0	1	9
Total Volume	0	9	0	9	20	0	0	20	0	1	0	1	30
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.563	0.000	0.563	0.625	0.000	0.000	0.625	0.000	0.250	0.000	0.250	0.682
Buses	0	2	0	2	5	0	0	5	0	1	0	1	8
Buses %	0.0	22.2	0.0	22.2	25.0	0.0	0.0	25.0	0.0	100.0	0.0	100.0	26.7
Single-Unit Trucks	0	7	0	7	12	0	0	12	0	0	0	0	19
Single-Unit %	0.0	77.8	0.0	77.8	60.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	63.3
Articulated Trucks	0	0	0	0	3	0	0	3	0	0	0	0	3
Articulated %	0.0	0.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	10.0
Buses	0	2	0	2	5	0	0	5	0	1	0	1	8
Single-Unit Trucks	0	7	0	7	12	0	0	12	0	0	0	0	19
Articulated Trucks	0	0	0	0	3	0	0	3	0	0	0	0	3
Total Entering Leg	0	9	0	9	20	0	0	20	0	1	0	1	30

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**



PRECISION
 D A T A
 INDUSTRIES, LLC

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

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

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
Buses	6				2				0				8
Single-Unit Trucks	12				7				0				19
Articulated Trucks	3				0				0				3
Total Exiting Leg	21				9				0				30

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Cars

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	1	30	0	31	76	1	0	77	3	1	0	4	112
7:15 AM	2	33	0	35	91	3	0	94	4	3	0	7	136
7:30 AM	4	42	0	46	110	5	0	115	5	3	0	8	169
7:45 AM	4	38	0	42	147	3	0	150	11	3	0	14	206
Total	11	143	0	154	424	12	0	436	23	10	0	33	623
8:00 AM	9	54	0	63	161	7	0	168	6	6	0	12	243
8:15 AM	2	48	0	50	136	2	0	138	9	4	0	13	201
8:30 AM	3	33	0	36	126	4	0	130	0	2	0	2	168
8:45 AM	1	32	0	33	118	1	0	119	2	5	0	7	159
Total	15	167	0	182	541	14	0	555	17	17	0	34	771
9:00 AM	2	33	0	35	60	2	0	62	3	3	0	6	103
9:15 AM	5	24	0	29	60	0	0	60	1	3	0	4	93
9:30 AM	0	34	0	34	49	3	0	52	2	2	0	4	90
9:45 AM	3	29	0	32	36	3	1	40	2	0	0	2	74
Total	10	120	0	130	205	8	1	214	8	8	0	16	360
10:00 AM	1	25	0	26	40	1	0	41	1	1	0	2	69
10:15 AM	2	22	0	24	49	2	0	51	2	0	0	2	77
10:30 AM	1	32	0	33	28	4	0	32	1	0	0	1	66
10:45 AM	0	18	0	18	30	2	0	32	7	1	0	8	58
Total	4	97	0	101	147	9	0	156	11	2	0	13	270
Grand Total	40	527	0	567	1317	43	1	1361	59	37	0	96	2024
Approach %	7.1	92.9	0.0		96.8	3.2	0.1		61.5	38.5	0.0		
Total %	2.0	26.0	0.0	28.0	65.1	2.1	0.0	67.2	2.9	1.8	0.0	4.7	
Exiting Leg Total				1354				587				83	2024

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:30 AM	4	42	0	46	110	5	0	115	5	3	0	8	169
7:45 AM	4	38	0	42	147	3	0	150	11	3	0	14	206
8:00 AM	9	54	0	63	161	7	0	168	6	6	0	12	243
8:15 AM	2	48	0	50	136	2	0	138	9	4	0	13	201
Total Volume	19	182	0	201	554	17	0	571	31	16	0	47	819
% Approach Total	9.5	90.5	0.0		97.0	3.0	0.0		66.0	34.0	0.0		
PHF	0.528	0.843	0.000	0.798	0.860	0.607	0.000	0.850	0.705	0.667	0.000	0.839	0.843
Entering Leg	19	182	0	201	554	17	0	571	31	16	0	47	819
Exiting Leg				570				213				36	819
Total				771				784				83	1638

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Light Goods Vehicle

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	3	0	3	12	0	0	12	0	0	0	0	15
7:15 AM	0	2	0	2	8	0	0	8	0	0	0	0	10
7:30 AM	0	3	0	3	11	0	0	11	0	0	0	0	14
7:45 AM	1	4	0	5	10	0	0	10	0	0	0	0	15
Total	1	12	0	13	41	0	0	41	0	0	0	0	54
8:00 AM	0	3	0	3	5	0	0	5	1	0	0	1	9
8:15 AM	0	5	0	5	7	0	0	7	0	0	0	0	12
8:30 AM	2	3	0	5	7	0	0	7	0	1	0	1	13
8:45 AM	0	5	0	5	9	0	0	9	0	0	0	0	14
Total	2	16	0	18	28	0	0	28	1	1	0	2	48
9:00 AM	1	4	0	5	13	0	0	13	0	0	0	0	18
9:15 AM	0	4	0	4	5	0	0	5	0	0	0	0	9
9:30 AM	0	6	0	6	4	1	0	5	0	0	0	0	11
9:45 AM	0	5	0	5	5	0	0	5	0	0	0	0	10
Total	1	19	0	20	27	1	0	28	0	0	0	0	48
10:00 AM	0	2	0	2	6	0	0	6	0	1	0	1	9
10:15 AM	0	2	0	2	9	0	0	9	1	0	0	1	12
10:30 AM	0	4	0	4	4	1	0	5	1	0	0	1	10
10:45 AM	0	2	0	2	6	0	0	6	0	0	0	0	8
Total	0	10	0	10	25	1	0	26	2	1	0	3	39
Grand Total	4	57	0	61	121	2	0	123	3	2	0	5	189
Approach %	6.6	93.4	0.0		98.4	1.6	0.0		60.0	40.0	0.0		
Total %	2.1	30.2	0.0	32.3	64.0	1.1	0.0	65.1	1.6	1.1	0.0	2.6	
Exiting Leg Total				123				60				6	189

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

8:15 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:15 AM	0	5	0	5	7	0	0	7	0	0	0	0	12
8:30 AM	2	3	0	5	7	0	0	7	0	1	0	1	13
8:45 AM	0	5	0	5	9	0	0	9	0	0	0	0	14
9:00 AM	1	4	0	5	13	0	0	13	0	0	0	0	18
Total Volume	3	17	0	20	36	0	0	36	0	1	0	1	57
% Approach Total	15.0	85.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.375	0.850	0.000	1.000	0.692	0.000	0.000	0.692	0.000	0.250	0.000	0.250	0.792
Entering Leg	3	17	0	20	36	0	0	36	0	1	0	1	57
Exiting Leg				37				17				3	57
Total				57				53				4	114

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Buses

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	4	0	0	4	0	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	6	0	0	6	0	0	0	0	7
8:00 AM	0	2	0	2	1	0	0	1	0	1	0	1	4
8:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
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	3	0	3	1	0	0	1	0	1	0	1	5
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 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
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
10:45 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	0	4	0	4	8	0	0	8	0	1	0	1	13
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	0.0	30.8	0.0	30.8	61.5	0.0	0.0	61.5	0.0	7.7	0.0	7.7	
Exiting Leg Total	9				4				0				13

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:30 AM	0	0	0	0	4	0	0	4	0	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	2	0	2	1	0	0	1	0	1	0	1	4
8:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	3	0	3	5	0	0	5	0	1	0	1	9
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.375	0.000	0.375	0.313	0.000	0.000	0.313	0.000	0.250	0.000	0.250	0.563
Entering Leg	0	3	0	3	5	0	0	5	0	1	0	1	9
Exiting Leg				6				3				0	9
Total				9				8				1	18

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Single-Unit Trucks

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	1	3	0	0	3	0	0	0	0	4
7:30 AM	0	3	0	3	3	0	0	3	0	0	0	0	6
7:45 AM	0	1	0	1	3	0	0	3	0	0	0	0	4
Total	0	5	0	5	9	0	0	9	0	0	0	0	14
8:00 AM	0	2	0	2	3	0	0	3	0	0	0	0	5
8:15 AM	0	2	0	2	0	0	0	0	0	0	0	0	2
8:30 AM	0	1	0	1	1	1	0	2	0	0	0	0	3
8:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	6	0	6	5	1	0	6	0	0	0	0	12
9:00 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
9:15 AM	0	3	0	3	2	1	0	3	0	0	0	0	6
9:30 AM	0	2	0	2	5	0	0	5	0	0	0	0	7
9:45 AM	0	1	0	1	0	1	0	1	0	0	0	0	2
Total	0	8	0	8	8	2	0	10	0	0	0	0	18
10:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
10:15 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
10:30 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
10:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	6	0	6	2	0	0	2	0	0	0	0	8
Grand Total	0	25	0	25	24	3	0	27	0	0	0	0	52
Approach %	0.0	100.0	0.0		88.9	11.1	0.0		0.0	0.0	0.0		
Total %	0.0	48.1	0.0	48.1	46.2	5.8	0.0	51.9	0.0	0.0	0.0	0.0	
Exiting Leg Total	24				25				3				52

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:15 AM	Greendale Avenue					Greendale Avenue					Grosvenor Road					Total
	from North					from South					from West					
	Right	Thru	U-Turn		Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total			
7:15 AM	0	1	0		1	3	0	0	3	0	0	0	0	4		
7:30 AM	0	3	0		3	3	0	0	3	0	0	0	0	6		
7:45 AM	0	1	0		1	3	0	0	3	0	0	0	0	4		
8:00 AM	0	2	0		2	3	0	0	3	0	0	0	0	5		
Total Volume	0	7	0		7	12	0	0	12	0	0	0	0	19		
% Approach Total	0.0	100.0	0.0			100.0	0.0	0.0		0.0	0.0	0.0				
PHF	0.000	0.583	0.000	0.583		1.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.792		
Entering Leg	0	7	0		7	12	0	0	12	0	0	0	0	19		
Exiting Leg					12				7				0	19		
Total					19				19				0	38		

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Articulated Trucks

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
7:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	3	0	0	3	0	0	0	0	3
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
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
10:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	0	0	1	0	0	0	0	2
Grand Total	0	2	0	2	4	0	0	4	0	0	0	0	6
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	33.3	0.0	33.3	66.7	0.0	0.0	66.7	0.0	0.0	0.0	0.0	
Exiting Leg Total	4				2				0				6

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:00 AM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
7:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	3	0	0	3	0	0	0	0	3
% Approach Total	0.0	0.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	0	0	0	3	0	0	3	0	0	0	0	3
Exiting Leg	3				0				0				3
Total	3				3				0				6

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
10:00 AM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	5	0	0	0	5	1	0	0	0	0	1	0	0	0	0	0	0	6
Approach %	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	83.3	0.0	0.0	0.0	83.3	16.7	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	1						5						0						6

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

9:15 AM	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
9:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Volume	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
% Approach Total	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	0.0			
PHF	0.000	0.313	0.000	0.000	0.000	0.313	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.313
Entering Leg	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Exiting Leg	0						5						0						5	
Total	5						5						0						10	

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



Pedestrians

	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8	8
8:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	5	0	5	7
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2	1	3	5
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	2	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
Total	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	9	4	13	18
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	2	3
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2	4	5
Grand Total	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	16	13	29	35
Approach %	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	55.172	44.828		
Total %	0	0	0	0	0	0	0	0	0	0	17.143	0	17.143	0	0	0	45.714	37.143	82.857	
Exiting Leg Total	0						6						29						35	

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

8:00 AM	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
8:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	5	0	5	7
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2	1	3	5
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	2	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
Total Volume	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	9	4	13	18
% 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	69.2	30.8		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.625	0.000	0.000	0.000	0.450	0.333	0.650	0.643
Entering Leg	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	9	4	13	18
Exiting Leg	0						5						13						18
Total	0						10						26						36

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	3	42	1	46	37	6	0	43	2	2	0	4	93
2:15 PM	6	44	0	50	49	3	0	52	1	4	0	5	107
2:30 PM	2	54	0	56	60	2	0	62	3	9	0	12	130
2:45 PM	12	121	0	133	35	5	0	40	17	7	0	24	197
Total	23	261	1	285	181	16	0	197	23	22	0	45	527
3:00 PM	4	107	0	111	53	1	0	54	8	4	0	12	177
3:15 PM	1	142	0	143	50	0	0	50	1	1	0	2	195
3:30 PM	1	175	0	176	46	4	0	50	1	3	0	4	230
3:45 PM	5	186	0	191	46	4	0	50	10	1	0	11	252
Total	11	610	0	621	195	9	0	204	20	9	0	29	854
4:00 PM	1	237	0	238	35	1	0	36	4	3	0	7	281
4:15 PM	6	198	0	204	37	4	0	41	3	0	0	3	248
4:30 PM	1	142	0	143	38	3	0	41	3	2	0	5	189
4:45 PM	4	147	0	151	35	6	0	41	5	2	0	7	199
Total	12	724	0	736	145	14	0	159	15	7	0	22	917
5:00 PM	3	156	0	159	31	3	0	34	1	4	0	5	198
5:15 PM	6	149	0	155	52	1	0	53	1	2	0	3	211
5:30 PM	5	166	0	171	53	1	0	54	0	1	0	1	226
5:45 PM	4	112	0	116	47	5	0	52	1	1	0	2	170
Total	18	583	0	601	183	10	0	193	3	8	0	11	805
Grand Total	64	2178	1	2243	704	49	0	753	61	46	0	107	3103
Approach %	2.9	97.1	0.0		93.5	6.5	0.0		57.0	43.0	0.0		
Total %	2.1	70.2	0.0	72.3	22.7	1.6	0.0	24.3	2.0	1.5	0.0	3.4	
Exiting Leg Total				751				2239				113	3103
Cars	62	2140	1	2203	686	45	0	731	54	42	0	96	3030
% Cars	96.9	98.3	100.0	98.2	97.4	91.8	0.0	97.1	88.5	91.3	0.0	89.7	97.6
Exiting Leg Total				729				2194				107	3030
Heavy Vehicles	2	38	0	40	18	4	0	22	7	4	0	11	73
% Heavy Vehicles	3.1	1.7	0.0	1.8	2.6	8.2	0.0	2.9	11.5	8.7	0.0	10.3	2.4
Exiting Leg Total				22				45				6	73

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:30 PM	1	175	0	176	46	4	0	50	1	3	0	4	230
3:45 PM	5	186	0	191	46	4	0	50	10	1	0	11	252
4:00 PM	1	237	0	238	35	1	0	36	4	3	0	7	281
4:15 PM	6	198	0	204	37	4	0	41	3	0	0	3	248
Total Volume	13	796	0	809	164	13	0	177	18	7	0	25	1011
% Approach Total	1.6	98.4	0.0		92.7	7.3	0.0		72.0	28.0	0.0		
PHF	0.542	0.840	0.000	0.850	0.891	0.813	0.000	0.885	0.450	0.583	0.000	0.568	0.899
Cars	13	780	0	793	157	13	0	170	16	6	0	22	985
Cars %	100.0	98.0	0.0	98.0	95.7	100.0	0.0	96.0	88.9	85.7	0.0	88.0	97.4
Heavy Vehicles	0	16	0	16	7	0	0	7	2	1	0	3	26
Heavy Vehicles %	0.0	2.0	0.0	2.0	4.3	0.0	0.0	4.0	11.1	14.3	0.0	12.0	2.6
Cars Enter Leg	13	780	0	793	157	13	0	170	16	6	0	22	985
Heavy Enter Leg	0	16	0	16	7	0	0	7	2	1	0	3	26
Total Entering Leg	13	796	0	809	164	13	0	177	18	7	0	25	1011
Cars Exiting Leg				163				796				26	985
Heavy Exiting Leg				8				18				0	26
Total Exiting Leg				171				814				26	1011

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars-Combined (Motorcycles, Cars, Light Goods)

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	3	38	1	42	35	6	0	41	2	2	0	4	87
2:15 PM	5	43	0	48	48	2	0	50	0	4	0	4	102
2:30 PM	2	54	0	56	59	2	0	61	3	8	0	11	128
2:45 PM	11	117	0	128	34	4	0	38	16	7	0	23	189
Total	21	252	1	274	176	14	0	190	21	21	0	42	506
3:00 PM	4	106	0	110	51	0	0	51	6	3	0	9	170
3:15 PM	1	140	0	141	50	0	0	50	1	1	0	2	193
3:30 PM	1	172	0	173	43	4	0	47	1	3	0	4	224
3:45 PM	5	185	0	190	45	4	0	49	9	1	0	10	249
Total	11	603	0	614	189	8	0	197	17	8	0	25	836
4:00 PM	1	232	0	233	33	1	0	34	4	2	0	6	273
4:15 PM	6	191	0	197	36	4	0	40	2	0	0	2	239
4:30 PM	1	141	0	142	36	3	0	39	2	2	0	4	185
4:45 PM	4	145	0	149	35	5	0	40	5	1	0	6	195
Total	12	709	0	721	140	13	0	153	13	5	0	18	892
5:00 PM	3	153	0	156	31	3	0	34	1	4	0	5	195
5:15 PM	6	148	0	154	52	1	0	53	1	2	0	3	210
5:30 PM	5	164	0	169	53	1	0	54	0	1	0	1	224
5:45 PM	4	111	0	115	45	5	0	50	1	1	0	2	167
Total	18	576	0	594	181	10	0	191	3	8	0	11	796
Grand Total	62	2140	1	2203	686	45	0	731	54	42	0	96	3030
Approach %	2.8	97.1	0.0		93.8	6.2	0.0		56.3	43.8	0.0		
Total %	2.0	70.6	0.0	72.7	22.6	1.5	0.0	24.1	1.8	1.4	0.0	3.2	
Exiting Leg Total				729				2194				107	3030

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:30 PM	1	172	0	173	43	4	0	47	1	3	0	4	224
3:45 PM	5	185	0	190	45	4	0	49	9	1	0	10	249
4:00 PM	1	232	0	233	33	1	0	34	4	2	0	6	273
4:15 PM	6	191	0	197	36	4	0	40	2	0	0	2	239
Total Volume	13	780	0	793	157	13	0	170	16	6	0	22	985
% Approach Total	1.6	98.4	0.0		92.4	7.6	0.0		72.7	27.3	0.0		
PHF	0.542	0.841	0.000	0.851	0.872	0.813	0.000	0.867	0.444	0.500	0.000	0.550	0.902
Entering Leg	13	780	0	793	157	13	0	170	16	6	0	22	985
Exiting Leg				163				796				26	985
Total				956				966				48	1970

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



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

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	4	0	4	2	0	0	2	0	0	0	0	6
2:15 PM	1	1	0	2	1	1	0	2	1	0	0	1	5
2:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
2:45 PM	1	4	0	5	1	1	0	2	1	0	0	1	8
Total	2	9	0	11	5	2	0	7	2	1	0	3	21
3:00 PM	0	1	0	1	2	1	0	3	2	1	0	3	7
3:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:30 PM	0	3	0	3	3	0	0	3	0	0	0	0	6
3:45 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
Total	0	7	0	7	6	1	0	7	3	1	0	4	18
4:00 PM	0	5	0	5	2	0	0	2	0	1	0	1	8
4:15 PM	0	7	0	7	1	0	0	1	1	0	0	1	9
4:30 PM	0	1	0	1	2	0	0	2	1	0	0	1	4
4:45 PM	0	2	0	2	0	1	0	1	0	1	0	1	4
Total	0	15	0	15	5	1	0	6	2	2	0	4	25
5:00 PM	0	3	0	3	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	7	0	7	2	0	0	2	0	0	0	0	9
Grand Total	2	38	0	40	18	4	0	22	7	4	0	11	73
Approach %	5.0	95.0	0.0		81.8	18.2	0.0		63.6	36.4	0.0		
Total %	2.7	52.1	0.0	54.8	24.7	5.5	0.0	30.1	9.6	5.5	0.0	15.1	
Exiting Leg Total	22				45				6				73
Buses	1	8	0	9	6	2	0	8	0	2	0	2	19
% Buses	50.0	21.1	0.0	22.5	33.3	50.0	0.0	36.4	0.0	50.0	0.0	18.2	26.0
Exiting Leg Total	8				8				3				19
Single-Unit Trucks	1	27	0	28	10	2	0	12	7	2	0	9	49
% Single-Unit	50.0	71.1	0.0	70.0	55.6	50.0	0.0	54.5	100.0	50.0	0.0	81.8	67.1
Exiting Leg Total	12				34				3				49
Articulated Trucks	0	3	0	3	2	0	0	2	0	0	0	0	5
% Articulated	0.0	7.9	0.0	7.5	11.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	6.8
Exiting Leg Total	2				3				0				5

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:30 PM	0	3	0	3	3	0	0	3	0	0	0	0	6
3:45 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
4:00 PM	0	5	0	5	2	0	0	2	0	1	0	1	8
4:15 PM	0	7	0	7	1	0	0	1	1	0	0	1	9
Total Volume	0	16	0	16	7	0	0	7	2	1	0	3	26
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		66.7	33.3	0.0		
PHF	0.000	0.571	0.000	0.571	0.583	0.000	0.000	0.583	0.500	0.250	0.000	0.750	0.722
Buses	0	4	0	4	2	0	0	2	0	0	0	0	6
Buses %	0.0	25.0	0.0	25.0	28.6	0.0	0.0	28.6	0.0	0.0	0.0	0.0	23.1
Single-Unit Trucks	0	10	0	10	4	0	0	4	2	1	0	3	17
Single-Unit %	0.0	62.5	0.0	62.5	57.1	0.0	0.0	57.1	100.0	100.0	0.0	100.0	65.4
Articulated Trucks	0	2	0	2	1	0	0	1	0	0	0	0	3
Articulated %	0.0	12.5	0.0	12.5	14.3	0.0	0.0	14.3	0.0	0.0	0.0	0.0	11.5
Buses	0	4	0	4	2	0	0	2	0	0	0	0	6
Single-Unit Trucks	0	10	0	10	4	0	0	4	2	1	0	3	17
Articulated Trucks	0	2	0	2	1	0	0	1	0	0	0	0	3
Total Entering Leg	0	16	0	16	7	0	0	7	2	1	0	3	26

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



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

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
Buses	2				4				0				6
Single-Unit Trucks	5				12				0				17
Articulated Trucks	1				2				0				3
Total Exiting Leg	8				18				0				26

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	3	36	1	40	31	5	0	36	2	2	0	4	80
2:15 PM	5	35	0	40	45	2	0	47	0	4	0	4	91
2:30 PM	2	50	0	52	57	2	0	59	3	7	0	10	121
2:45 PM	10	113	0	123	31	3	0	34	16	6	0	22	179
Total	20	234	1	255	164	12	0	176	21	19	0	40	471
3:00 PM	4	95	0	99	50	0	0	50	6	3	0	9	158
3:15 PM	1	124	0	125	45	0	0	45	0	1	0	1	171
3:30 PM	1	162	0	163	42	3	0	45	1	3	0	4	212
3:45 PM	4	158	0	162	42	4	0	46	6	1	0	7	215
Total	10	539	0	549	179	7	0	186	13	8	0	21	756
4:00 PM	1	209	0	210	32	1	0	33	4	1	0	5	248
4:15 PM	6	178	0	184	32	3	0	35	1	0	0	1	220
4:30 PM	1	124	0	125	36	3	0	39	1	2	0	3	167
4:45 PM	4	135	0	139	32	4	0	36	5	1	0	6	181
Total	12	646	0	658	132	11	0	143	11	4	0	15	816
5:00 PM	2	144	0	146	31	3	0	34	1	4	0	5	185
5:15 PM	6	146	0	152	52	1	0	53	0	2	0	2	207
5:30 PM	4	155	0	159	52	1	0	53	0	1	0	1	213
5:45 PM	4	107	0	111	45	4	0	49	1	1	0	2	162
Total	16	552	0	568	180	9	0	189	2	8	0	10	767
Grand Total	58	1971	1	2030	655	39	0	694	47	39	0	86	2810
Approach %	2.9	97.1	0.0		94.4	5.6	0.0		54.7	45.3	0.0		
Total %	2.1	70.1	0.0	72.2	23.3	1.4	0.0	24.7	1.7	1.4	0.0	3.1	
Exiting Leg Total				695				2018				97	2810

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:30 PM	1	162	0	163	42	3	0	45	1	3	0	4	212
3:45 PM	4	158	0	162	42	4	0	46	6	1	0	7	215
4:00 PM	1	209	0	210	32	1	0	33	4	1	0	5	248
4:15 PM	6	178	0	184	32	3	0	35	1	0	0	1	220
Total Volume	12	707	0	719	148	11	0	159	12	5	0	17	895
% Approach Total	1.7	98.3	0.0		93.1	6.9	0.0		70.6	29.4	0.0		
PHF	0.500	0.846	0.000	0.856	0.881	0.688	0.000	0.864	0.500	0.417	0.000	0.607	0.902
Entering Leg	12	707	0	719	148	11	0	159	12	5	0	17	895
Exiting Leg				153				719				23	895
Total				872				878				40	1790

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Light Goods Vehicle

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	2	0	2	4	1	0	5	0	0	0	0	7
2:15 PM	0	8	0	8	3	0	0	3	0	0	0	0	11
2:30 PM	0	4	0	4	2	0	0	2	0	1	0	1	7
2:45 PM	1	4	0	5	3	1	0	4	0	1	0	1	10
Total	1	18	0	19	12	2	0	14	0	2	0	2	35
3:00 PM	0	11	0	11	1	0	0	1	0	0	0	0	12
3:15 PM	0	16	0	16	5	0	0	5	1	0	0	1	22
3:30 PM	0	10	0	10	1	1	0	2	0	0	0	0	12
3:45 PM	1	27	0	28	3	0	0	3	3	0	0	3	34
Total	1	64	0	65	10	1	0	11	4	0	0	4	80
4:00 PM	0	23	0	23	1	0	0	1	0	1	0	1	25
4:15 PM	0	13	0	13	4	1	0	5	1	0	0	1	19
4:30 PM	0	17	0	17	0	0	0	0	1	0	0	1	18
4:45 PM	0	10	0	10	3	1	0	4	0	0	0	0	14
Total	0	63	0	63	8	2	0	10	2	1	0	3	76
5:00 PM	1	9	0	10	0	0	0	0	0	0	0	0	10
5:15 PM	0	2	0	2	0	0	0	0	1	0	0	1	3
5:30 PM	1	9	0	10	1	0	0	1	0	0	0	0	11
5:45 PM	0	4	0	4	0	1	0	1	0	0	0	0	5
Total	2	24	0	26	1	1	0	2	1	0	0	1	29
Grand Total	4	169	0	173	31	6	0	37	7	3	0	10	220
Approach %	2.3	97.7	0.0		83.8	16.2	0.0		70.0	30.0	0.0		
Total %	1.8	76.8	0.0	78.6	14.1	2.7	0.0	16.8	3.2	1.4	0.0	4.5	
Exiting Leg Total				34				176				10	220

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:45 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:45 PM	1	27	0	28	3	0	0	3	3	0	0	3	34
4:00 PM	0	23	0	23	1	0	0	1	0	1	0	1	25
4:15 PM	0	13	0	13	4	1	0	5	1	0	0	1	19
4:30 PM	0	17	0	17	0	0	0	0	1	0	0	1	18
Total Volume	1	80	0	81	8	1	0	9	5	1	0	6	96
% Approach Total	1.2	98.8	0.0		88.9	11.1	0.0		83.3	16.7	0.0		
PHF	0.250	0.741	0.000	0.723	0.500	0.250	0.000	0.450	0.417	0.250	0.000	0.500	0.706
Entering Leg	1	80	0	81	8	1	0	9	5	1	0	6	96
Exiting Leg				9				85				2	96
Total				90				94				8	192

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Buses

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
2:45 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
Total	1	1	0	2	1	1	0	2	0	1	0	1	5
3:00 PM	0	0	0	0	2	1	0	3	0	1	0	1	4
3:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	3	0	3	3	1	0	4	0	1	0	1	8
4:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
4:15 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	3	2	0	0	2	0	0	0	0	5
5:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
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	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	1	8	0	9	6	2	0	8	0	2	0	2	19
Approach %	11.1	88.9	0.0		75.0	25.0	0.0		0.0	100.0	0.0		
Total %	5.3	42.1	0.0	47.4	31.6	10.5	0.0	42.1	0.0	10.5	0.0	10.5	
Exiting Leg Total	8				8				3				19

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
2:45 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
3:00 PM	0	0	0	0	2	1	0	3	0	1	0	1	4
3:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Volume	1	3	0	4	3	2	0	5	0	2	0	2	11
% Approach Total	25.0	75.0	0.0		60.0	40.0	0.0		0.0	100.0	0.0		
PHF	0.250	0.375	0.000	0.500	0.375	0.500	0.000	0.417	0.000	0.500	0.000	0.500	0.688
Entering Leg	1	3	0	4	3	2	0	5	0	2	0	2	11
Exiting Leg				5				3				3	11
Total				9				8				5	22

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Single-Unit Trucks

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	3	0	3	2	0	0	2	0	0	0	0	5
2:15 PM	1	1	0	2	1	1	0	2	1	0	0	1	5
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	3	0	3	0	0	0	0	1	0	0	1	4
Total	1	7	0	8	3	1	0	4	2	0	0	2	14
3:00 PM	0	1	0	1	0	0	0	0	2	0	0	2	3
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	3	0	3	3	0	0	3	0	0	0	0	6
3:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	4	0	4	3	0	0	3	3	0	0	3	10
4:00 PM	0	2	0	2	1	0	0	1	0	1	0	1	4
4:15 PM	0	5	0	5	0	0	0	0	1	0	0	1	6
4:30 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
4:45 PM	0	2	0	2	0	1	0	1	0	1	0	1	4
Total	0	10	0	10	2	1	0	3	2	2	0	4	17
5:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	6	0	6	2	0	0	2	0	0	0	0	8
Grand Total	1	27	0	28	10	2	0	12	7	2	0	9	49
Approach %	3.6	96.4	0.0		83.3	16.7	0.0		77.8	22.2	0.0		
Total %	2.0	55.1	0.0	57.1	20.4	4.1	0.0	24.5	14.3	4.1	0.0	18.4	
Exiting Leg Total	12				34				3				49

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
3:30 PM	0	3	0	3	3	0	0	3	0	0	0	0	6
3:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
4:00 PM	0	2	0	2	1	0	0	1	0	1	0	1	4
4:15 PM	0	5	0	5	0	0	0	0	1	0	0	1	6
Total Volume	0	10	0	10	4	0	0	4	2	1	0	3	17
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		66.7	33.3	0.0		
PHF	0.000	0.500	0.000	0.500	0.333	0.000	0.000	0.333	0.500	0.250	0.000	0.750	0.708
Entering Leg	0	10	0	10	4	0	0	4	2	1	0	3	17
Exiting Leg				5				12				0	17
Total				15				16				3	34

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Articulated Trucks

	Greendale Avenue				Greendale Avenue				Grosvenor Road				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
2:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	1	0	1	1	0	0	1	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	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
4:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
4:30 PM	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
Total	0	2	0	2	1	0	0	1	0	0	0	0	0	3
5:00 PM	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
5:30 PM	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
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	0	3	2	0	0	2	0	0	0	0	0	5
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0			
Total %	0.0	60.0	0.0	60.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0		
Exiting Leg Total	2				3				0				5	

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:30 PM	Greendale Avenue					Greendale Avenue				Grosvenor Road					Total
	from North					from South				from West					
	Right	Thru	U-Turn	Total		Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	0	1	0	1	0	1	0	0	1	0	0	0	0	2	
4:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	
Total Volume	0	2	0	2	1	0	0	0	1	0	0	0	0	3	
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	0.0			
PHF	0.000	0.500	0.000	0.500	0.250	0.000	0.000	0.250		0.000	0.000	0.000	0.000	0.375	
Entering Leg	0	2	0	2	1	0	0	1		0	0	0	0	3	
Exiting Leg				1				2					0	3	
Total	3				3					0					

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	1	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	2
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	0	0	0	3	0	0	0	0	1	1	0	0	0	0	1	1	5
Approach %	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	100.0		
Total %	0.0	60.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	20.0	
Exiting Leg Total	0						4						1						5

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:15 PM	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	1	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	2
Total Volume	0	2	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	0	3
% Approach Total	0.0	100.0	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		
PHF	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	2	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	0	3
Exiting Leg	0						3						0						3
Total	2						4						0						6

PDI File #: **186604 B**
 Location: **N: Greendale Avenue S: Greendale Avenue**
 Location: **W: Grosvenor Road**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, November 29, 2018**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Pedestrians

	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	4
Total	0	0	0	0	0	0	0	0	0	6	3	9	0	0	0	0	1	1	10
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
3:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	3	4	5
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
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	1	1	1
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	2	2	4	4
Grand Total	0	0	0	1	0	1	0	0	0	6	3	9	0	0	0	5	8	13	23
Approach %	0	0	0	100	0		0	0	0	66.667	33.333		0	0	0	38.462	61.538		
Total %	0	0	0	4.3478	0	4.3478	0	0	0	26.087	13.043	39.13	0	0	0	21.739	34.783	56.522	
Exiting Leg Total	1						9						13						23

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Greendale Avenue						Greendale Avenue						Grosvenor Road						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:30 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	4
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
3:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	1	0	1	0	0	0	6	3	9	0	0	0	1	2	3	13
% Approach Total	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	33.3	66.7		
PHF	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.300	0.250	0.450	0.000	0.000	0.000	0.250	0.250	0.375	0.650
Entering Leg	0	0	0	1	0	1	0	0	0	6	3	9	0	0	0	1	2	3	13
Exiting Leg	1						9						3						13
Total	2						18						6						26

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



Cars and Heavy Vehicles (Combined)

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:00 AM	0	2	1	0	0	3	0	4	13	0	0	17	1	1	61	0	0	63	0	19	5	2	0	26	1	50	13	1	0	65
7:15 AM	3	5	2	0	0	10	1	8	13	0	0	22	2	5	61	0	0	68	0	39	5	2	0	46	0	47	14	4	0	65
7:30 AM	3	3	3	0	0	9	2	27	29	2	0	60	0	12	98	0	0	110	0	58	13	2	0	73	2	60	35	4	0	101
7:45 AM	6	8	5	0	0	19	0	19	40	0	0	59	0	15	102	0	0	117	1	24	13	1	0	39	1	72	8	3	0	84
Total	12	18	11	0	0	41	3	58	95	2	0	158	3	33	322	0	0	358	1	140	36	7	0	184	4	229	70	12	0	315
8:00 AM	10	9	8	1	0	28	1	7	27	0	0	35	0	11	97	0	0	108	0	24	11	2	0	37	1	55	10	2	0	68
8:15 AM	11	6	5	0	0	22	0	14	24	0	0	38	0	4	105	0	0	109	1	23	6	1	0	31	1	64	15	4	0	84
8:30 AM	2	6	5	0	0	13	0	6	24	0	1	31	0	7	84	1	0	92	0	23	7	1	0	31	2	67	6	3	0	78
8:45 AM	5	3	6	1	0	15	2	8	26	0	0	36	2	10	92	0	0	104	0	26	7	4	0	37	1	65	7	2	0	75
Total	28	24	24	2	0	78	3	35	101	0	1	140	2	32	378	1	0	413	1	96	31	8	0	136	5	251	38	11	0	305
9:00 AM	7	7	1	0	0	15	1	8	10	0	0	19	0	8	79	0	0	87	0	20	3	2	0	25	0	48	11	1	0	60
9:15 AM	1	3	0	0	0	4	0	7	28	0	0	35	0	9	102	1	0	112	0	14	7	1	0	22	2	42	5	0	0	49
9:30 AM	4	2	1	0	0	7	1	8	21	0	0	30	0	2	65	1	0	68	0	16	3	1	0	20	2	56	7	1	0	66
9:45 AM	4	6	5	1	0	16	0	7	18	0	0	25	0	7	69	0	0	76	1	25	2	4	0	32	3	69	5	0	0	77
Total	16	18	7	1	0	42	2	30	77	0	0	109	0	26	315	2	0	343	1	75	15	8	0	99	7	215	28	2	0	252
10:00 AM	4	6	2	0	0	12	0	6	21	0	0	27	0	0	64	0	0	64	1	14	4	5	0	24	0	52	7	0	0	59
10:15 AM	1	6	3	0	0	10	0	6	23	0	0	29	0	4	62	0	0	66	1	17	5	0	0	23	2	46	11	3	0	62
10:30 AM	2	5	4	0	0	11	1	1	20	0	0	22	0	6	58	0	0	64	0	19	2	3	0	24	1	58	2	1	0	62
10:45 AM	1	5	4	0	0	10	0	5	21	0	0	26	0	4	60	0	0	64	0	9	1	2	0	12	2	45	11	0	0	58
Total	8	22	13	0	0	43	1	18	85	0	0	104	0	14	244	0	0	258	2	59	12	10	0	83	5	201	31	4	0	241
Grand Total	64	82	55	3	0	204	9	141	358	2	1	511	5	105	1259	3	0	1372	5	370	94	33	0	502	21	896	167	29	0	1113
Approach %	31.4	40.2	27.0	1.5	0.0		1.8	27.6	70.1	0.4	0.2		0.4	7.7	91.8	0.2	0.0		1.0	73.7	18.7	6.6	0.0		1.9	80.5	15.0	2.6	0.0	
Total %	1.7	2.2	1.5	0.1	0.0	5.5	0.2	3.8	9.7	0.1	0.0	13.8	0.1	2.8	34.0	0.1	0.0	37.1	0.1	10.0	2.5	0.9	0.0	13.6	0.6	24.2	4.5	0.8	0.0	30.1
Exiting Leg Total						237						546						958						464						1497
Cars	64	81	52	3	0	200	8	139	348	2	1	498	5	100	1187	2	0	1294	5	352	89	32	0	478	21	846	162	28	0	1057
% Cars	100.0	98.8	94.5	100.0	0.0	98.0	88.9	98.6	97.2	100.0	100.0	97.5	100.0	95.2	94.3	66.7	0.0	95.2	100.0	95.1	94.7	97.0	0.0	95.2	100.0	94.4	97.0	96.6	0.0	95.0
Exiting Leg Total						225						523						905						452						1422
Heavy Vehicles	0	1	3	0	0	4	1	2	10	0	0	13	0	5	72	1	0	78	0	18	5	1	0	24	0	50	5	1	0	56
% Heavy Vehicles	0.0	1.2	5.5	0.0	0.0	2.0	11.1	1.4	2.8	0.0	0.0	2.5	0.0	4.8	5.7	33.3	0.0	5.7	0.0	4.9	5.3	3.0	0.0	4.8	0.0	5.6	3.0	3.4	0.0	5.0
Exiting Leg Total						12						23						53						12						75

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:30 AM	3	3	3	0	0	9	2	27	29	2	0	60	0	12	98	0	0	110	0	58	13	2	0	73	2	60	35	4	0	101
7:45 AM	6	8	5	0	0	19	0	19	40	0	0	59	0	15	102	0	0	117	1	24	13	1	0	39	1	72	8	3	0	84
8:00 AM	10	9	8	1	0	28	1	7	27	0	0	35	0	11	97	0	0	108	0	24	11	2	0	37	1	55	10	2	0	68
8:15 AM	11	6	5	0	0	22	0	14	24	0	0	38	0	4	105	0	0	109	1	23	6	1	0	31	1	64	15	4	0	84
Total Volume	30	26	21	1	0	78	3	67	120	2	0	192	0	42	402	0	0	444	2	129	43	6	0	180	5	251	68	13	0	337
% Approach Total	38.5	33.3	26.9	1.3	0.0		1.6	34.9	62.5	1.0	0.0		0.0	9.5	90.5	0.0	0.0		1.1	71.7	23.9	3.3	0.0		1.5	74.5	20.2	3.9	0.0	
PHF	0.682	0.722	0.656	0.250	0.000	0.696	0.375	0.620	0.750	0.250	0.000	0.800	0.000	0.700	0.957	0.000	0.000	0.949	0.500	0.556	0.827	0.750	0.000	0.616	0.625	0.872	0.486	0.813	0.000	0.834
Cars	30	26	21	1	0	78	3	66	118	2	0	189	0	41	376	0	0	417	2	113	41	6	0	162	5	240	68	13	0	326
Cars %	100.0	100.0	100.0	100.0	0.0	100.0	100.0	98.5	98.3	100.0	0.0	98.4	0.0	97.6	93.5	0.0	0.0	93.9	100.0	87.6	95.3	100.0	0.0	90.0	100.0	95.6	100.0	100.0	0.0	96.7
Heavy Vehicles	0	0	0	0	0	0	0	1	2	0	0	3	0	1	26	0	0	27	0	16	2	0	0	18	0	11	0	0	0	11
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.7	0.0	0.0	1.6	0.0	2.4	6.5	0.0	0.0	6.1	0.0	12.4	4.7	0.0	0.0	10.0	0.0	4.4	0.0	0.0	0.0	3.3
Cars Enter Leg	30	26	21	1	0	78	3	66	118	2	0	189	0	41	376	0	0	417	2	113	41	6	0	162	5	240	68	13	0	326
Heavy Enter Leg	0	0	0	0	0	0	0	1	2	0	0	3	0	1	26	0	0	27	0	16	2	0	0	18	0	11	0	0	0	11
Total Entering Leg	30	26	21	1	0	78	3	67	120	2	0	192	0	42	402	0	0	444	2	129	43	6	0	180	5	251	68	13	0	337
Cars Exiting Leg						98						182						265						149						478
Heavy Exiting Leg						3						16						11						2						27
Total Exiting Leg						101						198						276						151						505

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



Cars-Combined (Motorcycles, Cars, Light Goods)

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:00 AM	0	2	1	0	0	3	0	4	13	0	0	17	1	1	58	0	0	60	0	18	4	2	0	24	1	47	12	1	0	61
7:15 AM	3	5	2	0	0	10	0	8	13	0	0	21	2	4	56	0	0	62	0	38	5	2	0	45	0	43	14	4	0	61
7:30 AM	3	3	3	0	0	9	2	27	29	2	0	60	0	11	90	0	0	101	0	43	13	2	0	58	2	59	35	4	0	100
7:45 AM	6	8	5	0	0	19	0	19	40	0	0	59	0	15	93	0	0	108	1	24	12	1	0	38	1	67	8	3	0	79
Total	12	18	11	0	0	41	2	58	95	2	0	157	3	31	297	0	0	331	1	123	34	7	0	165	4	216	69	12	0	301
8:00 AM	10	9	8	1	0	28	1	7	25	0	0	33	0	11	94	0	0	105	0	23	10	2	0	35	1	53	10	2	0	66
8:15 AM	11	6	5	0	0	22	0	13	24	0	0	37	0	4	99	0	0	103	1	23	6	1	0	31	1	61	15	4	0	81
8:30 AM	2	6	5	0	0	13	0	6	21	0	1	28	0	7	83	1	0	91	0	23	7	1	0	31	2	66	5	3	0	76
8:45 AM	5	3	6	1	0	15	2	8	25	0	0	35	2	10	88	0	0	100	0	26	6	4	0	36	1	61	7	2	0	71
Total	28	24	24	2	0	78	3	34	95	0	1	133	2	32	364	1	0	399	1	95	29	8	0	133	5	241	37	11	0	294
9:00 AM	7	7	1	0	0	15	1	8	10	0	0	19	0	8	73	0	0	81	0	20	3	2	0	25	0	47	10	1	0	58
9:15 AM	1	2	0	0	0	3	0	7	27	0	0	34	0	8	95	1	0	104	0	14	7	1	0	22	2	34	5	0	0	41
9:30 AM	4	2	1	0	0	7	1	8	21	0	0	30	0	2	62	0	0	64	0	16	3	0	0	19	2	53	7	0	0	62
9:45 AM	4	6	4	1	0	15	0	7	18	0	0	25	0	6	65	0	0	71	1	25	2	4	0	32	3	64	5	0	0	72
Total	16	17	6	1	0	40	2	30	76	0	0	108	0	24	295	1	0	320	1	75	15	7	0	98	7	198	27	1	0	233
10:00 AM	4	6	0	0	0	10	0	6	21	0	0	27	0	0	59	0	0	59	1	14	4	5	0	24	0	51	6	0	0	57
10:15 AM	1	6	3	0	0	10	0	5	23	0	0	28	0	4	56	0	0	60	1	17	4	0	0	22	2	42	11	3	0	58
10:30 AM	2	5	4	0	0	11	1	1	19	0	0	21	0	5	56	0	0	61	0	19	2	3	0	24	1	54	1	1	0	57
10:45 AM	1	5	4	0	0	10	0	5	19	0	0	24	0	4	60	0	0	64	0	9	1	2	0	12	2	44	11	0	0	57
Total	8	22	11	0	0	41	1	17	82	0	0	100	0	13	231	0	0	244	2	59	11	10	0	82	5	191	29	4	0	229
Grand Total	64	81	52	3	0	200	8	139	348	2	1	498	5	100	1187	2	0	1294	5	352	89	32	0	478	21	846	162	28	0	1057
Approach %	32.0	40.5	26.0	1.5	0.0		1.6	27.9	69.9	0.4	0.2		0.4	7.7	91.7	0.2	0.0		1.0	73.6	18.6	6.7	0.0		2.0	80.0	15.3	2.6	0.0	
Total %	1.8	2.3	1.5	0.1	0.0	5.7	0.2	3.9	9.9	0.1	0.0	14.1	0.1	2.8	33.7	0.1	0.0	36.7	0.1	10.0	2.5	0.9	0.0	13.6	0.6	24.0	4.6	0.8	0.0	30.0
Exiting Leg Total	225						523						905						452						1422					

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:30 AM	3	3	3	0	0	9	2	27	29	2	0	60	0	11	90	0	0	101	0	43	13	2	0	58	2	59	35	4	0	100
7:45 AM	6	8	5	0	0	19	0	19	40	0	0	59	0	15	93	0	0	108	1	24	12	1	0	38	1	67	8	3	0	79
8:00 AM	10	9	8	1	0	28	1	7	25	0	0	33	0	11	94	0	0	105	0	23	10	2	0	35	1	53	10	2	0	66
8:15 AM	11	6	5	0	0	22	0	13	24	0	0	37	0	4	99	0	0	103	1	23	6	1	0	31	1	61	15	4	0	81
Total Volume	30	26	21	1	0	78	3	66	118	2	0	189	0	41	376	0	0	417	2	113	41	6	0	162	5	240	68	13	0	326
% Approach Total	38.5	33.3	26.9	1.3	0.0		1.6	34.9	62.4	1.1	0.0		0.0	9.8	90.2	0.0	0.0		1.2	69.8	25.3	3.7	0.0		1.5	73.6	20.9	4.0	0.0	
PHF	0.682	0.722	0.656	0.250	0.000	0.696	0.375	0.611	0.738	0.250	0.000	0.788	0.000	0.683	0.949	0.000	0.000	0.965	0.500	0.657	0.788	0.750	0.000	0.698	0.625	0.896	0.486	0.813	0.000	0.815
Entering Leg	30	26	21	1	0	78	3	66	118	2	0	189	0	41	376	0	0	417	2	113	41	6	0	162	5	240	68	13	0	326
Exiting Leg	98						182						265						149						478					
Total	176						371						682						311						804					

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



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

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue							
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	1	1	0	0	2	0	3	1	0	0	4	9
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	1	5	0	0	6	0	1	0	0	0	1	0	4	0	0	0	4	12	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9	0	15	0	0	0	15	0	1	0	0	0	1	25	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	0	1	0	0	1	0	5	0	0	0	5	15	
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	2	25	0	0	27	0	17	2	0	0	19	0	13	1	0	0	14	61	
8:00 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	3	0	0	3	0	1	1	0	0	2	0	2	0	0	0	2	9	
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	6	0	0	6	0	0	0	0	0	0	0	3	0	0	0	3	10	
8:30 AM	0	0	0	0	0	0	0	0	3	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	6	
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	4	0	0	4	0	0	1	0	0	1	0	4	0	0	0	4	10	
Total	0	0	0	0	0	0	0	1	6	0	0	7	0	0	14	0	0	14	0	1	2	0	0	3	0	10	1	0	0	11	35	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	1	1	0	0	2	8	
9:15 AM	0	1	0	0	0	1	0	0	1	0	0	1	0	1	7	0	0	8	0	0	0	0	0	0	0	8	0	0	0	8	18	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	0	0	0	1	0	1	0	3	0	1	0	4	9	
9:45 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	0	5	0	0	0	5	11	
Total	0	1	1	0	0	2	0	0	1	0	0	1	0	2	20	1	0	23	0	0	0	1	0	1	0	17	1	1	0	19	46	
10:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	1	1	0	0	2	9	
10:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	6	0	0	6	0	0	1	0	0	1	0	4	0	0	0	4	12	
10:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	2	0	0	3	0	0	0	0	0	0	0	4	1	0	0	5	9	
10:45 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	
Total	0	0	2	0	0	2	0	1	3	0	0	4	0	1	13	0	0	14	0	0	1	0	0	1	0	10	2	0	0	12	33	
Grand Total	0	1	3	0	0	4	1	2	10	0	0	13	0	5	72	1	0	78	0	18	5	1	0	24	0	50	5	1	0	56	175	
Approach %	0.0	25.0	75.0	0.0	0.0		7.7	15.4	76.9	0.0	0.0		0.0	6.4	92.3	1.3	0.0		0.0	75.0	20.8	4.2	0.0		0.0	89.3	8.9	1.8	0.0			
Total %	0.0	0.6	1.7	0.0	0.0	2.3	0.6	1.1	5.7	0.0	0.0	7.4	0.0	2.9	41.1	0.6	0.0	44.6	0.0	10.3	2.9	0.6	0.0	13.7	0.0	28.6	2.9	0.6	0.0	32.0		
Exiting Leg Total	12						23						53						12						75						175	
Buses	0	0	1	0	0	1	0	0	1	0	0	1	0	0	4	0	0	4	0	17	2	0	0	19	0	7	0	0	0	7	32	
% Buses	0.0	0.0	33.3	0.0	0.0	25.0	0.0	0.0	10.0	0.0	0.0	7.7	0.0	0.0	5.6	0.0	0.0	5.1	0.0	94.4	40.0	0.0	0.0	79.2	0.0	14.0	0.0	0.0	0.0	12.5	18.3	
Exiting Leg Total	2						17						8						1						4						32	
Single-Unit Trucks	0	1	2	0	0	3	0	2	7	0	0	9	0	5	64	1	0	70	0	1	3	1	0	5	0	36	4	1	0	41	128	
% Single-Unit	0.0	100.0	66.7	0.0	0.0	75.0	0.0	100.0	70.0	0.0	0.0	69.2	0.0	100.0	88.9	100.0	0.0	89.7	0.0	5.6	60.0	100.0	0.0	20.8	0.0	72.0	80.0	100.0	0.0	73.2	73.1	
Exiting Leg Total	9						5						38						9						67						128	
Articulated Trucks	0	0	0	0	0	0	1	0	2	0	0	3	0	0	4	0	0	4	0	0	0	0	0	0	0	7	1	0	0	8	15	
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	20.0	0.0	0.0	23.1	0.0	0.0	5.6	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	20.0	0.0	0.0	14.3	8.6	
Exiting Leg Total	1						1						7						2						4						15	

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:00 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total	
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	1	0	0	0	2	0	3	1	0	0	4	9
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	1	5	0	0	6	0	1	0	0	0	1	0	4	0	0	0	4	12	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9	0	15	0	0	0	15	0	1	0	0	0	1	25	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	0	1	0	0	1	0	5	0	0	0	5	15	
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	2	25	0	0	27	0	17	2	0	0	19	0	13	1	0	0	14	61	
% 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	7.4	92.6	0.0	0.0	0.0	0.0	89.5	10.5	0.0	0.0	0.0	0.0	92.9	7.1	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.500	0.694	0.000	0.000	0.750	0.000	0.283	0.500	0.000	0.000	0.317	0.000	0.650	0.250	0.000	0.000	0.700	0.610	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	16	1	0	0	17	0	3	0	0	0	3	23	
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	11.1	0.0	94.1	50.0	0.0	0.0	89.5	0.0	23.1	0.0	0.0	0.0	21.4	37.7	
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20	0	0	22	0	1	1	0	0	2	0	8	0	0	0	8	32	
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	80.0	0.0	0.0	81.5	0.0	5.9	50.0	0.0	0.0	10.5	0.0	61.5	0.0	0.0	0.0	57.1	52.5	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	2	1	0	0	3	6	
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	8.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	100.0	0.0	0.0	21.4	9.8	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	16	1	0	0	17	0	3	0	0	0	3	23	
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20	0	0	22	0	1	1	0	0	2	0	8	0	0	0	8	32	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	2	1	0	0	3	6	
Total Entering Leg	0	0	0	0	0	0	1	0	0	0	0	1	0	2	25	0	0	27	0	17	2	0	0	19	0	13	1	0	0	14	61	
Buses	1						16						3						0						3						23	

PDI File #: **186604 A**
 Location: **N: Warren Street S: Warren Street NE: Harris Avenue**
 Location: **E: Dedham Avenue W: Dedham Avenue**
 City, State: **Needham, MA**
 Client: **GPI/ N.Rogers**
 Site Code: **MAX-2017099.1**
 Count Date: **Thursday, December 06, 2018**
 Start Time: **7:00 AM**
 End Time: **11:00 AM**
 Class:



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

	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
Single-Unit Trucks						3						1						8						0					20	32
Articulated Trucks						1						1						2						0					2	6
Total Exiting Leg						5						18						13						0					25	61

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:00 AM	0	2	1	0	0	3	0	2	12	0	0	14	1	1	49	0	0	51	0	16	4	2	0	22	1	42	12	1	0	56
7:15 AM	3	5	2	0	0	10	0	8	13	0	0	21	2	3	47	0	0	52	0	38	4	2	0	44	0	36	14	4	0	54
7:30 AM	3	3	2	0	0	8	2	26	27	2	0	57	0	10	79	0	0	89	0	40	13	2	0	55	2	53	35	3	0	93
7:45 AM	6	8	5	0	0	19	0	18	37	0	0	55	0	14	88	0	0	102	1	21	11	1	0	34	0	60	8	3	0	71
Total	12	18	10	0	0	40	2	54	89	2	0	147	3	28	263	0	0	294	1	115	32	7	0	155	3	191	69	11	0	274
8:00 AM	10	9	8	1	0	28	1	7	25	0	0	33	0	11	88	0	0	99	0	23	10	2	0	35	0	44	9	2	0	55
8:15 AM	11	6	5	0	0	22	0	13	24	0	0	37	0	4	92	0	0	96	1	18	6	1	0	26	1	56	14	2	0	73
8:30 AM	2	5	5	0	0	12	0	5	21	0	0	26	0	7	75	1	0	83	0	23	7	0	0	30	2	61	5	3	0	71
8:45 AM	5	3	6	1	0	15	2	7	24	0	0	33	1	10	79	0	0	90	0	26	6	4	0	36	1	55	6	2	0	64
Total	28	23	24	2	0	77	3	32	94	0	0	129	1	32	334	1	0	368	1	90	29	7	0	127	4	216	34	9	0	263
9:00 AM	7	7	1	0	0	15	1	6	10	0	0	17	0	6	61	0	0	67	0	20	3	2	0	25	0	46	9	1	0	56
9:15 AM	1	2	0	0	0	3	0	7	26	0	0	33	0	8	82	0	0	90	0	11	7	1	0	19	2	31	4	0	0	37
9:30 AM	4	2	1	0	0	7	1	6	20	0	0	27	0	2	49	0	0	51	0	14	3	0	0	17	2	41	6	0	0	49
9:45 AM	3	6	4	1	0	14	0	7	18	0	0	25	0	6	58	0	0	64	1	23	1	4	0	29	3	58	5	0	0	66
Total	15	17	6	1	0	39	2	26	74	0	0	102	0	22	250	0	0	272	1	68	14	7	0	90	7	176	24	1	0	208
10:00 AM	4	5	0	0	0	9	0	6	18	0	0	24	0	0	54	0	0	54	1	13	3	5	0	22	0	44	3	0	0	47
10:15 AM	1	5	3	0	0	9	0	5	20	0	0	25	0	3	52	0	0	55	1	15	3	0	0	19	2	33	10	1	0	46
10:30 AM	2	5	4	0	0	11	1	1	19	0	0	21	0	4	49	0	0	53	0	18	2	2	0	22	0	49	0	1	0	50
10:45 AM	1	5	4	0	0	10	0	5	17	0	0	22	0	4	51	0	0	55	0	9	0	1	0	10	2	39	9	0	0	50
Total	8	20	11	0	0	39	1	17	74	0	0	92	0	11	206	0	0	217	2	55	8	8	0	73	4	165	22	2	0	193
Grand Total	63	78	51	3	0	195	8	129	331	2	0	470	4	93	1053	1	0	1151	5	328	83	29	0	445	18	748	149	23	0	938
Approach %	32.3	40.0	26.2	1.5	0.0		1.7	27.4	70.4	0.4	0.0		0.3	8.1	91.5	0.1	0.0		1.1	73.7	18.7	6.5	0.0		1.9	79.7	15.9	2.5	0.0	
Total %	2.0	2.4	1.6	0.1	0.0	6.1	0.3	4.0	10.3	0.1	0.0	14.7	0.1	2.9	32.9	0.0	0.0	36.0	0.2	10.3	2.6	0.9	0.0	13.9	0.6	23.4	4.7	0.7	0.0	29.3
Exiting Leg Total	207						484						806						428						1274					

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:30 AM	3	3	2	0	0	8	2	26	27	2	0	57	0	10	79	0	0	89	0	40	13	2	0	55	2	53	35	3	0	93
7:45 AM	6	8	5	0	0	19	0	18	37	0	0	55	0	14	88	0	0	102	1	21	11	1	0	34	0	60	8	3	0	71
8:00 AM	10	9	8	1	0	28	1	7	25	0	0	33	0	11	88	0	0	99	0	23	10	2	0	35	0	44	9	2	0	55
8:15 AM	11	6	5	0	0	22	0	13	24	0	0	37	0	4	92	0	0	96	1	18	6	1	0	26	1	56	14	2	0	73
Total Volume	30	26	20	1	0	77	3	64	113	2	0	182	0	39	347	0	0	386	2	102	40	6	0	150	3	213	66	10	0	292
% Approach Total	39.0	33.8	26.0	1.3	0.0		1.6	35.2	62.1	1.1	0.0		0.0	10.1	89.9	0.0	0.0		1.3	68.0	26.7	4.0	0.0		1.0	72.9	22.6	3.4	0.0	
PHF	0.682	0.722	0.625	0.250	0.000	0.688	0.375	0.615	0.764	0.250	0.000	0.798	0.000	0.696	0.943	0.000	0.000	0.946	0.500	0.638	0.769	0.750	0.000	0.682	0.375	0.888	0.471	0.833	0.000	0.785
Entering Leg	30	26	20	1	0	77	3	64	113	2	0	182	0	39	347	0	0	386	2	102	40	6	0	150	3	213	66	10	0	292
Exiting Leg	92						169						237						142						447					
Total	169						351						623						292						739					

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:00 AM	0	0	0	0	0	0	0	2	1	0	0	3	0	0	9	0	0	9	0	2	0	0	0	2	0	5	0	0	0	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	0	10	0	0	1	0	0	1	0	7	0	0	0	7
7:30 AM	0	0	1	0	0	1	0	1	2	0	0	3	0	1	11	0	0	12	0	3	0	0	0	3	0	6	0	1	0	7
7:45 AM	0	0	0	0	0	0	0	1	3	0	0	4	0	1	5	0	0	6	0	3	1	0	0	4	1	7	0	0	0	8
Total	0	0	1	0	0	1	0	4	6	0	0	10	0	3	34	0	0	37	0	8	2	0	0	10	1	25	0	1	0	27
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	1	9	1	0	0	11
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	5	0	0	0	5	0	5	1	2	0	8
8:30 AM	0	1	0	0	0	1	0	1	0	0	1	2	0	0	8	0	0	8	0	0	0	1	0	1	0	5	0	0	0	5
8:45 AM	0	0	0	0	0	0	0	1	1	0	0	2	1	0	9	0	0	10	0	0	0	0	0	0	0	6	1	0	0	7
Total	0	1	0	0	0	1	0	2	1	0	1	4	1	0	30	0	0	31	0	5	0	1	0	6	1	25	3	2	0	31
9:00 AM	0	0	0	0	0	0	0	2	0	0	0	2	0	2	12	0	0	14	0	0	0	0	0	0	0	1	1	0	0	2
9:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	13	1	0	14	0	3	0	0	0	3	0	3	1	0	0	4
9:30 AM	0	0	0	0	0	0	0	2	1	0	0	3	0	0	13	0	0	13	0	2	0	0	0	2	0	12	1	0	0	13
9:45 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	7	0	2	1	0	0	3	0	6	0	0	0	6
Total	1	0	0	0	0	1	0	4	2	0	0	6	0	2	45	1	0	48	0	7	1	0	0	8	0	22	3	0	0	25
10:00 AM	0	1	0	0	0	1	0	0	3	0	0	3	0	0	5	0	0	5	0	1	1	0	0	2	0	7	3	0	0	10
10:15 AM	0	1	0	0	0	1	0	0	3	0	0	3	0	1	4	0	0	5	0	2	1	0	0	3	0	9	1	2	0	12
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	0	1	0	1	0	2	1	5	1	0	0	7
10:45 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	9	0	0	9	0	0	1	1	0	2	0	5	2	0	0	7
Total	0	2	0	0	0	2	0	0	8	0	0	8	0	2	25	0	0	27	0	4	3	2	0	9	1	26	7	2	0	36
Grand Total	1	3	1	0	0	5	0	10	17	0	1	28	1	7	134	1	0	143	0	24	6	3	0	33	3	98	13	5	0	119
Approach %	20.0	60.0	20.0	0.0	0.0		0.0	35.7	60.7	0.0	3.6		0.7	4.9	93.7	0.7	0.0		0.0	72.7	18.2	9.1	0.0		2.5	82.4	10.9	4.2	0.0	
Total %	0.3	0.9	0.3	0.0	0.0	1.5	0.0	3.0	5.2	0.0	0.3	8.5	0.3	2.1	40.9	0.3	0.0	43.6	0.0	7.3	1.8	0.9	0.0	10.1	0.9	29.9	4.0	1.5	0.0	36.3
Exiting Leg Total	18						39						99						24						148					

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

9:30 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
9:30 AM	0	0	0	0	0	0	0	2	1	0	0	3	0	0	13	0	0	13	0	2	0	0	0	2	0	12	1	0	0	13
9:45 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	7	0	2	1	0	0	3	0	6	0	0	0	6
10:00 AM	0	1	0	0	0	1	0	0	3	0	0	3	0	0	5	0	0	5	0	1	1	0	0	2	0	7	3	0	0	10
10:15 AM	0	1	0	0	0	1	0	0	3	0	0	3	0	1	4	0	0	5	0	2	1	0	0	3	0	9	1	2	0	12
Total Volume	1	2	0	0	0	3	0	2	7	0	0	9	0	1	29	0	0	30	0	7	3	0	0	10	0	34	5	2	0	41
% Approach Total	33.3	66.7	0.0	0.0	0.0		0.0	22.2	77.8	0.0	0.0		0.0	3.3	96.7	0.0	0.0		0.0	70.0	30.0	0.0	0.0		0.0	82.9	12.2	4.9	0.0	
PHF	0.250	0.500	0.000	0.000	0.000	0.750	0.000	0.250	0.583	0.000	0.000	0.750	0.000	0.250	0.558	0.000	0.000	0.577	0.000	0.875	0.750	0.000	0.000	0.833	0.000	0.708	0.417	0.250	0.000	0.788
Entering Leg	1	2	0	0	0	3	0	2	7	0	0	9	0	1	29	0	0	30	0	7	3	0	0	10	0	34	5	2	0	41
Exiting Leg	6						12						34						9						32					
Total	9						21						64						19						73					

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total		
	from North						from Northeast						from East						from South						from West								
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	1	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	15	0	0	0	0	15	0	1	0	0	0	1	16	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	1	0	0	1	0	1	0	0	0	1	4	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	16	1	0	0	0	17	0	3	0	0	0	3	23	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	0	2	3	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	4	0	0	0	4	7	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	
Grand Total	0	0	1	0	0	1	0	0	1	0	0	1	0	0	4	0	0	4	0	17	2	0	0	19	0	7	0	0	0	7		32	
Approach %	0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	89.5	10.5	0.0	0.0		0.0	100.0	0.0	0.0	0.0				
Total %	0.0	0.0	3.1	0.0	0.0	3.1	0.0	0.0	3.1	0.0	0.0	3.1	0.0	0.0	12.5	0.0	0.0	12.5	0.0	53.1	6.3	0.0	0.0	59.4	0.0	21.9	0.0	0.0	0.0	21.9			
Exiting Leg Total	2						17						8						1						4						32		

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:30 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue					
	from North						from Northeast						from East						from South						from West					
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	15	0	1	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	1	0	1	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	1	0	0	0	1	0	2	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	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	3	0	0	3	0	16	1	0	0	17	0	4	0	0	0	4
% 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	100.0	0.0	0.0		0.0	94.1	5.9	0.0	0.0		0.0	100.0	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	0.375	0.000	0.000	0.375	0.000	0.267	0.250	0.000	0.000	0.283	0.000	0.500	0.000	0.000	0.500	0.375
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	16	1	0	0	17	0	4	0	0	0	4
Exiting Leg	1						16						7						0						3					
Total	1						16						7						17						7					

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	2	0	0	2	0	0	0	2	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	6	0	1	0	0	0	1	0	2	0	0	0	2	9
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	4	0	0	0	4	10
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20	0	0	22	0	1	1	0	0	2	0	8	0	0	0	8	32
8:00 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	3	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	4	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	8
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	1	0	0	1	0	1	0	0	0	1	6
Total	0	0	0	0	0	0	0	1	3	0	0	4	0	0	12	0	0	12	0	0	2	0	0	2	0	4	1	0	0	5	23
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	1	0	0	1	7
9:15 AM	0	1	0	0	0	1	0	0	1	0	0	1	0	1	7	0	0	8	0	0	0	0	0	0	0	7	0	0	0	7	17
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	0	0	0	1	0	1	0	2	0	1	0	3	8
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	0	5	0	0	0	5	9
Total	0	1	0	0	0	1	0	0	1	0	0	1	0	2	19	1	0	22	0	0	0	1	0	1	0	14	1	1	0	16	41
10:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	1	1	0	0	2	9
10:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	6	0	0	6	0	0	0	0	0	0	0	4	0	0	0	4	11
10:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	2	0	0	3	0	0	0	0	0	0	0	4	1	0	0	5	9
10:45 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
Total	0	0	2	0	0	2	0	1	3	0	0	4	0	1	13	0	0	14	0	0	0	0	0	0	0	10	2	0	0	12	32
Grand Total	0	1	2	0	0	3	0	2	7	0	0	9	0	5	64	1	0	70	0	1	3	1	0	5	0	36	4	1	0	41	128
Approach %	0.0	33.3	66.7	0.0	0.0		0.0	22.2	77.8	0.0	0.0		0.0	7.1	91.4	1.4	0.0		0.0	20.0	60.0	20.0	0.0		0.0	87.8	9.8	2.4	0.0		
Total %	0.0	0.8	1.6	0.0	0.0	2.3	0.0	1.6	5.5	0.0	0.0	7.0	0.0	3.9	50.0	0.8	0.0	54.7	0.0	0.8	2.3	0.8	0.0	3.9	0.0	28.1	3.1	0.8	0.0	32.0	
Exiting Leg Total	9						5						38						9						67						128

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

9:15 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total	
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
9:15 AM	0	1	0	0	0	1	0	0	1	0	0	1	0	1	7	0	0	8	0	0	0	0	0	0	0	0	7	0	0	0	7	17
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	0	0	0	1	0	1	0	2	0	1	0	3	8	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	0	5	0	0	0	5	9	
10:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	1	1	0	0	2	9
Total Volume	0	1	2	0	0	3	0	0	1	0	0	1	0	2	18	1	0	21	0	0	0	1	0	1	0	15	1	1	0	17	43	
% Approach Total	0.0	33.3	66.7	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	9.5	85.7	4.8	0.0		0.0	0.0	0.0	100.0	0.0		0.0	88.2	5.9	5.9	0.0			
PHF	0.000	0.250	0.250	0.000	0.000	0.375	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.643	0.250	0.000	0.656	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.536	0.250	0.250	0.000	0.607	0.632	
Entering Leg	0	1	2	0	0	3	0	0	1	0	0	1	0	2	18	1	0	21	0	0	0	1	0	1	0	15	1	1	0	17	43	
Exiting Leg	3						1						17						3						19						43	
Total	6						2						38						4						36						86	

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total
	from North						from Northeast						from East						from South						from West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	2	1	0	0	3	6
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30 AM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Total	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	5
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
Grand Total	0	0	0	0	0	0	1	0	2	0	0	3	0	0	4	0	0	4	0	0	0	0	0	0	0	7	1	0	0	8	15
Approach %	0.0	0.0	0.0	0.0	0.0		33.3	0.0	66.7	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	87.5	12.5	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	13.3	0.0	0.0	20.0	0.0	0.0	26.7	0.0	0.0	26.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.7	6.7	0.0	0.0	53.3	
Exiting Leg Total	1						1						7						2						4						15

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:00 AM	Warren Street						Harris Avenue						Dedham Avenue						Warren Street						Dedham Avenue						Total	
	from North						from Northeast						from East						from South						from West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2	1	0	0	3	6
% 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	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	33.3	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.375	0.500
Entering Leg	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2	1	0	0	3	6
Exiting Leg	1						1						2						0						2						6	
Total	1						2						4						0						5						12	

PDI File #: 186604 A
Location: N: Warren Street S: Warren Street NE: Harris Avenue
Location: E: Dedham Avenue W: Dedham Avenue
City, State: Needham, MA
Client: GPI/ N.Rogers
Site Code: MAX-2017099.1
Count Date: Thursday, December 06, 2018
Start Time: 7:00 AM
End Time: 11:00 AM
Class:



	Warren Street								Harris Avenue								Dedham Avenue								Warren Street								Dedham Avenue								Total													
	from North								from Northeast								from East								from South								from West																					
	Right	Thru	Left	Hard Left	U-Turn	CW-SB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total														
7:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	6											
7:15 AM	0	0	0	0	0	0	5	3	8	0	0	0	0	0	5	2	7	0	0	0	0	0	1	10	11	0	0	0	0	0	1	5	6	0	0	0	0	0	1	2	3	35												
7:30 AM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	2	2	4	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16											
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2												
Total	0	0	0	0	0	0	7	4	11	0	0	0	0	0	8	5	13	0	0	0	0	0	1	24	25	0	0	0	0	0	1	6	7	0	0	0	0	1	2	3	59													
8:00 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	5														
8:15 AM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5														
8:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1														
8:45 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2													
Total	0	0	0	0	0	0	2	3	5	0	0	0	0	0	1	1	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	3	5			13													
9:00 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4														
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
9:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2														
9:45 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	1	1	4														
Total	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	2	2			10												
10:00 AM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	1	1	6													
10:15 AM	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	2			10												
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	4													
10:45 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			2													
Total	0	0	0	0	0	0	3	4	7	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	8	0	0	0	0	3	1	4			22											
Grand Total	0	0	0	0	0	0	13	13	26	0	0	0	0	0	9	11	20	0	0	0	0	0	1	25	26	0	0	0	0	0	10	8	18	0	0	0	0	6	8	14			104											
Approach %	0	0	0	0	0	0	50	50		0	0	0	0	0	45	55		0	0	0	0	0	3.85	96.2		0	0	0	0	0	55.6	44.4		0	0	0	0	0	42.9	57.1														
Total %	0	0	0	0	0	0	12.5	12.5	25	0	0	0	0	0	8.65	10.6	19.2	0	0	0	0	0	0.96	24	25	0	0	0	0	0	9.62	7.69	17.3	0	0	0	0	5.77	7.69	13.5														
Exiting Leg Total									26									20									26									18									14									104

Peak Hour Analysis from 07:00 AM to 11:00 AM begins at:

7:00 AM	Warren Street								Harris Avenue								Dedham Avenue								Warren Street								Dedham Avenue								Total													
	from North								from Northeast								from East								from South								from West																					
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SA	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total														
7:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	6												
7:15 AM	0	0	0	0	0	5	3	8	0	0	0	0	0	5	2	7	0	0	0	0	0	1	10	11	0	0	0	0	0	1	5	6	0	0	0	0	0	1	2	3	35													
7:30 AM	0	0	0	0	0	1	1	2	0	0	0	0	0	2	2	4	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16													
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2													
Total Volume	0	0	0	0	0	7	4	11	0	0	0	0	0	8	5	13	0	0	0	0	0	1	24	25	0	0	0	0	0	1	6	7	0	0	0	0	0	1	2	3	59													
% Approach Total	0.0	0.0	0.0	0.0	0.0	63.6	36.4		0.0	0.0	0.0	0.0	0.0	61.5	38.5		0.0	0.0	0.0	0.0	0.0	4.0	96.0		0.0	0.0	0.0	0.0	0.0	14.3	85.7		0.0	0.0	0.0	0.0	33.3	66.7																
PHF	0.000	0.000	0.000	0.000	0.000	0.350	0.333	0.344	0.000	0.000	0.000	0.000	0.000	0.400	0.625	0.464	0.000	0.000	0.000	0.000	0.000	0.250	0.600	0.568	0.000	0.000	0.000	0.000	0.000	0.250	0.300	0.292	0.000	0.000	0.000	0.000	0.250	0.250	0.250		0.421													
Entering Leg	0	0	0	0	0	7	4	11	0	0	0	0	0	8	5	13	0	0	0	0	0	1	24	25	0	0	0	0	0	1	6	7	0	0	0	0	0	1	2	3	59													
Exiting Leg									11									13									7									3									59									
Total									22									26									50									14									6									118

APPENDIX

- A. Preliminary High-Risk Crosswalk Locations Report
- B. Crosswalk Inventory Attribute Lists & Maps
- C. Traffic Counts
- D. **MassDOT Crash Data**

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
2/11/2012	4:43 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Fatigued/asleep),(Failure to keep in proper lane or	Wet	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)	GREENDALE AVENUE
2/24/2012	9:05 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Unknown)	Wet	Dark - lighted roadway	Rain/Rain	CHESTNUT STREET / SOUTH STREET
1/16/2012	5:41 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear/Clear	SOUTH STREET
1/3/2012	6:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	WEST STREET
8/24/2012	11:24 PM	Property damage only (none injured)	No injury	Angle	Collision with curb	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	WARREN STREET / SCHOOL STREET
4/8/2012	1:09 AM	Non-fatal injury	Non-fatal injury - Incapacitating	Single vehicle crash	Collision with utility pole	D1:(Over-correcting/over-steering)	Dry	Dark - lighted roadway	Clear	SECOND AVENUE / A STREET
11/10/2012	4:54 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CHARLES RIVER STREET / GROVE STREET
11/7/2012	5:45 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Driving too fast for conditions),(Over-correcting/over-steering)	Snow	Dark - lighted roadway	Snow/Blowing sand, snow	CHARLES RIVER STREET / PINE STREET
11/6/2012	4:50 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE / NEHOIDEN STREET
12/11/2012	7:12 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of	Dry	Dark - lighted roadway	Clear	WEST STREET
11/8/2012	4:47 PM	Non-fatal injury	Non-fatal injury - Incapacitating	Not reported	Collision with pedestrian	D1:(Disregarded traffic signs, signals, road markings),(Failed	Wet	Dark - lighted roadway	Rain	WEBSTER STREET
12/15/2012	3:45 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / MARKED TREE ROAD
1/13/2012	12:22 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Cloudy	HIGHLAND AVENUE
4/11/2012	10:00 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE / SECOND AVENUE
8/18/2012	10:42 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy	GREAT PLAIN AVENUE
11/28/2012	5:14 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving) D3:(No improper	Dry	Dark - lighted roadway	Clear	GREENDALE AVENUE
11/1/2012	6:10 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving) D3:(No	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / Rte 95
11/13/2012	5:14 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain	CENTRAL AVENUE / RESERVOIR STREET
1/17/2012	7:57 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with pedestrian	D1:(Failed to yield right of way),(Failure to keep in proper	Wet	Dark - lighted roadway	Cloudy/Rain	GREAT PLAIN AVENUE / LINDEN STREET
1/3/2012	7:19 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving) D3:()	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / WEBSTER STREET
3/6/2012	7:40 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	HILLSIDE AVENUE / HUNNEWELL STREET
5/16/2012	10:32 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with median barrier	D1:(Over-correcting/over-steering)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE / WEST STREET / HIGHLAND AVENUE
5/31/2012	2:16 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Exceeded authorized speed limit),(Failure to keep in	Dry	Dark - lighted roadway	Cloudy	HILLSIDE AVENUE
6/14/2012	9:34 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road) D2:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	WEBSTER STREET / HARRIS AVENUE
6/23/2012	9:56 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear	CHESTNUT STREET
6/28/2012	3:33 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Exceeded authorized speed limit),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Dry	Dark - lighted roadway	Clear	HYDE PARK WOODS
9/4/2012	12:11 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Dry	Dark - lighted roadway	Clear	CHESTNUT STREET
9/16/2012	7:13 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with pedalcycle (bicycle, tricycle, unicycle, pedal car)	D1:()	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / ROSEMARY STREET
9/11/2012	3:15 AM	Property damage only (none injured)	No injury	Unknown	Collision with parked motor vehicle	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / WEBSTER STREET
10/29/2012	12:20 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with curb	D1:(Driving too fast for conditions)	Wet	Dark - lighted roadway	Rain	SECOND AVENUE
10/18/2012	6:22 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / ARBOR STREET
11/20/2012	7:46 PM	Property damage only (none injured)	No injury	Single vehicle crash	Not reported	D1:(Failure to keep in proper lane or running off road),(Operating vehicle in erratic, reckless, careless,	Dry	Dark - lighted roadway	Clear	MAPLE STREET
11/30/2012	5:20 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE / FOREST STREET
11/7/2012	8:26 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Driving too fast for conditions),(Followed too closely)	Snow	Dark - lighted roadway	Snow	CENTRAL AVENUE / HUNNEWELL STREET
11/3/2012	12:36 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE
11/9/2012	5:58 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other light pole or other	D1:(Disregarded traffic signs, signals, road markings)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / GOULD STREET
1/12/2012	5:02 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Cloudy	HIGHLAND AVENUE / HUNNEWELL STREET
2/22/2012	6:58 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(Failed to yield right of	Dry	Dark - lighted roadway	Clear	HUNTING ROAD / KENDRICK STREET
2/21/2012	9:55 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention),(Distracted)	Dry	Dark - lighted roadway	Clear	FOURTH AVENUE / KENDRICK STREET
1/18/2012	6:11 PM	Property damage only (none injured)	No injury	Not reported	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGH ROCK STREET / MARKED TREE ROAD
1/16/2012	10:26 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc) D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object,	Snow	Dark - lighted roadway	Cloudy/Snow	CENTRAL AVENUE / WEST STREET
1/31/2012	6:05 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE
1/27/2012	6:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain	CHESTNUT STREET / GREAT PLAIN AVENUE
3/27/2012	8:15 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	WEST STREET / HIGHLAND AVENUE
3/18/2012	10:46 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Inattention) D2:(No improper	Dry	Dark - lighted roadway	Clear/Clear	WOODBINE CIRCLE
3/1/2012	6:00 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(No improper driving)	Snow	Dark - lighted roadway	Snow/Sleet, hail (freezing rain or drizzle)	GROSVENOR ROAD / BROAD MEADOW ROAD
3/1/2012	5:38 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Snow	Dark - lighted roadway	Cloudy/Snow	HIGHLAND AVENUE
9/28/2012	2:21 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with utility pole	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Physical impairment) D2:(No	Dry	Dark - lighted roadway	Clear	CHESTNUT STREET
10/1/2012	7:40 AM	Not Reported	Not Applicable	Angle	Collision with motor vehicle in traffic	D1:() D2:()	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / CHARLES STREET
10/13/2012	1:25 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Driving too fast for conditions)	Wet	Dark - lighted roadway	Cloudy/Rain	BROOKSIDE ROAD
10/30/2012	9:12 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:()	Dry	Dark - lighted roadway	Clear	CHARLES RIVER STREET
10/30/2012	6:39 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Wet	Dark - lighted roadway	Rain	GREAT PLAIN AVENUE Rte 135 W / GARDEN STREET
10/30/2012	6:07 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings),(Inattention)	Wet	Dark - lighted roadway	Cloudy/Rain	CENTRAL AVENUE / NEHOIDEN STREET
10/28/2012	5:04 PM	Not Reported	Not reported	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain/Other	WEBSTER STREET
10/26/2012	10:41 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dark - lighted roadway	Clear	KENDRICK STREET / HUNTING ROAD
10/12/2012	10:09 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:()	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVENUE / CHAPEL STREET
10/11/2012	8:15 PM	Property damage only (none injured)	No injury	Head-on	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE / GREAT PLAIN AVENUE
11/27/2012	4:55 PM	Not Reported	Not reported	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain/Sleet, hail (freezing rain or drizzle)	GREAT PLAIN AVENUE / WOODLAWN AVENUE
11/7/2012	12:57 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	SECOND AVENUE

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
12/9/2012	6:08 AM	Unknown	Unknown	Single vehicle crash	Collision with curb	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Failure to keep in proper lane or	Dry	Dark - lighted roadway	Clear	SECOND AVENUE
12/5/2012	8:43 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic		Dry	Dark - lighted roadway	Clear/Clear	SECOND AVENUE
1/11/2013	5:48 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain	CENTRAL AVENUE
2/3/2013	9:05 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Driving too fast for conditions)	Snow	Dark - lighted roadway	Snow/Snow	LEE ROAD
3/6/2013	5:56 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Wet	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)/Sleet, hail (freezing rain or drizzle)	CENTRAL AVE / CHARLES RIVER ST
7/19/2013	1:19 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with parked motor vehicle	D1:(Wrong side or wrong way),(Inattention) D2:(No	Dry	Dark - lighted roadway	Clear	MANNING STREET / JAMES AVENUE
6/7/2013	11:00 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving)	Wet	Dark - lighted roadway	Rain/Rain	CENTRAL AVENUE
8/23/2013	1:00 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Rear-end	Collision with parked motor vehicle	D1:(Wrong side or wrong way),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No	Dry	Dark - lighted roadway	Clear/Clear	GROSVENOR ROAD
8/6/2012	9:30 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Made an improper turn),(Failure to keep in proper lane or running off road) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	KENDRICK STREET
1/14/2013	5:48 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVENUE / HIGHLAND AVENUE
1/13/2013	6:18 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with tree	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Cloudy	SECOND AVENUE
2/4/2013	10:00 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - lighted roadway	Cloudy/Cloudy	HIGHLAND AVENUE / RAMP-RT 95 NB TO HIGHLAND AVE NB
2/7/2013	10:17 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	DEDHAM AVENUE / WARREN STREET
2/3/2013	10:12 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(No improper driving)	Snow	Dark - lighted roadway	Snow/Snow	NOANETT ROAD / LEE ROAD
2/7/2013	5:26 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT STREET
3/8/2013	7:08 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Wet	Dark - lighted roadway	Cloudy	GREAT PLAIN AVE / DEDHAM AVE
3/21/2013	10:20 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(Disregarded traffic signs, signals, road markings),(Physical impairment) D2:(No improper driving)	Wet	Dark - lighted roadway	Cloudy/Cloudy	HUNNEWELL STREET
6/7/2013	11:15 PM	Property damage only (none injured)	No injury	Single vehicle crash	Other non-collision	D1:(Driving too fast for conditions)	Wet	Dark - lighted roadway	Rain/Rain	CENTRAL AV.
6/18/2013	1:44 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No	Dry	Dark - lighted roadway	Cloudy	WEBSTER ST / THORPE RD
1/13/2013	6:18 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with tree	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Cloudy	SECOND AVENUE
2/3/2013	9:05 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Driving too fast for conditions)	Snow	Dark - lighted roadway	Snow/Snow	LEE RD
3/4/2013	4:05 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / MARSHALL STREET
3/8/2013	9:08 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other movable object	D1:(No improper driving)	Snow	Dark - lighted roadway	Snow/Blowing sand, snow	CENTRAL AVE / WEBSTER ST
5/12/2013	9:21 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVE / WEBSTER ST
1/27/2013	10:45 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Snow	CENTRAL AV. / MARKED TREE RD.
12/27/2012	8:16 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Snow	DEDHAM AVENUE / SOUTH STREET
6/28/2013	11:33 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE
6/6/2013	8:29 AM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVE / NORTH HILL AVE.
7/1/2013	10:06 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy/Cloudy	CHESTNUT ST
7/26/2013	9:21 PM	Not Reported	Not reported	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:() D2:()	Dry	Dark - lighted roadway	Cloudy	HUNNEWELL ST
7/30/2013	9:07 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Made an improper turn),(Other improper action)	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVENUE / DOUGLAS ROAD
8/11/2013	12:10 AM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	GREENDALE AVENUE
8/17/2013	11:39 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE
8/17/2013	9:09 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT ST / GREAT PLAIN AVE. / CHAPEL ST.
9/11/2013	9:00 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREENDALE AVENUE
9/25/2013	11:25 AM	Property damage only (none injured)	No injury	Head-on	Collision with other	D1:(Distracted)	Dry	Dark - lighted roadway	Clear/Clear	HILLCREST RD
10/19/2013	9:47 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Other improper action) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	DEDHAM AVE / SOUTH ST
8/19/2013	4:36 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Visibility obstructed) D2:(Visibility obstructed)	Dry	Dark - lighted roadway	Clear/Clear	MARKED TREE RD. / GREATPLAIN AVE Rte 135 E
10/4/2013	11:01 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	WEBSTER ST / DEDHAM AVE.
9/13/2013	3:40 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Inattention) D2:()	Dry	Dark - lighted roadway	Clear/Clear	TAYLOR STREET
11/27/2013	11:35 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Other improper action)	Wet	Dark - lighted roadway	Cloudy	YANKEE DIVISION HIGHWAY Rte SR128 S / RAMP-RT 9 EB TO RT 95 SB
11/2/2013	4:11 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Cloudy	DEDHAM AVENUE Rte 135 E
10/25/2013	7:13 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / RAMP-RT 95 SB TO GREAT PLAIN AVE
12/15/2013	5:54 PM	Non-fatal injury	Non-fatal injury - Possible	Head-on	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Ice	Dark - lighted roadway	Clear/Clear	DEDHAM AVE / SOUTH ST
10/30/2013	8:08 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain/Cloudy	HUNTING RD / KENDRICK ST
12/4/2013	8:30 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE / RAMP-RT 95 SB TO HIGHLAND AVE NB
12/9/2013	6:00 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Other improper action)	Wet	Dark - lighted roadway	Cloudy/Rain	CHAPEL STREET
12/14/2013	8:41 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	110 WEST ST / AVERY SQUARE
12/11/2013	5:30 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Clear/Cloudy	HARRIS AVENUE
12/11/2013	10:37 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear/Clear	SOUTH ST
10/28/2013	9:00 AM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Inattention),(Distracted) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT STREET (LOT)
12/15/2013	8:19 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(No improper driving)	Ice	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)/Snow	CHARLES RIVER ST
12/16/2013	10:35 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Slush	Dark - lighted roadway	Clear	HIGHLAND AVE
12/14/2013	8:22 PM	Property damage only (none injured)	No injury	Head-on	Collision with tree	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Snow	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)/Sleet, hail (freezing rain or drizzle)	WEBSTER STREET / BROOKLINE STREET
12/24/2013	7:15 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HIGH ROCK STREET
1/18/2014	6:36 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with parked motor vehicle	D1:(Driving too fast for conditions) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow	RICHARD ROAD
1/19/2014	9:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CHAPEL STREET / GREAT PLAIN AVENUE Rte 135
2/3/2014	7:07 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(No improper driving)	Snow	Dark - lighted roadway	Snow	ROLLING LN
2/20/2014	6:47 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Wet	Dark - lighted roadway	Cloudy/Cloudy	CHESTNUT STREET / HIGH ROCK STREET
2/8/2014	10:30 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	WEBSTER ST
2/7/2014	10:17 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Made an improper turn)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / CHAPEL STREET

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
6/6/2014	10:23 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / CHAPEL STREET
6/12/2013	8:38 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings)	Dry	Dark - lighted roadway	Clear	PEACEDALE ROAD / GREAT PLAIN AVENUE
11/13/2013	5:20 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE
12/24/2013	6:02 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	MARKED TREE ROAD / HIGH ROCK STREET
12/27/2013	11:53 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	DEDHAM AVE Rte 135 E / SOUTH STREET
1/4/2014	12:00 AM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Other improper action),(Distracted) D2:(No improper	Snow	Dark - lighted roadway	Clear	GREAT PLAIN AVE
1/14/2014	5:02 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Visibility obstructed)	Wet	Dark - lighted roadway	Rain/Sleet, hail (freezing rain or drizzle)	KENDRICK ST. / 4TH AVE
1/21/2014	5:29 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Blowing sand, snow	ALFRETON ROAD / MARK LEE ROAD
1/28/2014	5:41 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving) D3:(No	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE.
12/1/2013	8:59 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other movable object	D1:(No improper driving)	Ice	Dark - lighted roadway	Rain/Cloudy	FOREST ST
12/28/2013	5:26 PM	Property damage only (none injured)	No injury	Head-on	Collision with animal - deer	D1:(No improper driving)	Wet	Dark - lighted roadway	Clear/Clear	KENDRICK ST / 4TH AVE
12/28/2013	6:19 PM	Non-fatal injury	Non-fatal injury - Incapacitating	Unknown	Collision with pedestrian	D1:()	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE / ROSEMARY STREET
1/16/2014	5:43 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy	CENTRAL AVE / HUNNEWELL ST
1/10/2014	4:53 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:()	Wet	Dark - lighted roadway	Cloudy/Cloudy	FIRST AVENUE / HIGHLAND AVENUE
2/26/2014	9:12 PM	Non-fatal injury	Non-fatal injury - Incapacitating	Single vehicle crash	Collision with tree	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	GREENDALE AV
2/8/2014	6:56 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dark - lighted roadway	Clear/Clear	NEHOIDEN ST / PARISH RD / MEADOWBROOK RD.
10/18/2013	9:45 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	DEDHAM AVENUE
5/9/2014	9:17 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy	HIGHLAND AV
5/5/2014	9:05 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic		Dry	Dark - lighted roadway	Clear	CHESTNUT STREET / SCHOOL STREET
5/20/2014	9:42 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Unknown) D3:(No improper	Dry	Dark - lighted roadway	Clear/Clear	SOUTH ST / DEDHAM AVE.
5/31/2014	4:08 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Cloudy/Cloudy	2ND AVE / A STREET
7/1/2014	9:11 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with pedalcycle (bicycle, tricycle,	D1:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear/Clear	GRANT ST / SCHOOL ST
7/4/2014	12:26 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Physical impairment)	Wet	Dark - lighted roadway	Rain	CHESTNUT ST / SCHOOL ST
7/12/2014	9:53 PM	Property damage only (none injured)	No injury	Rear-to-rear	Collision with parked motor vehicle	D1:(Other improper action) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT ST
7/17/2014	10:01 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Other improper action)	Dry	Dark - lighted roadway	Clear	MAPLE ST
8/5/2014	10:00 AM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(No improper driving) D2:(Inattention)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT ST
8/15/2014	8:04 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - lighted roadway	Clear	WEBSTER ST / WEST ST
9/18/2014	8:50 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	WEBSTER ST / DEDHAM AVE
9/30/2014	7:10 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Cloudy/Cloudy	SOUTH ST
2/10/2014	2:10 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Rain/Rain	CENTRAL AVENUE
10/14/2014	6:35 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HILLSIDE AVE / WEST STREET
10/22/2014	7:41 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Wet	Dark - lighted roadway	Rain/Severe crosswinds	SCHOOL STREET / WARREN STREET
9/4/2014	10:17 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE / CARLETON DRIVE
9/16/2014	6:57 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT ST. / HIGH ROCK ST.
10/4/2014	3:03 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Unknown)	Wet	Dark - lighted roadway	Cloudy/Rain	SOUTH STREET / RIVERBEND LANE
8/6/2014	4:04 AM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Unknown	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGHLAND TERRACE
11/2/2014	1:58 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with utility pole	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Rain/Cloudy	FOREST ST / ROLLING LANE
10/7/2014	7:25 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AV Rte 135 W / CHAPEL ST
11/6/2014	6:08 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Wet	Dark - lighted roadway	Rain/Rain	HIGHLAND AVENUE / GOULD STREET
11/7/2014	7:41 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dark - lighted roadway	Clear	ROSEMARY STREET / HIGHLAND AVENUE
11/10/2014	5:08 PM	Property damage only (none injured)	No injury	Head-on	Collision with motor vehicle in traffic	D1:(Other improper action),(Failure to keep in proper lane or running off road) D2:(No improper driving) D3:(No	Dry	Dark - lighted roadway	Clear/Clear	DEDHAM AVE. / SOUTH ST
11/11/2014	6:55 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Made an improper turn)	Dry	Dark - lighted roadway	Clear	WEST ST / HIGHLAND AV
11/30/2014	4:40 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Other improper action)	Dry	Dark - lighted roadway	Clear	WEBSTER ST / KINGSBURY STREET
11/25/2014	6:27 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	WEBSTER ST / GREENDALE AVE
11/25/2014	8:21 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dark - lighted roadway	Clear/Clear	WEBSTER ST / HIGH STREET
11/26/2014	2:25 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE / GREENDALE AVENUE
11/26/2014	4:02 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Driving too fast for conditions)	Slush	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)/Sleet, hail (freezing rain or drizzle)	CHARLES RIVER STREET
11/29/2014	12:30 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown)	Dry	Dark - lighted roadway	Clear/Clear	KENNEY STREET / GREENDALE AVENUE
11/30/2014	5:30 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	SOUTH ST
12/1/2014	7:15 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	FOURTH AVENUE
12/3/2014	5:07 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Wet	Dark - lighted roadway	Rain/Cloudy	ABBOTT STREET / WARE ROAD
12/11/2013	11:50 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	GREAT PLAIN AVENUE
12/15/2014	7:30 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE / HUNTING RD
12/16/2014	5:44 PM	Property damage only (none injured)	No injury	Head-on	Collision with animal - deer	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy	GROVE ST
12/17/2014	5:47 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVENUE / WEXFORD STREET
12/17/2014	6:16 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE / ROSEMARY STREET
12/21/2014	4:46 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(No improper driving) D2:(Other improper action)	Other	Dark - lighted roadway	Clear/Other	WEBSTER ST
12/21/2014	7:57 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - lighted roadway	Cloudy/Cloudy	SCHOOL ST / WARREN ST
12/22/2014	4:50 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Unknown)	Wet	Dark - lighted roadway	Rain/Rain	WEBSTER ST / MAY ST
12/16/2014	4:30 PM	Non-fatal injury	Non-fatal injury - Possible	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	/ HIGHLAND AVENUE
12/17/2014	11:37 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	NEHOIDEN ST
11/1/2014	2:45 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Fatigued/asleep)	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE / WEBSTER STREET
11/18/2014	5:16 AM	Non-fatal injury	Non-fatal injury - Possible	Head-on	Collision with parked motor vehicle	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE
1/4/2015	7:26 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Wet	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)/Rain	HIGHLAND AVENUE / WEBSTER STREET
1/9/2015	5:54 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Cloudy/Cloudy	DEDHAM AVE.
1/10/2015	10:16 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Other improper action) D2:(No improper driving) D3:(No	Sand, mud, dirt, oil, gravel	Dark - lighted roadway	Clear	HIGHLAND AVE / HUNTING RD
1/13/2015	6:50 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE
1/14/2015	5:30 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with pedestrian	D1:(No improper driving)	Ice	Dark - lighted roadway	Snow/Other	HIGHLAND AVE / HIGHLAND TER.
1/14/2015	4:57 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving) D3:(No	Wet	Dark - lighted roadway	Snow	CHESTNUT ST / SOUTH ST

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
1/16/2015	9:07 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dark - lighted roadway	Clear	HIGHLAND AV / WEST ST
1/18/2015	10:35 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Rain/Fog, smog, smoke	CENTRAL AV / BOOTH ST
1/3/2015	8:05 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Sleet, hail (freezing rain or drizzle)	CHESTNUT ST / GREAT PLAIN AVE
1/20/2015	5:41 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic		Dry	Dark - lighted roadway	Clear/Clear	2ND AVE / A STREET
1/24/2015	4:39 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in	Snow	Dark - lighted roadway	Snow/Snow	CENTRAL AVE
1/24/2015	6:35 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Unknown)	Snow	Dark - lighted roadway	Snow/Sleet, hail (freezing rain or drizzle)	4TH AVENUE / 2ND AVENUE
1/1/2015	5:23 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(No improper driving) D2:(Failure to keep in proper lane	Dry	Dark - lighted roadway	Clear	WEBSTER ST
1/29/2015	11:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Snow	Dark - lighted roadway	Cloudy	CENTRAL AVE / GREAT PLAIN AVE
2/1/2015	4:34 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear/Clear	CENTRAL AVE / MARKED TREE RD
2/3/2015	6:19 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Snow	Dark - lighted roadway	Clear/Snow	HUNNEWELL STREET / WELLESLEY AVE
2/13/2015	6:20 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Sand, mud, dirt, oil, gravel	Dark - lighted roadway	Clear/Clear	GREENDALE AVE
2/17/2015	5:16 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Snow	SOUTH ST / DEDHAM AVE.
2/17/2015	7:28 PM	Unknown	Unknown	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Slush	Dark - lighted roadway	Snow/Snow	KENDRICK ST / HUNTING RD
2/20/2015	5:58 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Other improper action) D2:(No	Dry	Dark - lighted roadway	Clear/Clear	HIGHLAND AVE. / WEST ST.
2/20/2015	9:27 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Snow	Dark - lighted roadway	Clear/Snow	HARRIS AVE / WEBSTER STREET
2/24/2015	5:55 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dark - lighted roadway	Clear	WARREN ST / SCHOOL STREET
1/16/2015	12:00 AM	Property damage only (none injured)	No injury	Head-on	Collision with parked motor vehicle	D1:(No improper driving) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow/Snow	SECOND AVENUE
3/5/2015	6:27 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Clear	HARRIS AVENUE / BRADFORD STREET
3/28/2015	11:21 PM	Unknown	Unknown	Head-on	Collision with parked motor vehicle	D1:(No improper driving) D2:(Unknown)	Dry	Dark - lighted roadway	Snow	MELROSE AVENUE
4/17/2015	7:53 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too	Dry	Dark - lighted roadway	Clear/Clear	CHESTNUT ST
4/21/2015	9:38 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with curb	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear	SECOND AVENUE
6/18/2015	9:05 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear/Unknown	CENTRAL AVENUE
7/9/2015	9:15 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Inattention)	Wet	Dark - lighted roadway	Rain/Cloudy	2ND AVE
8/19/2015	11:29 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with utility pole	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Disregarded traffic signs, signals,	Dry	Dark - lighted roadway	Clear	SOUTH ST
8/25/2015	9:11 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Distracted) D2:()	Dry	Dark - lighted roadway	Clear	LINDBERGH AVENUE
9/9/2015	7:29 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Dry	Dark - lighted roadway	Clear/Unknown	CENTRAL AVE
9/11/2015	10:53 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(Inattention)	Dry	Dark - lighted roadway	Clear	HILLSIDE AVE
10/25/2015	7:56 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with unknown fixed object	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Dry	Dark - lighted roadway	Clear	HUNNEWELL ST
12/12/2015	9:47 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with other light pole or other	D1:(Fatigued/asleep)	Dry	Dark - lighted roadway	Clear	SOUTH ST
12/23/2015	9:28 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings),(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain	GREAT PLAIN AVE / WEBSTER ST
12/24/2015	5:35 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with parked motor vehicle	D1:(Made an improper turn) D2:()	Dry	Dark - lighted roadway	Cloudy	ST MARY ST
12/28/2015	6:06 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear/Cloudy	RICHARD RD
11/21/2015	3:27 AM	Unknown	Unknown	Single vehicle crash	Collision with unknown fixed object	D1:(Unknown)	Dry	Dark - lighted roadway	Clear	SOUTH ST
11/30/2015	7:07 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely),(Inattention)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / RAMP-RTS 95 NB/128 NB TO HIGHLAND AVE NB
11/30/2015	7:59 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with embankment	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Dry	Dark - lighted roadway	Clear	CENTRAL AVE
12/1/2015	5:21 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Rear-end	Collision with motor vehicle in traffic	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Followed too closely) D2:(No	Dry	Dark - lighted roadway	Cloudy	WEST ST
12/2/2015	5:53 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Distracted)	Wet	Dark - lighted roadway	Cloudy/Rain	HIGHLAND AVE
10/15/2015	8:14 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Unknown)	Dry	Dark - lighted roadway	Clear/Unknown	CHESTNUT STREET / SOUTHFIELD COURT
11/2/2015	9:23 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - lighted roadway	Clear/Unknown	CHAPEL STREET / GREAT PLAIN AVENUE
11/12/2015	6:40 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with work zone maintenance equipment	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - lighted roadway	Cloudy/Rain	KENDRICK STREET
11/24/2015	6:50 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / FIRST AVENUE
12/1/2015	5:10 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely),(Inattention)	Dry	Dark - lighted roadway	Clear	RAMP-RTS 95 NB/128 NB TO HIGHLAND AVE NB / HIGHLAND AVENUE
1/12/2016	7:40 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Snow	Dark - lighted roadway	Snow	CENTRAL AVE
1/24/2016	12:50 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with utility pole	D1:(Driving too fast for conditions),(Other improper action)	Snow	Dark - lighted roadway	Blowing sand, snow	CENTRAL AVENUE / NOYES STREET
1/27/2016	6:42 PM	Not Reported	Not reported	Single vehicle crash	Collision with guardrail	D1:(Failure to keep in proper lane or running off	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
2/11/2016	10:04 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dark - lighted roadway	Clear/Unknown	DEDHAM AVE / SOUTH ST
2/16/2016	5:26 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Distracted),(Followed too	Wet	Dark - lighted roadway	Rain	HIGHLAND AVE
2/26/2016	3:34 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with tree	D1:(Fatigued/asleep)	Dry	Dark - lighted roadway	Clear	SOUTH ST
2/28/2016	11:01 PM	Not Reported	Not reported	Sideswipe, same direction	Collision with parked motor vehicle	D1:()	Dry	Dark - lighted roadway	Clear/Cloudy	ENSLIN RD
2/29/2016	8:49 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Other improper	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVE / CHAPEL ST
1/22/2016	5:50 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:() D2:(Inattention)	Dry	Dark - lighted roadway	Clear	BERKSHIRE ROAD
10/16/2015	9:42 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(Inattention) D2:()	Dry	Dark - lighted roadway	Clear	COOLIDGE AVE
11/5/2015	6:00 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention),(Followed too closely) D2:(No improper	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
11/10/2015	5:50 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of	Dry	Dark - lighted roadway	Cloudy/Rain	DEDHAM AVE
11/10/2015	5:17 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	CHESTNUT ST
11/18/2015	9:51 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVE / MAPLE ST
11/20/2015	1:46 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Distracted)	Wet	Dark - lighted roadway	Rain	CHESTNUT ST
11/20/2015	6:45 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
12/22/2015	4:55 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other light pole or other	D1:(Distracted)	Wet	Dark - lighted roadway	Rain/Cloudy	WEST ST
1/23/2016	10:17 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other	D1:(No improper driving)	Snow	Dark - lighted roadway	Snow	HIGHLAND AVE / MAY ST
2/4/2016	5:21 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Slush	Dark - lighted roadway	Clear/Other	GREAT PLAIN AVE
2/20/2016	8:59 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Cloudy	LINDBERGH AVENUE
2/24/2016	5:56 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain/Clear	HUNNEWELL STREET
3/8/2016	7:10 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failure to keep in proper lane	Dry	Dark - lighted roadway	Clear	GREENDALE AVENUE
4/1/2016	9:50 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Unknown)	Dry	Dark - lighted roadway	Clear	CENTRAL AVENUE
5/27/2016	11:11 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings),(No improper driving)	Dry	Dark - lighted roadway	Clear	GREAT PLAIN AVE / CHESTNUT ST
5/8/2016	10:39 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(No improper driving) D2:(Inattention),(No improper	Dry	Dark - lighted roadway	Cloudy	HIGHLAND AVE

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
5/15/2016	2:12 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Unknown	Dark - lighted roadway	Unknown	PARISH RD
5/19/2016	12:12 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with parked motor vehicle	D1:(Other improper action) D2:(No improper driving) D3:(I	Dry	Dark - lighted roadway	Clear	BERKSHIRE RD
5/6/2016	2:27 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(Driving too fast for conditions)	Wet	Dark - lighted roadway	Rain/Cloudy	PARISH RD
6/28/2016	12:33 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	CHESTNUT ST / GREAT PLAIN AVE
6/28/2016	11:19 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Unknown)	Dry	Dark - lighted roadway	Clear	SOUTH ST
6/19/2016	1:49 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with parked motor vehicle	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE
7/13/2016	9:09 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
7/19/2016	10:15 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dark - lighted roadway	Clear	WEBSTER ST / HIGHLAND AVE
8/5/2016	7:25 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Head-on	Collision with pedalcycle (bicycle, tricycle,	D1:(Unknown)	Dry	Dark - lighted roadway	Clear	HOOVER RD
8/6/2016	8:17 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
8/8/2016	9:18 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - lighted roadway	Clear	CHAPEL ST / GREAT PLAIN AVE
8/22/2016	10:47 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(Fatigued/asleep)	Dry	Dark - lighted roadway	Clear	CHARLES RIVER ST
8/30/2016	8:27 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVE
9/1/2016	11:04 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Failure to keep in proper lane or	Dry	Dark - lighted roadway	Clear	GREENDALE AVE
9/28/2016	6:24 PM	Non-fatal injury	Non-fatal injury - Possible	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - lighted roadway	Clear	GARDEN STREET
11/4/2016	9:11 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(I) D2:(I)	Dry	Dark - lighted roadway	Clear	RAMP-RTS 95 NB/128 NB TO HIGHLAND AVE NB
12/24/2016	11:01 PM	Property damage only (none injured)	No injury	Head-on	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Ice	Dark - lighted roadway	Cloudy/Sleet, hail (freezing rain or drizzle)	NEHOIDEN ST
12/28/2016	2:17 AM	Not Reported	Not reported	Rear-end	Collision with parked motor vehicle	D1:(I)	Dry	Dark - lighted roadway	Clear	MANNING ST
10/6/2016	2:20 AM	Property damage only (none injured)	No injury	Head-on	Collision with utility pole	D1:(Fatigued/asleep)	Dry	Dark - lighted roadway	Clear	CENTRAL AVE
10/12/2016	8:33 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	WEBSTER ST
12/5/2016	9:45 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Driving too fast for conditions)	Ice	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)	NOANETT RD
12/5/2016	11:45 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with bridge overhead structure	D1:(Inattention)	Wet	Dark - lighted roadway	Clear	WELLESLEY AVENUE
12/8/2016	7:19 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Visibility obstructed)	Dry	Dark - lighted roadway	Cloudy	HIGHLAND AVE
12/12/2016	5:10 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(Unknown) D3:(Unknown)	Dry	Dark - lighted roadway	Clear	WEBSTER ST
12/15/2016	5:20 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - lighted roadway	Cloudy/Other	GREAT PLAIN AVE
11/3/2016	6:51 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Wet	Dark - lighted roadway	Cloudy	HIGHLAND AVE
12/24/2016	5:25 PM	Non-fatal injury	Non-fatal injury - Incapacitating	Single vehicle crash	Collision with pedestrian	D1:(Inattention)	Wet	Dark - lighted roadway	Clear	HIGHLAND AVE
11/8/2016	5:07 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Failed to yield right of way)	Dry	Dark - lighted roadway	Clear	WEST ST / WEBSTER ST
11/8/2016	5:10 PM	Not Reported	Unknown	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving) D3:(Followed too closely),(No improper driving)	Dry	Dark - lighted roadway	Clear	CENTRAL AVE
11/8/2016	6:17 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Other improper action) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear/Cloudy	GREAT PLAIN AVE
11/12/2016	7:38 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Inattention)	Dry	Dark - lighted roadway	Clear	2ND AVE
11/17/2016	4:40 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - lighted roadway	Clear	HIGH ROCK ST
11/27/2016	3:58 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other movable object	D1:(No improper driving)	Dry	Dark - lighted roadway	Clear	DEDHAM AVE / SOUTH ST
11/28/2016	5:09 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - lighted roadway	Clear	SCHOOL ST / WARREN ST
12/8/2016	5:58 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with pedestrian	D1:(Unknown)	Dry	Dark - lighted roadway	Clear	HIGHLAND AVENUE / Mellen STREET
10/5/2016	8:25 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(History heart/epilepsy/fainting)	Dry	Dark - lighted roadway	Clear	CHESTNUT STREET
10/20/2016	10:21 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Wet	Dark - lighted roadway	Rain/Cloudy	SOUTH STREET / CHESTNUT STREET
12/18/2016	7:55 PM	Not Reported	Not reported	Angle	Collision with parked motor vehicle	D1:(I) D2:(I)	Dry	Dark - lighted roadway	Clear/Other	LASALLE ROAD
11/14/2016	5:43 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Unknown) D2:(I)	Sand, mud, dirt, oil, gravel	Dark - lighted roadway	Clear	SOUTH STREET
5/19/2012	10:22 PM	Non-fatal injury	Non-fatal injury - Possible	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Inattention) D2:(I)	Dry	Dark - roadway not lighted	Clear	CHARLES RIVER STREET
5/11/2012	11:13 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - roadway not lighted	Clear	A STREET
4/5/2012	10:33 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions) D2:(Exceeded authorized	Dry	Dark - roadway not lighted	Clear	NOANETT ROAD / BOWER STREET
11/29/2012	6:25 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other light pole or other	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 S
10/26/2012	4:25 AM	Unknown	Unknown	Single vehicle crash	Collision with unknown fixed object	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Fatigued/asleep)	Dry	Dark - roadway not lighted	Clear/Unknown	CHARLES RIVER STREET
1/17/2013	1:35 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with guardrail	D1:(Operating vehicle in erratic, reckless, careless, negligent	Wet	Dark - roadway not lighted	Cloudy	YANKEE DIVISION HIGHWAY Rte 95 S
11/2/2012	6:03 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with pedalcycle (bicycle, tricycle,	D1:(No improper driving)	Ice	Dark - roadway not lighted	Snow	WARREN STREET
3/11/2012	9:48 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other movable object	D1:(Exceeded authorized speed limit),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Dry	Dark - roadway not lighted	Clear	SOUTH STREET
2/9/2012	6:14 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving) D3:(No	Dry	Dark - roadway not lighted	Clear/Clear	KENDRICK STREET
10/17/2012	6:56 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	SOUTH STREET
7/30/2012	9:58 PM	Not Reported	Not reported	Rear-end	Collision with parked motor vehicle	D1:(Unknown) D2:(I)	Dry	Dark - roadway not lighted	Clear/Clear	HARRIS AVENUE
11/19/2012	8:06 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear/Cloudy	HIGHLAND AVENUE / HUNNEWELL STREET
3/19/2013	8:26 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(No improper driving)	Snow	Dark - roadway not lighted	Snow/Sleet, hail (freezing rain or drizzle)	GREENDALE
8/2/2012	12:28 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road),(Operating vehicle in erratic, reckless, careless,	Dry	Dark - roadway not lighted	Clear/Clear	CENTRAL AVENUE
12/11/2012	8:27 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failure to keep in proper lane	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 S
3/25/2013	10:10 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Inattention),(Failure to keep in proper lane or running	Dry	Dark - roadway not lighted	Cloudy/Clear	HIGH ROCK STREET
5/8/2013	11:27 PM	Non-fatal injury	Non-fatal injury - Possible	Head-on	Collision with tree	D1:(Other improper action)	Dry	Dark - roadway not lighted	Clear/Clear	FOREST ST
6/17/2013	8:41 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear/Clear	GREAT PLAIN AVENUE / WARREN STREET
3/20/2013	4:53 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with parked motor vehicle	D1:(No improper driving) D2:(Wrong side or wrong	Wet	Dark - roadway not lighted	Clear/Clear	EVELYN ROAD
7/18/2013	11:40 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving)	Dry	Dark - roadway not lighted	Clear	RAMP-RT 95 NB TO RT 9 EB
6/28/2013	9:45 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Visibility obstructed),(Inattention) D2:(No improper	Dry	Dark - roadway not lighted	Cloudy/Cloudy	1ST AVE
10/15/2013	2:58 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 S
8/8/2013	10:44 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - roadway not lighted	Cloudy/Cloudy	GREAT PLAIN AVE / SOUTH ST
10/31/2013	10:12 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(I)	Wet	Dark - roadway not lighted	Rain	YANKEE DIVISION HIGHWAY Rte 95 S / RAMP-RT 9 EB TO RT 95 SB
1/2/2014	10:40 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Snow	Dark - roadway not lighted	Snow	YANKEE DIVISION HIGHWAY Rte 95 S
1/2/2014	11:42 PM	Property damage only (none injured)	No injury	Head-on	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions) D2:(No improper driving)	Snow	Dark - roadway not lighted	Snow	YANKEE DIVISION HIGHWAY Rte 95 S
10/23/2013	9:42 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - roadway not lighted	Clear/Clear	BIRD STREET / GREENDALE AVENUE
1/14/2014	12:23 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - roadway not lighted	Clear/Clear	GREAT PLAIN AVE
10/16/2014	5:41 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Wet	Dark - roadway not lighted	Rain	YANKEE DIVISION HIGHWAY Rte 95 S

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
7/10/2012	11:14 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 128 N
9/12/2013	9:07 PM	Non-fatal injury	Non-fatal injury - Possible	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dark - roadway not lighted	Clear/Clear	SOUTH ST
12/30/2013	5:51 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - roadway not lighted	Clear/Clear	1ST AVENUE / HIGHLAND AVENUE
6/22/2014	4:14 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Fatigued/asleep)	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 N
1/11/2014	2:26 AM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Ice	Dark - roadway not lighted	Sleet, hail (freezing rain or drizzle)/Fog,	NEHIODEN ST
1/20/2014	2:28 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention),(Distracted)	Dry	Dark - roadway not lighted	Cloudy/Cloudy	GREAT PLAIN AVE / / GLENDON RD
4/16/2014	4:58 AM	Unknown	Unknown	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Slush	Dark - roadway not lighted	Sleet, hail (freezing rain or drizzle)/Cloudy	SOUTH ST / CANTERBURY LN
4/16/2014	10:50 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear/Clear	CENTRAL AVE / HAMPTON AVE
8/20/2014	12:55 AM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dark - roadway not lighted	Clear	RAMP-HIGHLAND AVE SB TO RTS 95 SB/128 SB
5/20/2014	3:14 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Made an improper turn)	Dry	Dark - roadway not lighted	Clear/Clear	CHARLES RIVER STREET / GROVE ST
6/13/2014	9:26 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings),(Made an improper turn)	Dry	Dark - roadway not lighted	Clear	HIGHLAND AVE / WEST ST
1/7/2015	12:58 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with median barrier	D1:(Driving too fast for conditions)	Ice	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 S
10/27/2014	6:55 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Inattention) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	RICHDAL E ROAD
10/28/2014	2:01 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Made an improper turn)	Dry	Dark - roadway not lighted	Clear/Clear	GREAT PLAIN AVE / CHESTNUT ST
11/24/2014	12:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dark - roadway not lighted	Rain	HIGHLAND AVE / FIRST AVE
10/11/2014	3:17 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Unknown	Dark - roadway not lighted	Clear/Clear	2ND AVE
4/14/2015	7:35 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(I	Dry	Dark - roadway not lighted	Cloudy	YANKEE DIVISION HIGHWAY Rte 95 S
1/9/2015	3:09 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - roadway not lighted	Clear/Clear	GREENDALE AVE / / GREAT PLAIN AVE
2/9/2015	7:37 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely),(Swerving or avoiding due to wind, slippery surface,	Snow	Dark - roadway not lighted	Snow/Snow	GREENDALE AVE. / GROSVENOR RD.
3/1/2015	3:25 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other	D1:(Driving too fast for conditions),(Over-correcting/over-	Other	Dark - roadway not lighted	Clear/Clear	WELLESLEY AVE
3/26/2015	8:53 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(Disregarded traffic signs, signals, road	Wet	Dark - roadway not lighted	Rain/Fog, smog, smoke	HIGHLAND AVE / WEST ST
6/1/2015	10:51 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Unknown)	Wet	Dark - roadway not lighted	Rain/Rain	CHARLES RIVER STREET / WHITING
3/16/2016	7:32 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	RAMP-RTS 95 NB/128 NB TO GREAT PLAIN AVE / GREAT PLAIN AVENUE
10/31/2015	12:14 AM	Not Reported	Not Applicable	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dark - roadway not lighted	Clear	SOUTH ST
3/31/2016	9:19 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 N
2/7/2016	5:52 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	2ND AVE
2/9/2016	8:11 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Unknown)	Dry	Dark - roadway not lighted	Clear	SOUTH ST / WILSON LN
1/7/2016	5:51 PM	Unknown	Unknown	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Dry	Dark - roadway not lighted	Clear/Unknown	GREAT PLAIN AVE
1/18/2016	8:08 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dark - roadway not lighted	Cloudy	RAMP-RTS 95 NB/128 NB TO HIGHLAND AVE NB / HIGHLAND AVENUE
12/17/2015	7:00 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with median barrier	D1:(Unknown)	Wet	Dark - roadway not lighted	Rain/Cloudy	CENTRAL AVE
5/2/2016	8:36 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dark - roadway not lighted	Cloudy	YANKEE DIVISION HIGHWAY Rte 95 N
6/9/2016	11:00 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(I) D2:(I	Dry	Dark - roadway not lighted	Clear	YANKEE DIVISION HIGHWAY Rte 95 S
8/3/2016	11:23 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with work zone maintenance equipment	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - roadway not lighted	Clear	RAMP-RTS 95 NB/128 NB TO HIGHLAND AVE SB
8/11/2016	11:05 PM	Non-fatal injury	Non-fatal injury - Incapacitating	Single vehicle crash	Collision with guardrail	D1:(Driving too fast for conditions)	Dry	Dark - roadway not lighted	Clear	RAMP-RTS 95 SB/128 SB TO HIGHLAND AVE SB
6/18/2016	8:42 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dark - roadway not lighted	Clear	CENTRAL AVE
8/9/2016	7:41 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dark - roadway not lighted	Clear	HIGHLAND AVE
9/27/2016	6:15 AM	Non-fatal injury	Non-fatal injury - Incapacitating	Unknown	Collision with pedestrian	D1:(Unknown) D2:(No improper driving)	Wet	Dark - roadway not lighted	Rain	GARDEN ST / MAY ST
11/21/2016	1:17 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with median barrier	D1:(Failure to keep in proper lane or running off road)	Wet	Dark - roadway not lighted	Snow	YANKEE DIVISION HIGHWAY Rte 95 N
10/29/2016	1:24 AM	Not Reported	Not reported	Single vehicle crash	Collision with ditch	D1:(Inattention),(Made an improper turn)	Wet	Dark - roadway not lighted	Cloudy/Unknown	EAST MILITIA HEIGHTS ROAD
12/18/2016	12:39 AM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with tree	D1:(No improper driving)	Ice	Dark - roadway not lighted	Clear	CHARLES RIVER ST
11/17/2016	6:27 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dark - roadway not lighted	Clear	GREAT PLAIN AVE
10/8/2016	7:11 PM	Non-fatal injury	Non-fatal injury - Possible	Head-on	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Dry	Dark - roadway not lighted	Clear	GREAT PLAIN AVENUE
6/6/2012	1:15 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(Disregarded traffic signs, signals, road markings),(Failure to keep in proper lane or running off road)	Dry	Dark - unknown roadway lighting	Clear	OAK STREET / MARKED TREE ROAD / PERRY DRIVE
6/4/2012	8:11 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Unknown	Collision with parked motor vehicle	D1:(No improper driving) D2:(No improper driving)	Dry	Dark - unknown roadway	Cloudy/Rain	YALE ROAD
1/24/2013	10:15 AM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic		Dry	Dark - unknown roadway	Clear/Clear	HIGHLAND AVENUE / RIVERSIDE STREET
8/18/2013	3:11 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - unknown roadway	Cloudy	DEDHAM AVE / SOUTH STREET
1/18/2013	3:22 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with curb	D1:(Distracted)	Dry	Dark - unknown roadway	Clear/Cloudy	ROSEMARY STREET
1/25/2013	10:09 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with utility pole	D1:(Driving too fast for conditions),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Snow	Dark - unknown roadway lighting	Snow/Other	HIGHLAND AVE.
1/31/2013	4:19 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic		Dry	Dark - unknown roadway	Clear	HIGHLAND AVENUE
3/6/2013	8:00 PM	Unknown	Unknown	Single vehicle crash	Collision with tree	D1:(Unknown)	Wet	Dark - unknown roadway	Rain/Cloudy	/ ELLICOTT STREET
3/13/2013	9:59 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely),(Inattention) D2:(No improper driving) D3:(No improper driving) D4:(No improper	Dry	Dark - unknown roadway lighting	Clear/Cloudy	HIGHLAND AVE
7/20/2013	12:10 PM	Property damage only (none injured)	No injury	Rear-to-rear	Collision with motor vehicle in traffic	D1:(Visibility obstructed) D2:(No improper driving)	Dry	Dark - unknown roadway	Clear	DUNBARTON RD
10/8/2013	12:41 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dark - unknown roadway	Clear	GREENDALE AVE
11/8/2013	8:13 AM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too	Dry	Dark - unknown roadway	Clear/Clear	SOUTH ST
12/20/2013	5:10 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving)	Ice	Dark - unknown roadway	Cloudy/Cloudy	FIRST AVE
2/16/2014	12:11 PM	Unknown	Unknown	Rear-end	Collision with other	D1:(Driving too fast for conditions) D2:(No improper driving)	Snow	Dark - unknown roadway	Snow/Blowing sand, snow	HARRIS AVENUE / COULTON PARK
6/15/2013	10:58 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dark - unknown roadway	Clear/Clear	HUNTING ROAD / SACHEM ROAD
8/22/2014	12:03 PM	Property damage only (none injured)	No injury	Head-on	Collision with other	D1:(Other improper action)	Dry	Dark - unknown roadway	Cloudy	HIGHLAND AVE
10/26/2014	9:23 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(No improper driving) D2:(I	Dry	Dark - unknown roadway	Clear	CHESTNUT ST
11/28/2014	4:02 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(Inattention) D2:(No improper driving)	Dry	Dark - unknown roadway	Cloudy	THIRD AVENUE
2/4/2015	5:50 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving) D3:(No improper driving) D4:(No improper driving)	Wet	Dark - unknown roadway lighting	Clear/Clear	KENDRICK ST / GREENDALE AVE.
2/26/2015	7:58 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Sand, mud, dirt, oil, gravel	Dark - unknown roadway	Clear/Clear	SCHOOL ST / GRANT ST
12/8/2015	4:51 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Unknown) D2:(I	Other	Dark - unknown roadway	Cloudy	WEBSTER ST
12/25/2016	5:28 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dark - unknown roadway	Clear	GREAT PLAIN AVE
2/11/2012	6:15 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Wet	Dawn	Cloudy/Snow	HIGHLAND AVENUE / HUNTING ROAD
3/21/2012	6:07 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dawn	Clear	GOULD STREET / T V PLACE
1/16/2013	6:40 AM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Ice	Dawn	Snow	HILLSIDE AVENUE

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
4/24/2013	4:35 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear/Clear	WASHINGTON AVE
7/30/2013	8:23 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dawn	Clear	HIGHLAND AVENUE / MELLEEN STREET
8/10/2013	12:00 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dawn	Clear	HIGHLAND AVE / ROSEMARY ST
2/11/2013	6:06 AM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with guardrail	D1:(No improper driving) D2:(No improper driving) D3:(No improper driving) D4:(No improper driving) D5:(No improper driving)	Snow	Dawn	Snow	YANKEE DIVISION HIGHWAY Rte 95 S
1/16/2013	7:01 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc) D2:(No improper driving)	Snow	Dawn	Snow	HUNNEWELL STREET
3/3/2013	7:37 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear	GREAT PLAIN AVENUE / FAIR OAKS PARK
5/22/2013	5:05 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Exceeded authorized speed limit)	Wet	Dawn	Rain	YANKEE DIVISION HIGHWAY Rte 128 S
4/18/2013	4:35 PM	Property damage only (none injured)	No injury	Head-on	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dawn	Cloudy	WEXFORD STREET
5/13/2013	1:40 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dawn	Clear/Clear	SCHOOL ST / LINCOLN ST
7/8/2013	10:02 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear/Clear	CENTRAL AVE / FOREST STREET
8/3/2013	7:13 AM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with tree	D1:(Illness)	Dry	Dawn	Clear	WEST STREET
8/9/2013	6:01 AM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dawn	Cloudy	GREAT PLAIN AVENUE / CHAPEL STREET
9/23/2013	6:14 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dawn	Clear	CENTRAL AVENUE
9/23/2013	7:35 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Glare)	Dry	Dawn	Clear	GAGE STREET
9/30/2013	7:38 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dawn	Clear/Clear	GREAT PLAIN AVENUE / GREENWOOD AVE
10/17/2013	5:29 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings),(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear/Clear	WEST STREET / HILLSIDE AVENUE
10/19/2013	12:00 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dawn	Clear/Clear	HIGHLAND AVE
11/5/2013	2:38 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Inattention) D2:(No improper driving)	Dry	Dawn	Clear/Clear	TV PLACE
11/7/2013	4:46 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Wet	Dawn	Rain/Cloudy	SOUTH ST
6/26/2014	6:00 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions)	Wet	Dawn	Rain	YANKEE DIVISION HIGHWAY Rte 95 S
5/17/2014	5:51 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(No improper driving)	Wet	Dawn	Rain/Cloudy	GREEN STREET / NORMAN ROAD
5/26/2014	5:11 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dawn	Clear/Clear	CENTRAL AVENUE / WEST STREET
3/19/2014	8:30 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Dry	Dawn	Cloudy/Cloudy	HIGHLAND AV / MARK LEE RD
9/19/2014	11:27 AM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings),(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear/Clear	WEST STREET / HILLSIDE AVENUE
11/13/2014	7:07 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dawn	Clear/Clear	GREAT PLAIN AVE / WEBSTER STREET
4/6/2015	6:13 AM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(Followed too closely) D3:(No improper driving)	Dry	Dawn	Clear	YANKEE DIVISION HIGHWAY Rte 128 N
3/3/2015	5:49 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs, signals, road markings)	Dry	Dawn	Cloudy/Cloudy	CENTRAL AVE / CHARLES RIVER ST
3/6/2015	8:30 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear/Clear	GREAT PLAIN AVENUE / NEHOIDEN ST
4/9/2015	8:34 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dawn	Clear/Clear	NORTH HILL AVE / GREAT PLAIN AVE
5/20/2015	12:22 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Other improper action) D2:(No improper driving)	Dry	Dawn	Clear	HIGHLAND AVE
7/6/2015	7:23 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dawn	Clear	WEST ST / WEBSTER ST
9/4/2015	3:30 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with parked motor vehicle	D1:(No improper driving)	Dry	Dawn	Clear	HIGHLAND AVE
11/8/2015	7:02 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Dry	Dawn	Clear	GREAT PLAIN AVE / WEBSTER ST
6/22/2016	4:40 AM	Unknown	Unknown	Single vehicle crash	Collision with bridge	D1:(Disregarded traffic signs, signals, road markings),(No improper driving)	Dry	Dawn	Clear	DEDHAM AVE
9/22/2016	6:52 AM	Non-fatal injury	Non-fatal injury - Incapacitating	Angle	Collision with pedalcycle (bicycle, tricycle, etc)	D1:(Unknown)	Dry	Dawn	Clear/Unknown	WARREN ST / SCHOOL ST
10/27/2016	7:02 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dawn	Cloudy	CHARLES RIVER ST
6/13/2012	8:23 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Wet	Dusk	Cloudy	SECOND AVENUE
1/13/2012	5:09 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVENUE / WEXFORD STREET
5/26/2012	8:09 PM	Not Reported	Not reported	Head-on	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dusk	Cloudy	HUNTING ROAD / KENDRICK STREET
11/6/2012	3:54 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Followed too closely)	Dry	Dusk	Clear	HUNTING ROAD
2/15/2012	5:12 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with tree	D1:(Unknown)	Dry	Dusk	Clear/Clear	HIGHLAND AVENUE
3/13/2012	6:43 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Distracted) D2:(No improper driving)	Dry	Dusk	Clear	GREAT PLAIN AVENUE
5/31/2012	8:15 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear/Clear	CHESTNUT STREET
4/12/2012	7:20 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Unknown)	Wet	Dusk	Cloudy/Rain	CENTRAL AVENUE / GOULD STREET
9/10/2012	6:50 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Made an improper turn),(Failure to keep in proper lane or running off road) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVENUE / CHARLES STREET
3/1/2012	5:15 PM	Property damage only (none injured)	No injury	Head-on	Collision with other	D1:(Driving too fast for conditions),(Disregarded traffic signs, signals, road markings)	Snow	Dusk	Snow	CHARLES RIVER STREET
7/24/2012	7:27 PM	Unknown	Unknown	Single vehicle crash	Collision with utility pole	D1:(No improper driving)	Wet	Dusk	Clear	NEHOIDEN STREET / PENNSYLVANIA AVENUE
10/15/2012	5:07 PM	Unknown	Unknown	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVENUE / GOULD STREET
12/20/2012	4:00 PM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dusk	Cloudy	GREAT PLAIN AVENUE
12/13/2012	4:08 PM	Property damage only (none injured)	No injury	Unknown	Collision with other	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVENUE
1/17/2013	7:55 AM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(Driving too fast for conditions),(Glare) D2:(Driving too fast for conditions),(Glare) D3:(No improper driving) D4:(No improper driving)	Wet	Dusk	Clear	ROSEMARY STREET
2/21/2013	5:21 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(No improper driving) D2:(Other improper action)	Dry	Dusk	Clear	GREAT PLAIN AVENUE / GARDEN STREET
2/2/2013	6:10 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic		Dry	Dusk	Cloudy/Cloudy	OAKLAND AVENUE / HIGHLAND COURT / KINGSBURY STREET
5/15/2013	6:12 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Wet	Dusk	Cloudy/Cloudy	BROAD MEADOW ROAD
1/28/2012	3:40 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Other improper action)	Dry	Dusk	Clear/Clear	CHAPEL STREET
7/5/2012	7:14 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear	KENDRICK STREET / GREENDALE AVENUE
1/23/2013	4:30 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear	MARK LEE ROAD
2/6/2013	5:28 PM	Non-fatal injury	Non-fatal injury - Possible	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failure to keep in proper lane or running off road)	Dry	Dusk	Clear/Clear	DEDHAM AVENUE / GREAT PLAIN AVENUE
3/6/2013	5:16 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Wet	Dusk	Severe crosswinds/Rain	HIGHLAND AVE / HUNNEWELL ST
1/2/2013	5:02 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No improper driving)	Dry	Dusk	Clear/Clear	GREAT PLAIN AVENUE / CHESTNUT STREET
3/28/2013	2:39 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with utility pole	D1:(Fatigued/asleep)	Dry	Dusk	Clear/Clear	HILLSIDE AVENUE
8/21/2013	8:35 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dusk	Clear/Clear	GOULD STREET
8/29/2013	10:49 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dusk	Cloudy/Cloudy	HIGHLAND AVE
10/9/2013	12:00 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Inattention) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AV / 2ND AV
10/10/2013	8:04 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear/Clear	CENTRAL AVENUE / HIGH ROCK STREET

Crash Date	Crash Time	Crash Severity	Maximum Injury Severity Reported	Manner of Collision	First Harmful Event	Driver Contributing Codes	Road Surface	Ambient Light	Weather Condition	Roadway
10/12/2013	5:35 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failure to keep in proper lane or running off road)	Wet	Dusk	Cloudy/Rain	4TH AVE / KENDRICK ST
8/17/2013	7:16 AM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Dry	Dusk	Clear	HIGHLAND AVENUE / WEST STREET
12/14/2013	4:35 PM	Property damage only (none injured)	Not Applicable	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Disregarded traffic signs,	Snow	Dusk	Snow/Snow	CENTRAL AVE / CHARLES RIVER STREET
12/26/2013	4:14 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(No improper driving) D2:(No improper driving)	Ice	Dusk	Cloudy/Snow	CENTRAL AVE
11/3/2013	3:31 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Glare)	Dry	Dusk	Clear/Clear	PINE ST
11/16/2013	11:46 AM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving)	Dry	Dusk	Clear/Clear	HIGHLAND AVENUE
12/4/2013	4:05 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dusk	Clear/Clear	HIGHLAND AVE
12/6/2013	4:00 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Wet	Dusk	Clear/Clear	CENTRAL AVE / GOULD ST
12/14/2013	9:18 AM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(No improper driving)	Dry	Dusk	Clear/Clear	EDGEWATER DRIVE / SOUTH STREET
11/25/2013	8:12 AM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Followed too closely) D2:(No improper driving)	Dry	Dusk	Clear/Clear	GREENDALE AVENUE
3/17/2013	9:04 AM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with pedalcycle (bicycle, tricycle,	D1:(Failed to yield right of way)	Dry	Dusk	Clear	DEDHAM AVE Rte 135 E
2/6/2014	5:21 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Made an improper turn)	Wet	Dusk	Cloudy/Cloudy	HIGHLAND AVE / WEBSTER STREET
2/24/2014	5:13 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with parked motor vehicle	D1:(Failure to keep in proper lane or running off road),(Operating vehicle in erratic, reckless, careless,	Dry	Dusk	Clear/Clear	GREAT PLAIN AVENUE
2/26/2014	4:32 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Dry	Dusk	Clear/Clear	CHESTNUT STREET / HIGH ROCK STREET
4/9/2014	7:24 AM	Non-fatal injury	Non-fatal injury - Possible	Head-on	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dusk	Clear/Clear	HIGHLAND AVE.
2/14/2014	1:45 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dusk	Clear/Clear	POWERS ST / WOODLAWN AVE
4/17/2014	6:40 PM	Property damage only (none injured)	No injury	Rear-end	Collision with other	D1:(No improper driving) D2:(Other improper action)	Dry	Dusk	Clear	B STREET
5/20/2014	8:08 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No improper driving)	Dry	Dusk	Clear/Clear	FAIR OAKS ST. / DEDHAM AVE. / PLEASANT ST.
6/3/2014	1:45 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Inattention)	Dry	Dusk	Clear/Clear	CENTRAL AVE / FOREST ST
6/30/2014	10:10 AM	Property damage only (none injured)	No injury	Angle	Collision with parked motor vehicle	D1:(No improper driving) D2:(No improper driving)	Dry	Dusk	Clear/Clear	GREAT PLAIN AVE
10/17/2014	3:16 PM	Property damage only (none injured)	No injury	Head-on	Collision with guardrail	D1:(Distracted) D2:(No improper driving)	Wet	Dusk	Rain/Rain	SOUTH ST
10/16/2014	5:25 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failed to yield right of way)	Wet	Dusk	Rain	CENTRAL AVE / WEBSTER ST.
10/21/2014	5:04 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with guardrail	D1:(Failure to keep in proper lane or running off road)	Dry	Dusk	Clear/Clear	DEDHAM AVE / SOUTH STREET
9/4/2014	6:45 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with moped	D1:(Made an improper turn) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVENUE / RIVERSIDE STREET
11/4/2014	4:35 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(Disregarded traffic signs, signals, road markings) D2:(No	Dry	Dusk	Clear/Clear	LINDEN STREET / GREAT PLAIN AVENUE
12/16/2014	3:06 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dusk	Cloudy	GREENDALE AVE
2/4/2015	4:19 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Wet	Dusk	Cloudy/Snow	HARRIS AVENUE / WEBSTER STREET
2/4/2015	6:42 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Visibility obstructed) D2:(No improper driving)	Wet	Dusk	Cloudy/Cloudy	WEBSTER ST / MAY ST
2/5/2015	5:12 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Disregarded traffic signs, signals, road markings),(Driving too fast for conditions)	Ice	Dusk	Cloudy/Cloudy	OAK ST / LINDEN ST
2/13/2015	5:20 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dusk	Clear	WEBSTER ST / HILLSIDE AVE
2/14/2015	4:00 PM	Property damage only (none injured)	No injury	Sideswipe, opposite direction	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(No improper driving)	Snow	Dusk	Snow/Sleet, hail (freezing rain or drizzle)	GREAT PLANE AVE
2/25/2015	5:08 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dusk	Clear/Snow	GREENDALE AVE / HIGH STREET
4/11/2015	6:50 PM	Non-fatal injury	Non-fatal injury - Non-incapacitating	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Dry	Dusk	Clear	DARTMOUTH
5/25/2015	7:38 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with unknown fixed object	D1:(Other improper action)	Dry	Dusk	Clear/Clear	GREAT PLAIN AVE.
6/7/2015	6:50 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with utility pole	D1:(Unknown)	Dry	Dusk	Clear	BURNSIDE RD / HIGH ST
6/24/2015	8:20 PM	Non-fatal injury	Non-fatal injury - Possible	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(Visibility obstructed),(No improper	Dry	Dusk	Clear	WEST ST
2/2/2016	6:16 AM	Property damage only (none injured)	No injury	Single vehicle crash	Overturn/rollover	D1:(Driving too fast for conditions)	Dry	Dusk	Clear	RAMP-RTS 95 SB/128 SB TO HIGHLAND AVE SB
10/24/2015	5:52 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with parked motor vehicle	D1:(Unknown) D2:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVE
10/28/2015	5:22 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dusk	Rain/Other	HIGHLAND AVE
11/11/2015	2:54 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with animal - deer	D1:(No improper driving)	Dry	Dusk	Clear	CHARLES RIVER ST
12/27/2015	3:20 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Failure to keep in proper lane or running off road),(Inattention)	Dry	Dusk	Cloudy	GREAT PLAIN AVE
11/29/2015	3:58 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dusk	Clear	HUNNEWELL ST / CENTRAL AVE
2/3/2016	4:09 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Wet	Dusk	Cloudy/Rain	KENDRICK ST / 4TH AVE
1/10/2016	4:43 PM	Non-fatal injury	Non-fatal injury - Possible	Single vehicle crash	Collision with pedestrian	D1:(No improper driving)	Wet	Dusk	Rain/Cloudy	WEBSTER ST / HIGHLAND AVE
2/23/2016	5:23 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Distracted)	Dry	Dusk	Clear/Unknown	CENTRAL AVE
4/1/2016	6:53 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Inattention) D2:(No improper driving) D3:(No improper driving) D4:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVE
6/14/2016	9:17 PM	Property damage only (none injured)	No injury	Sideswipe, same direction	Collison with moped	D1:(No improper driving)	Dry	Dusk	Clear	HIGHLAND AVE
7/28/2016	7:40 PM	Non-fatal injury	Non-fatal injury - Possible	Rear-end	Collision with motor vehicle in traffic	D1:(No improper driving) D2:(Distracted)	Dry	Dusk	Clear	CENTRAL AVE
8/13/2016	8:42 PM	Property damage only (none injured)	No injury	Rear-end	Collision with parked motor vehicle	D1:(Unknown) D2:(No improper driving)	Dry	Dusk	Clear	HIGH ROCK ST
10/27/2016	5:17 PM	Property damage only (none injured)	No injury	Rear-end	Collision with motor vehicle in traffic	D1:(Other improper action) D2:(No improper driving)	Wet	Dusk	Rain	CENTRAL AVE
12/27/2016	4:24 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Failed to yield right of way) D2:(No improper driving)	Dry	Dusk	Clear	HUNTING RD
11/22/2016	3:57 PM	Property damage only (none injured)	No injury	Single vehicle crash	Collision with other movable object	D1:(Glare),(Unknown)	Dry	Dusk	Clear	HIGHLAND AVE
11/29/2016	3:34 PM	Property damage only (none injured)	No injury	Angle	Collision with motor vehicle in traffic	D1:(Unknown) D2:(No improper driving)	Wet	Dusk	Rain	CENTRAL AVE