

MEMORANDUM

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DATE: June 15, 2023
Updated January 26, 2024

RE: 9568

SUBJECT: Updated Transportation Impact Assessment
Proposed Multifamily Residential Development – 47 Main Street (Route 140)
Upton, Massachusetts



Vanasse & Associates, Inc. (VAI) has prepared an update to the June 15, 2023 Transportation Impact Assessment (TIA) that was prepared for the proposed construction of a multifamily residential development to be located at 47 Main Street (Route 140) in Upton, Massachusetts (hereafter referred to as the “Project”). This update is responsive to comments raised by Stantec in their November 9, 2023 *Traffic Impact Assessment Peer Review* memorandum and includes additional information requested by the Zoning Board of Appeals (ZBA) at the November 15, 2023 public hearing for the Project. This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project along Route 140 and at major intersections along this roadway through which Project-related traffic will travel, including the Route 140/Fiske Avenue intersection. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),¹ the Project is expected to generate approximately 310 vehicle trips on an average weekday (two-way, 24-hour volume), with 18 vehicle trips expected during the weekday morning peak-hour, 17 vehicle trips expected during the peak-hour that coincides with the afternoon release for the Memorial Elementary School and 27 vehicle trips expected during the weekday evening peak-hour;
2. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), acknowledging that one or more movements at the study area intersections are currently operating or are predicted to operate at or over capacity (i.e., level-of-service (LOS) “E” or “F”, respectively) independent of the Project;

¹*Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

3. All movements exiting the Project site driveway to Route 140 are predicted to operate at LOS B during the peak hours with negligible vehicle queuing predicted. All movements along Route 140 approaching the driveway are predicted to operate at LOS A, also with negligible vehicle queuing;
4. Independent of the Project, the Route 140/School Street/Pleasant Street intersection was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for similar intersections. MassDOT is currently advancing improvements along Route 140 that include improvements at this intersection that will enhance safety and mobility; and
5. Lines of sight at the Project site driveway intersection with Route 140 were found to exceed the American Association of State Highway and Transportation Officials (AASHTO)² recommended minimum distance for the intersection to operate in a safe and efficient manner based on the appropriate approach speed.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations defined herein.

The following details our assessment of the Project.

PROJECT DESCRIPTION

The Project will entail the construction of a 68-unit multifamily residential development to be located off of Main Street (Route 140) in Upton, Massachusetts. The Project site encompasses approximately $6.75\pm$ acres of land that is bound by residential properties to the north, east and west; and Route 140 and Pickering & Son Upton Funeral Home to the south. The Project site currently contains areas of open and wooded space. Figure 1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site will be provided by way of a new drive that will intersect the north side of Route 140 approximately 700 feet west of School Street (between the Pickering & Son Upton Funeral Home and 51 Main Street). Off-street parking will be provided for 105 vehicles, or a parking ratio of 1.54 parking spaces per unit. The proposed parking ratio is consistent with the parking ratios observed for other multifamily residential communities in a similar setting documented by the ITE.³ The ITE parking demand observations indicate that the peak parking demands ratio for a multifamily residential community range from 0.75 to 2.03 spaces per residential unit.

STUDY METHODOLOGY

This study was prepared in consultation with the Massachusetts Department of Transportation (MassDOT) and the Town of Upton; was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and was conducted in three distinct stages.

²*A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018

³*Parking Generation*, 6th Edition; Institute of Transportation Engineers; Washington D.C.; October 2023.



Figure 1
Site Location Map

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The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; on-street parking; public transportation services; observations of traffic flow; and collection of pedestrian, bicycle, and vehicle counts.

In the second stage of the study, future traffic conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A seven-year time horizon was selected for analyses consistent with MassDOT guidelines. The analysis conducted in stage two identifies existing or projected future capacity, safety, and access issues, as these areas relate to the transportation infrastructure.

The third stage of the study presents and evaluates measures to address deficiencies in the transportation infrastructure, if any, identified in stage two of the study.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in December 2022 and January 2023, and was updated in January 2024. This inventory included the collection of traffic-volume data and vehicle travel speed measurements, as well as a review of existing pedestrian and bicycle accommodations, public transportation services, and motor vehicle crash data. The following summarizes existing conditions within the study area.

Roadway

Main Street (Route 140)

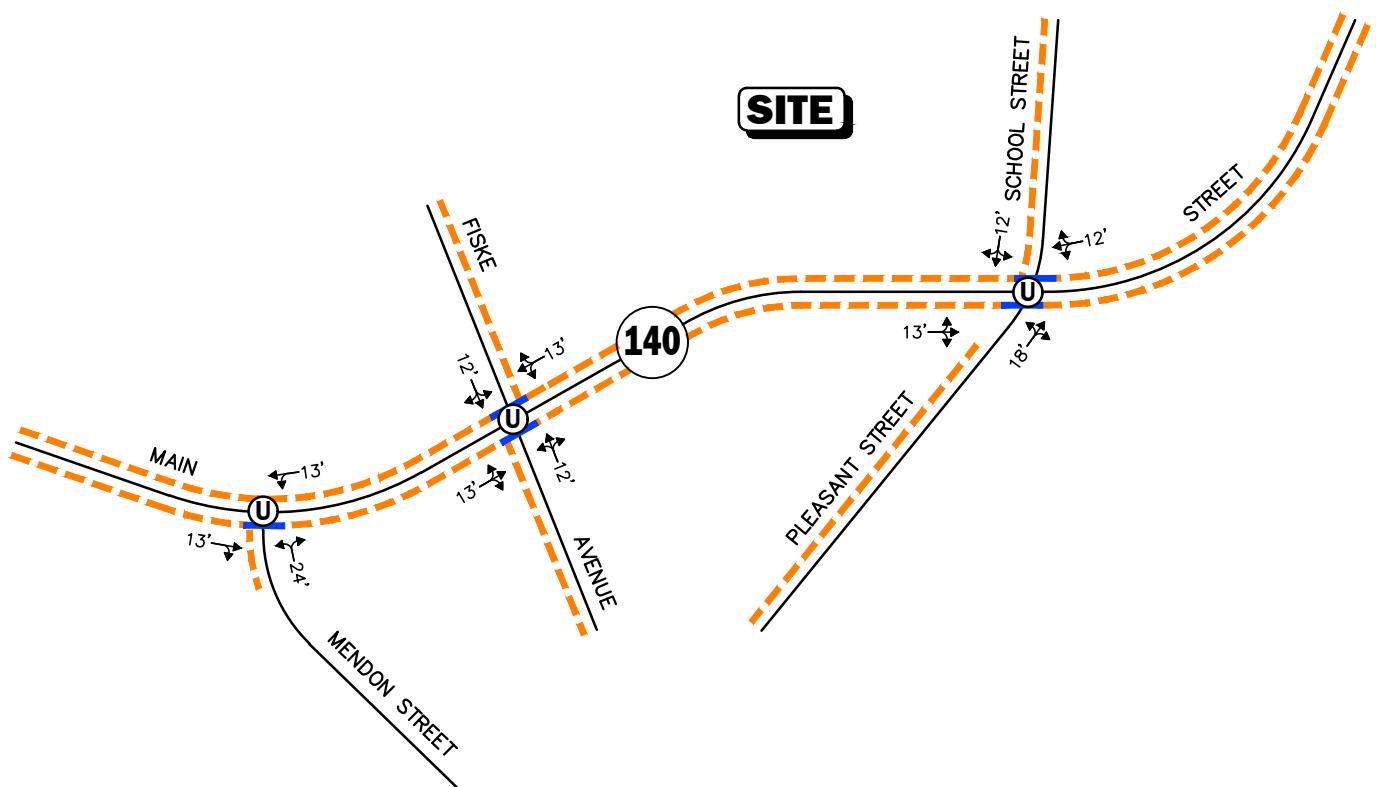
Main Street is a two-lane, urban principal arterial roadway that traverses the study area in a general east-west direction and is under MassDOT jurisdiction. In the vicinity of the Project site, Route 140 provides two 13-foot-wide travel lanes that are separated by a double yellow centerline, with 6 to 8-foot-wide marked shoulders. The posted speed limit in the vicinity of the Project site is 35 miles per hour (mph). A sidewalk is provided along both sides of the roadway within the study area. Illumination is provided intermittently by way of streetlights mounted on wooden poles. Land use along Route 140 within the study area consists of the Project site, residential properties, the Pickering & Son Upton Funeral Home, the Memorial Elementary School and areas of open and wooded space.

Intersections

Table 1 and Figure 2 summarize existing lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in December 2022.

Legend:

- ① Unsignalized Intersection
- Sidewalk
- Crosswalk
- XX' → Lane Use and Travel Lane Width



Not To Scale

VAI Vanasse & Associates inc

Figure 2

Existing Intersection Lane Use, Travel Lane Width, and Pedestrian Facilities

Table 1
STUDY AREA INTERSECTION DESCRIPTION

Intersection	Traffic Control Type ^a	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Rte. 140/ School St./ Pleasant St.	S	1 general-purpose travel lane provided on all approaches	Yes; 7-feet on Rte. 140 and 1-foot on School St. (west side) and Pleasant St.	Yes; sidewalks are provided along both sides of Rte. 140 and along the west side of School St. and Pleasant St. (south of Station St.); marked crosswalks are provided for crossing the Rte. 140 west leg, School St. and Pleasant St.	Yes; shared-traveled-way ^b on Rte. 140
Rte. 140/ Mendon St.	S	1 general-purpose travel lane provided on all approaches	Yes; 7-feet on Rte. 140 and 1 to 3-feet on Mendon St.	Yes; sidewalks are provided along both sides of Rte. 140; marked crosswalk is provided for crossing Mendon St.	Yes; shared-traveled-way on Rte. 140
Rte. 140/ Fiske Ave.	S	1 general-purpose travel lane provided on all approaches	Yes; 7-feet on Rte. 140	Yes; sidewalks are provided along both sides of Rte. 140; along the west side of Fiske Ave. south of the intersection; and along the east side of Fiske Ave. north of the intersection; marked crosswalks provided for crossing Fiske Ave. legs	Yes; shared-traveled-way on Rte. 140

^aS = STOP-sign control.

^bCombined shoulder and travel lane width equal to or exceed 14 feet.

Existing Traffic Volumes

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, turning movement counts (TMCs), and vehicle classification counts were completed in January 2023 and in January 2024 (Route 140/Fiske Avenue). The ATR counts were conducted on Route 140, west of School Street, on January 11th through 12th, 2023 (Wednesday through Thursday, inclusive) in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak-period TMCs performed at the Route 140/Pleasant Street/School Street and Route 140/Mendon Street intersections on Wednesday, January 11, 2023. Peak-period TMCs were performed at the Route 140/Fiske Avenue intersection on Wednesday January 10, 2024. These time periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, MassDOT weekday seasonal factors for Urban Group 3 roadways (principal arterial roadways, the functional

classification of Route 140) were reviewed.⁴ Based on a review of this data, it was determined that traffic volumes for the month of January are approximately 6.0 percent *below* average-month conditions. As such, the January traffic volumes were adjusted upward by 6.0 percent in order to be representative of average-month conditions in accordance with MassDOT standards. In addition, the January 2023 traffic volumes were adjusted to 2024 conditions by applying a 1.0 percent growth rate consistent with the identified background growth rate (see *General Background Traffic Growth* section of this assessment).

MassDOT does not require pandemic-related adjustment of traffic counts performed after March 2022, except in locations where the predominant land use consists of offices or similar uses.⁵ Given that the predominant land use within the study area is residential, a pandemic-related adjustment was not required.

The 2024 Existing traffic volumes are summarized in Table 2, with the weekday morning and evening peak-hour traffic volumes graphically depicted on Figure 3. Note that the peak-hour traffic volumes presented in Table 2 were obtained from the TMCs and ATR and are reflected on the aforementioned figure.

Table 2
2024 EXISTING TRAFFIC VOLUMES

Location/Peak-Hour	AWT ^a	VPH ^b	K Factor ^c	Directional Distribution ^d
<i>Route 140, west of School Street:</i>				
Weekday Morning (7:00 – 8:00 AM)	6,200	--	--	--
Elementary School Release (3:00 – 4:00 PM)	--	583	9.4	55.8% EB
Weekday Evening (4:00 – 5:00 PM)	--	548	8.8	52.1% WB
	--	605	9.8	51.3% WB

^aAverage weekday traffic in vehicles per day.

^bVehicles per hour.

^cPercent of daily traffic occurring during the peak-hour.

^dPercent traveling in peak direction.

EB = eastbound; WB = westbound.

As can be seen in Table 2, Route 140 in the vicinity of the Project site, was found to accommodate approximately 6,200 vehicles on an average weekday (two-way, 24-hour volume), with approximately 583 vehicles per hour (vph) during the weekday morning peak-hour, 548 vph during the peak-hour that coincides with the afternoon release for the Memorial Elementary School and 605 vph during the weekday evening peak-hour.

Pedestrian and Bicycle Facilities

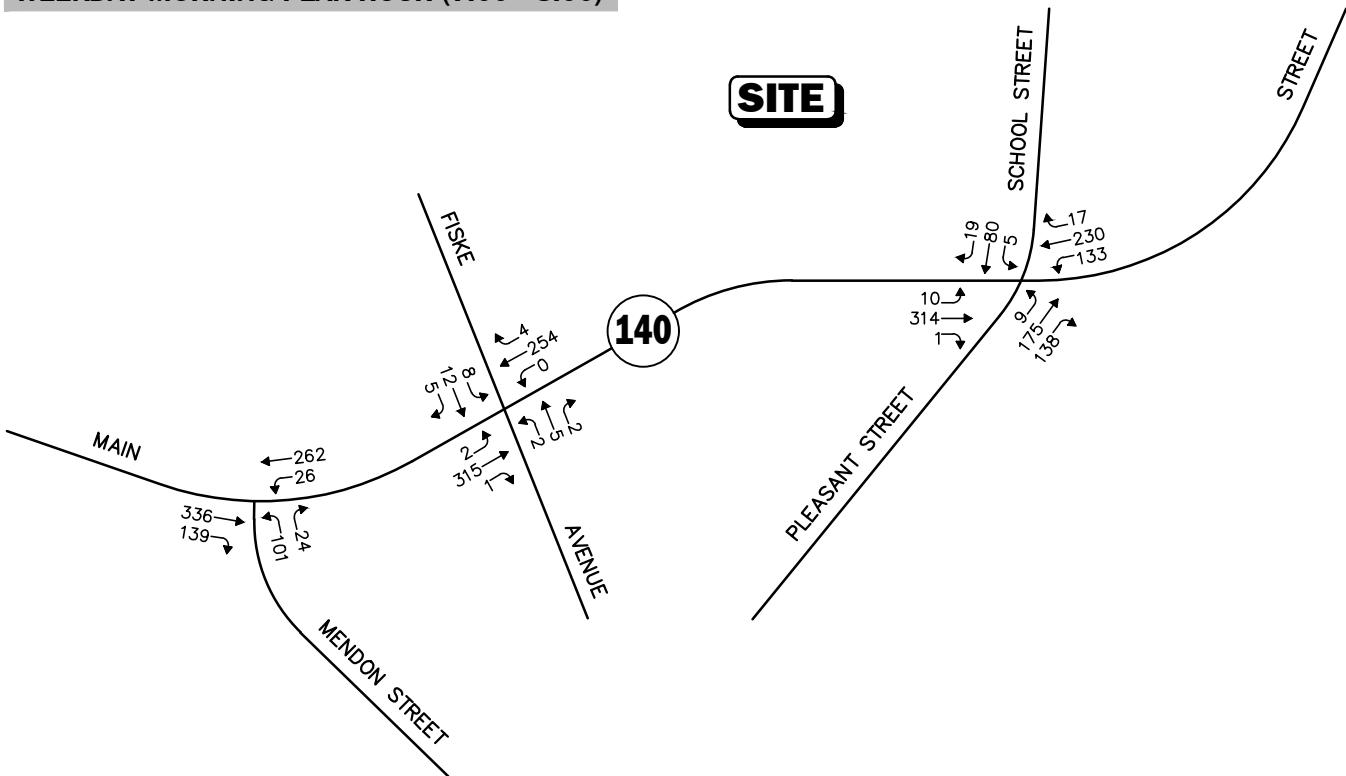
A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in December 2022. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 2, sidewalks are generally provided along one or both sides of the study area roadways with marked crosswalks provided for crossing one or more legs of the study area intersections. Formal bicycle facilities are not provided within the study area; however, Route 140 generally provides sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared traveled-way configuration (i.e., motor vehicles and bicyclists sharing the roadway).⁶

⁴MassDOT statewide Traffic Data Collection; 2019 Weekday Seasonal Factors, Group U3.

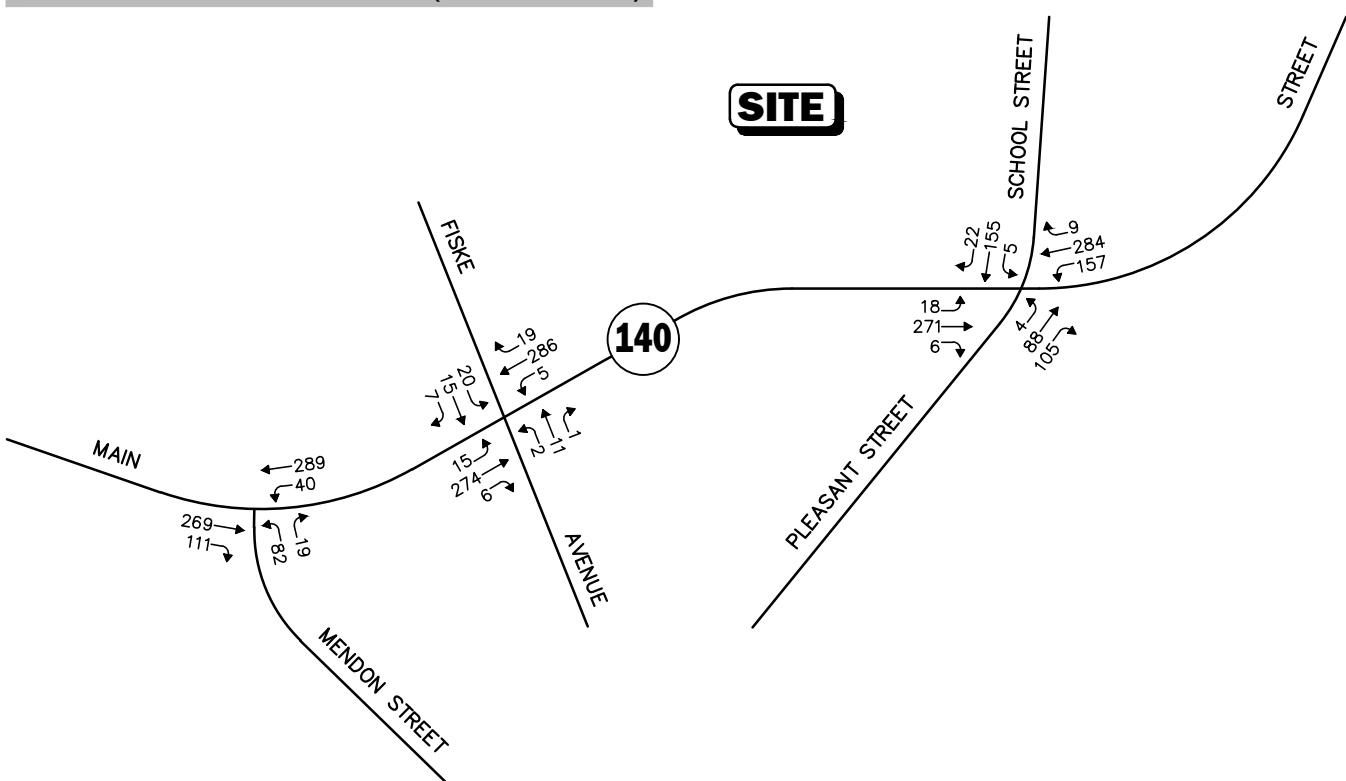
⁵25% Design Submission Guidelines; MassDOT Highway Division, Traffic and Safety Engineering; Revised May 31, 2022.

⁶A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared traveled-way condition.

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 3

At the proposed location of the Project site driveway, sidewalks are provided along both sides of Route 140, and Route 140 provides sufficient width (combined travel lane and shoulder) in both directions to support bicycle travel in a shared-traveled-way configuration. An existing curb cut is present along the north side of Route 140 at the location of the Project site driveway at which the sidewalk slightly ramps down and crosses the driveway (i.e., pan-type driveway).

As a part of a future roadway improvement project that is being advanced by MassDOT (MassDOT Project No. 608490; see *Roadway Improvement Project* sections of this assessment), Route 140 within the study area will be improved to accommodate separated bicycle lanes, with improvements to sidewalks and upgraded pedestrian curb ramps at crossings along the roadway and at major side streets.

Public Transportation

Regularly scheduled public transportation services are not currently provided within the study area or the Town of Upton. The Upton Council on Aging (COA) provides transportation services for seniors (age 60+) and eligible disabled Upton residents. Trips must be scheduled 48-hours in advance by contacting the COA and the cost varies by the trip destination.

Spot Speed Measurements

Vehicle travel speed measurements were performed on Route 140 in the vicinity of the Project site in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 140	
	Eastbound	Westbound
Mean Travel Speed (mph)	29	31
85 th Percentile Speed (mph)	34	36
Posted Speed Limit (mph)	35	35

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Route 140 in the vicinity of the Project site was found to be 29 mph in the eastbound direction and 31 mph westbound. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 34 mph in the eastbound direction and 36 mph westbound, which is consistent with the posted speed limit (35 mph) in the vicinity of the Project site. The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances and is often used in establishing posted speed limits.

Motor Vehicle Crash Data

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2016 through 2020, inclusive) to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and is presented in Table 4.

As can be seen in Table 4, with the exception of the Route 140/School Street/Pleasant Street intersection, the study area intersections were found to have experienced four (4) or fewer reported motor vehicle crashes over the five-year review period, or an average of 0.8 or fewer crashes per year, and were identified to have motor vehicle crash rates *below* both the MassDOT statewide and District average crash rates for similar intersections for the MassDOT Highway Division District in which the intersections are located (District 3). The majority of the crashes occurred on a weekday; during daylight; and involved angle-type collisions of collisions with a fixed roadside object that resulted in property damage only.

The Route 140/School Street/Pleasant Street intersection was found to have experienced 22 reported motor vehicle crashes per year over the five-year review period, or an average of 4.4 crashes per year, the majority of which occurred on a weekday; during daylight; under clear weather conditions; and involved angle or rear-end type collisions that resulted in property damage only. The intersection was identified to have a motor vehicle crash rate that is *above* the MassDOT statewide and District average crash rates for similar intersections. MassDOT is currently advancing improvements along Route 140 that include improvements at this intersection that will enhance safety and mobility (discussion follows).

A review of the MassDOT statewide High Crash Location List indicated that there are no Highway Safety Improvement Program (HSIP) eligible high crash locations within the study area or the Town of Upton. In addition, no motor vehicle crashes that involved pedestrians or bicycles, or that resulted in a fatality, were reported to have occurred at the study area intersections over the five-year review period. The detailed MassDOT Crash Rate Worksheets and HSIP Mapping are attached.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Rte. 140/ School St./ Pleasant St.	Rte. 140/ Mendon St.	Rte. 140/ Fiske Ave.	Rte. 140/Project Site Driveway
Traffic Control Type ^b	U	U	U	U
Year:				
2016	2	1	0	1
2017	8	1	1	0
2018	3	1	0	0
2019	4	1	0	0
<u>2020</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	22	4	1	3
Average	4.40	0.80	0.20	0.60
Crash Rate ^c	0.96	0.22	0.08	0.25
MassDOT Crash Rate: ^d	0.57/0.61	0.57/0.61	0.57/0.61	0.57/0.61
Significant? ^e	Yes	No	No	No
Type:				
Angle	9	1	1	0
Head-On	0	0	0	0
Rear-End	9	1	0	0
Rear-to-Rear	0	0	0	0
Sideswipe	0	0	0	1
Fixed Object	4	2	0	2
Pedestrian/Bicycle	0	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	22	4	1	3
Conditions:				
Clear	13	1	1	3
Cloudy	7	1	0	0
Rain	1	2	0	0
Snow/Ice	1	0	0	0
<u>Not Reported/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	22	4	1	3
Lighting:				
Daylight	17	2	0	2
Dawn/Dusk	0	0	0	0
Dark (Road Lit)	4	2	1	1
<u>Dark (Road Unlit)</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	22	4	1	3
Day of Week:				
Monday-Friday	17	4	1	3
Saturday	1	0	0	0
<u>Sunday</u>	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	22	4	1	3
Severity:				
Property Damage Only	14	4	1	1
Non-fatal Injury	7	0	0	2
Fatalities	0	0	0	0
<u>Not Reported</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	22	4	1	3

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2016 through 2020.

^bTraffic Control Type: U = unsignalized.

^cCrash rate per million vehicles entering the intersection.

^dStatewide/District crash rate.

^eThe intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 3).



FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2031, which reflects a seven-year planning horizon consistent with MassDOT guidelines. Independent of the Project, traffic volumes on the roadway network in the year 2031 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2031 No-Build traffic volumes reflect 2031 Build traffic-volume conditions with the Project.

Future Traffic Growth

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

Specific Development by Others

The Town of Upton Planning Department was consulted in order to determine if there were any projects that would have an impact on future traffic volumes at the study intersections. Based on this consultation, the following project was identified for inclusion in this assessment:

- ***Governor's Landing Residential Development, Milford Street (Route 140), Upton, Massachusetts.*** This project entails the construction of a 162±-unit residential development that will include 48± multifamily units, 10± detached senior homes and 100± attached senior housing units to be located off of Milford Street to the east of the Project site. Traffic volumes associated with this project obtained from the traffic study prepared for the development⁷ and were incorporated into the future conditions traffic volumes.

No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate (discussion follows).

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from count stations located in Upton were reviewed in order to determine general traffic growth trends in the area. This data indicates that annual traffic volumes have fluctuated over the past several years, with the average growth rate found to be approximately 0.92 percent per year. As such, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

⁷*Traffic Assessment, Governor's Landing Residential Development, Upton, Massachusetts; TEPP LLC; September 10, 2019.*

Roadway Improvement Projects

The Town of Upton and MassDOT were contacted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2031 within the study area. Based on these discussions, the following roadway improvement project was identified:

- ***Resurfacing and Related Work on Route 140 and Roundabout Construction at Route 140, Church Street and Grove Street (MassDOT Project No. 608490).*** This project is being undertaken by MassDOT and entails the following improvements: rehabilitation and resurfacing of sections of Route 140; the construction of bicycle lanes; improved sidewalks and upgraded pedestrian curb ramps; the reconstruction of the Route 140/Church Street/Grove Street intersection to function under modern roundabout control; and the realignment of specific side streets along the Route 140 corridor. Within the study area, the Pleasant Street approach to Route 140 will be realigned to intersect Route 140 opposite School Street and new sidewalks, crosswalks bicycle lanes and signs and pavement markings will be installed. These improvements will enhance both safety and mobility at the intersection. The Route 140 improvement project is being funded through the 2024 Transportation Improvement Program (TIP) for the Central Massachusetts Metropolitan Planning Organization, with construction planned to begin in Spring 2025.

No other roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

No-Build Traffic Volumes

The 2031 No-Build condition peak-hour traffic volumes were developed by: i) applying the 1.0 percent per year compounded annual background traffic growth rate to the 2024 Existing peak-hour traffic volumes; and ii) adding the traffic volumes associated with the specific development project by others (Governor's Landing residential development). The resulting 2031 No-Build weekday morning and evening peak-hour traffic volumes are shown on Figure 4.

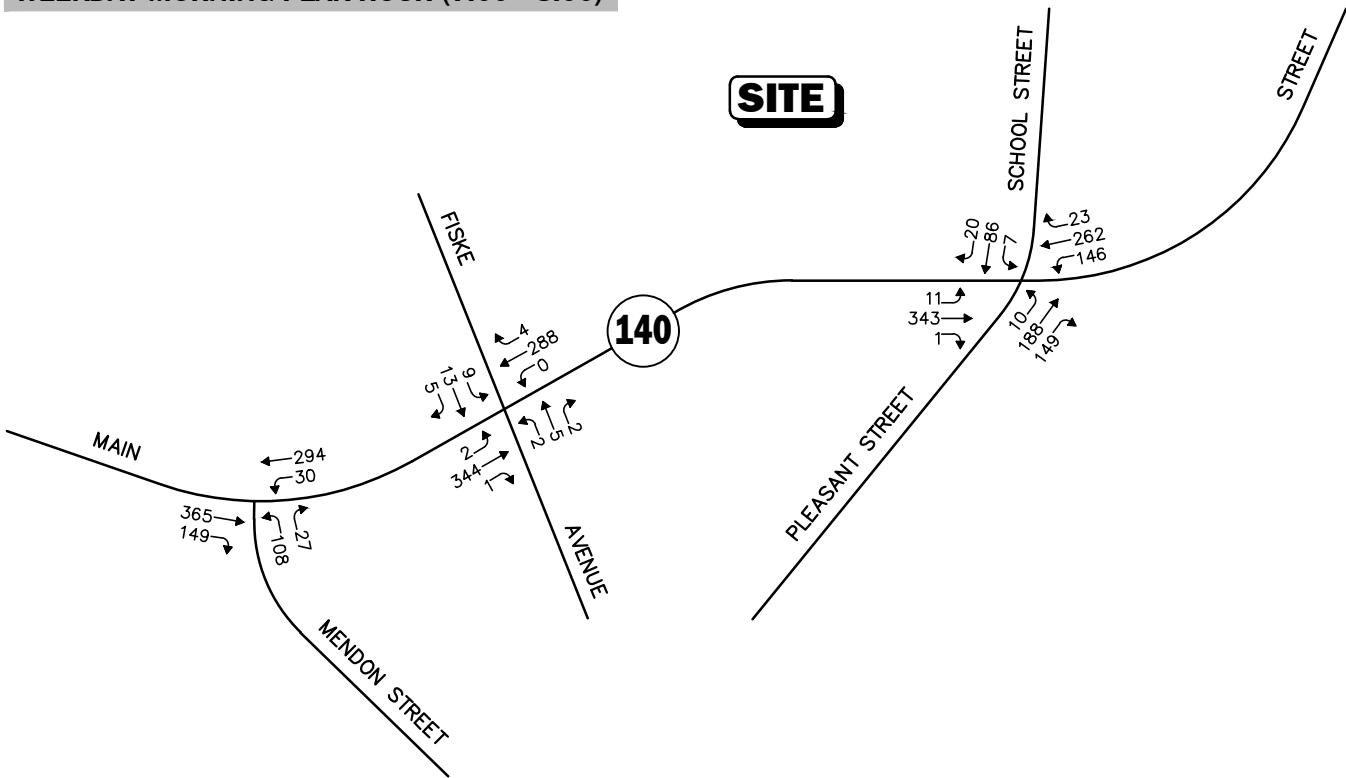
Project-Generated Traffic

Design year (2031 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

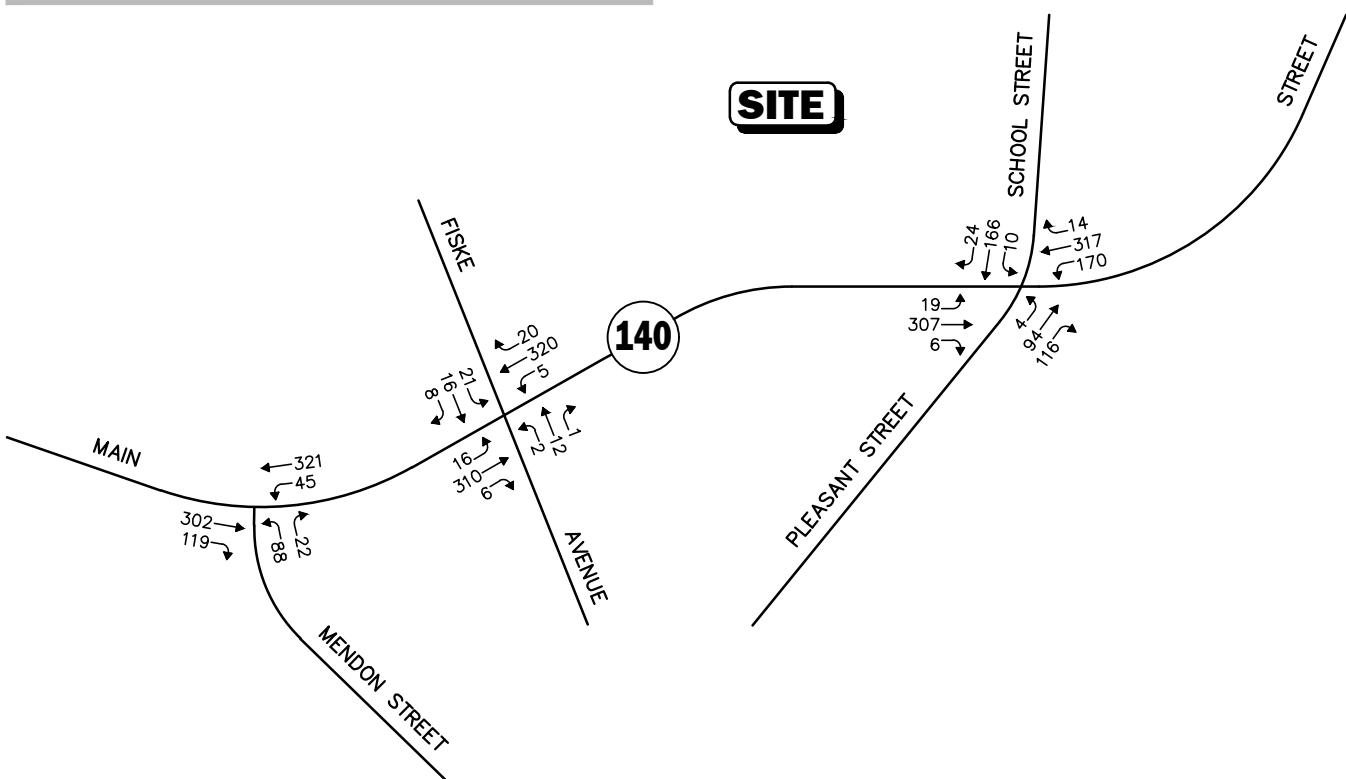
As proposed, the Project will entail the construction of a 68-unit multifamily residential development. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the Institute of Transportation Engineers (ITE)⁸ for a similar land use as that proposed were used. ITE Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)*, was used to develop the traffic characteristics of the Project. Table 5 summarizes the daily and peak-hour traffic volumes expected to be generated by the Project, with Figure 5 summarizing the anticipated traffic flow profile for the Project illustrating the volume of traffic that is expected to be produced on an average weekday on an hourly basis.

⁸Institute of Transportation Engineers, op. cit. 1.

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 4

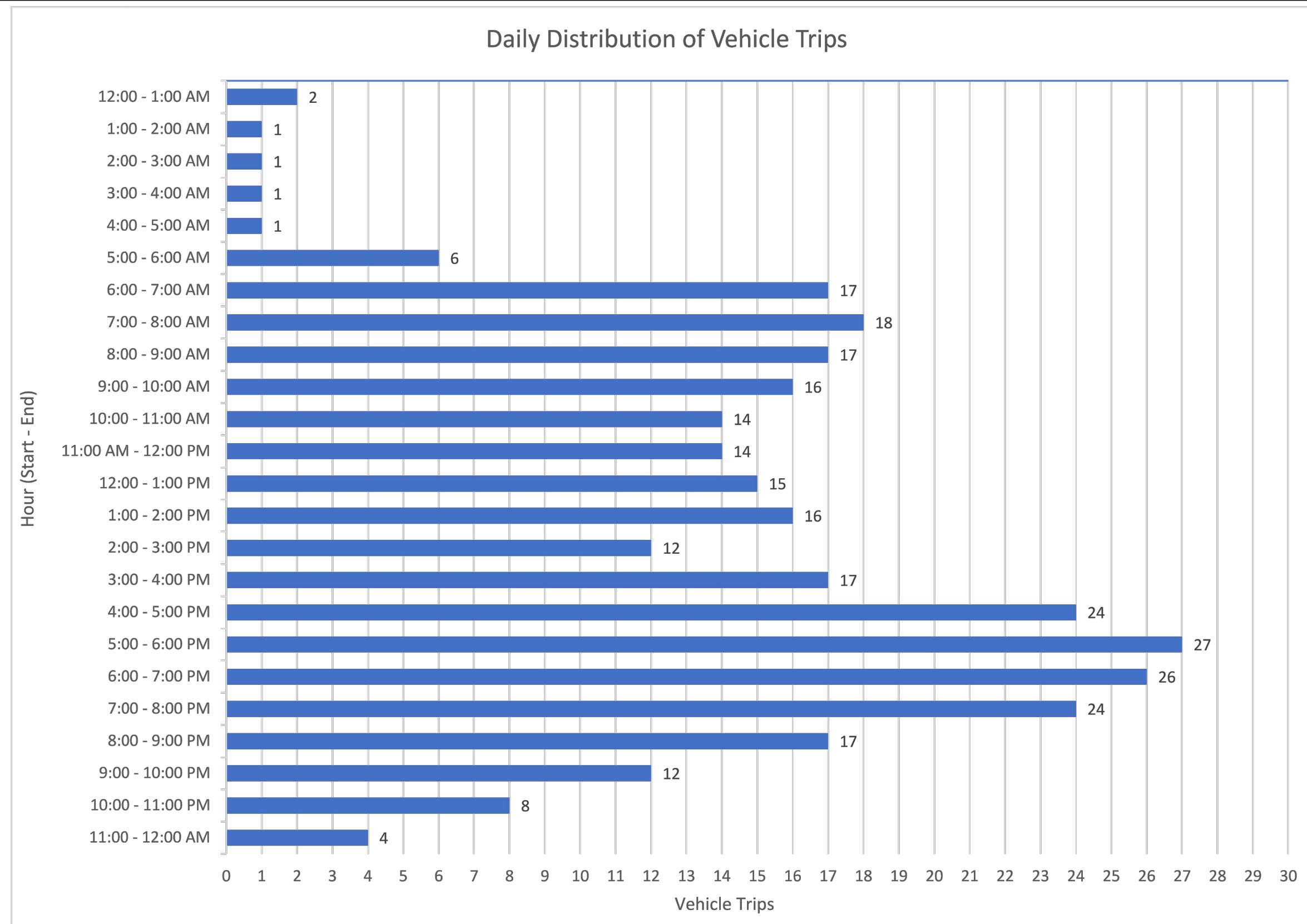
**Figure 5****Total Daily Vehicle Trips = 310****Daily Distribution of Vehicle Trips**

Table 5
TRIP GENERATION SUMMARY

Time Period	Vehicle Trips ^a		
	Entering	Exiting	Total
Average Weekday:	155	155	310
Weekday Morning Peak-Hour:	4	14	18
Elementary School Release Peak-Hour: ^b	10	7	17
Weekday Evening Peak-Hour:	16	11	27

^aBased on ITE LUC 221, *Multifamily Housing (Mid-Rise)* (68 units).

^bObtained from Figure 5.

Project-Generated Traffic-Volume Summary

As can be seen in Table 5, the Project is expected to generate approximately 310 vehicle trips on an average weekday (two-way, 24-hour volume, or 155 vehicles entering and 155 exiting), with 18 vehicle trips (4 vehicles entering and 14 exiting) expected during the weekday morning peak-hour, 17 vehicle trips (10 vehicles entering and 7 exiting) expected during the peak-hour that coincides with the afternoon release for the Memorial Elementary School and 27 vehicle trips (16 vehicles entering and 11 exiting) expected during the weekday evening peak-hour.

Given that the Project is expected to generate high traffic volumes during both the weekday morning and evening peak-hours that coincide with the roadway peak hours, these time periods were used to assess the potential impact of the Project on the roadway network, with conditions during the peak-hour that coincides with the afternoon release for the Memorial Elementary School expected to be similar to or less than those reported during the weekday morning and evening peak hours.

Trip Distribution and Assignment

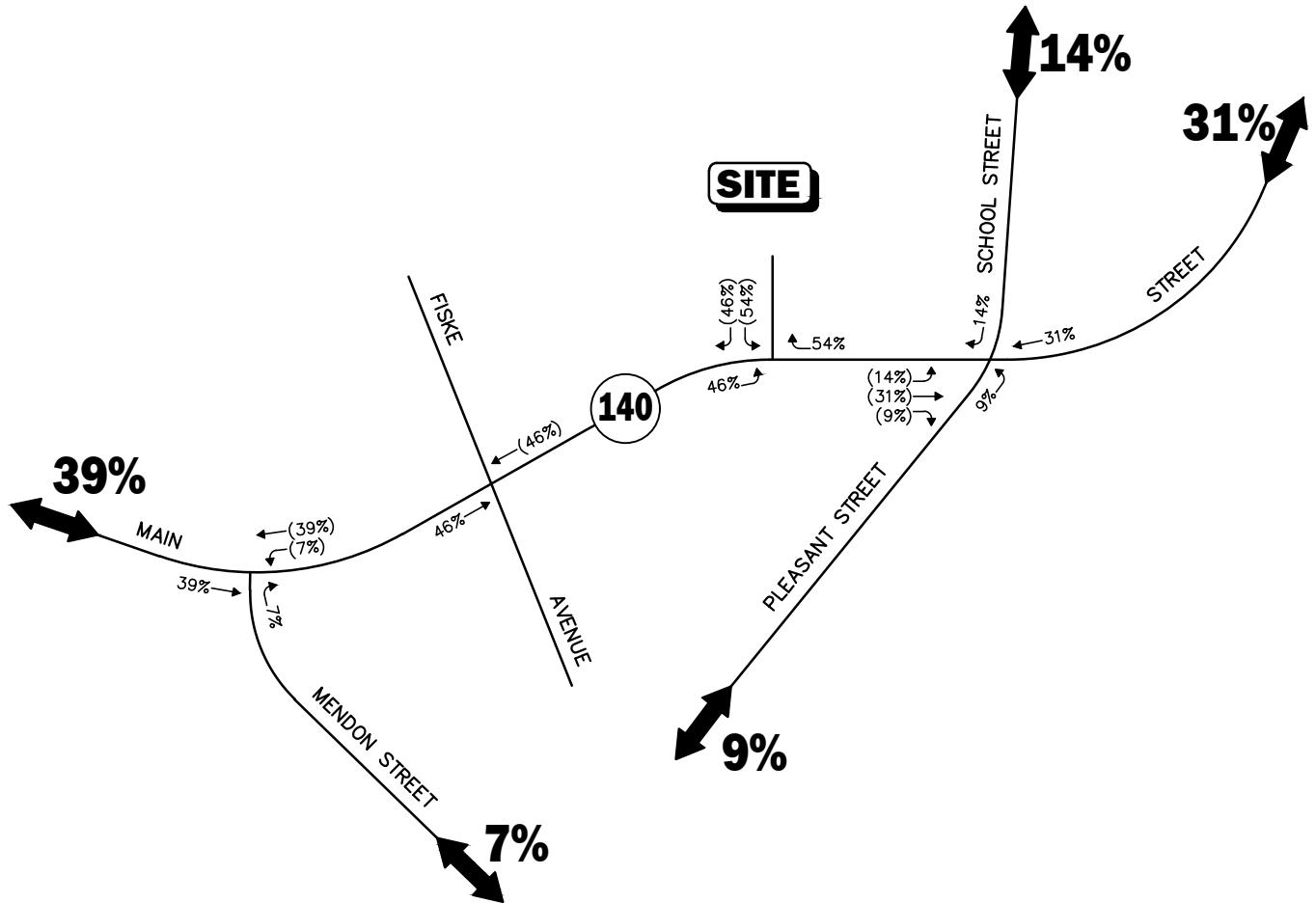
The directional distribution of generated trips to and from the Project site was determined based on a review of U.S. Census Journey-to-Work data for the Town of Upton and then refined based on a review of existing traffic patterns within the study area. The general trip distribution for the Project is graphically depicted on Figure 6, with the additional traffic that is expected to be generated by the Project assigned on the study area roadway network as shown on Figure 7.

Build Traffic Volumes

The 2031 Build condition traffic volumes consist of the 2031 No-Build traffic volumes with the addition of the traffic expected to be generated by the Project. The 2031 Build weekday morning and evening peak-hour traffic volumes are graphically depicted on Figure 8.

Legend:

- XX Entering Trips
- (XX) Exiting Trips

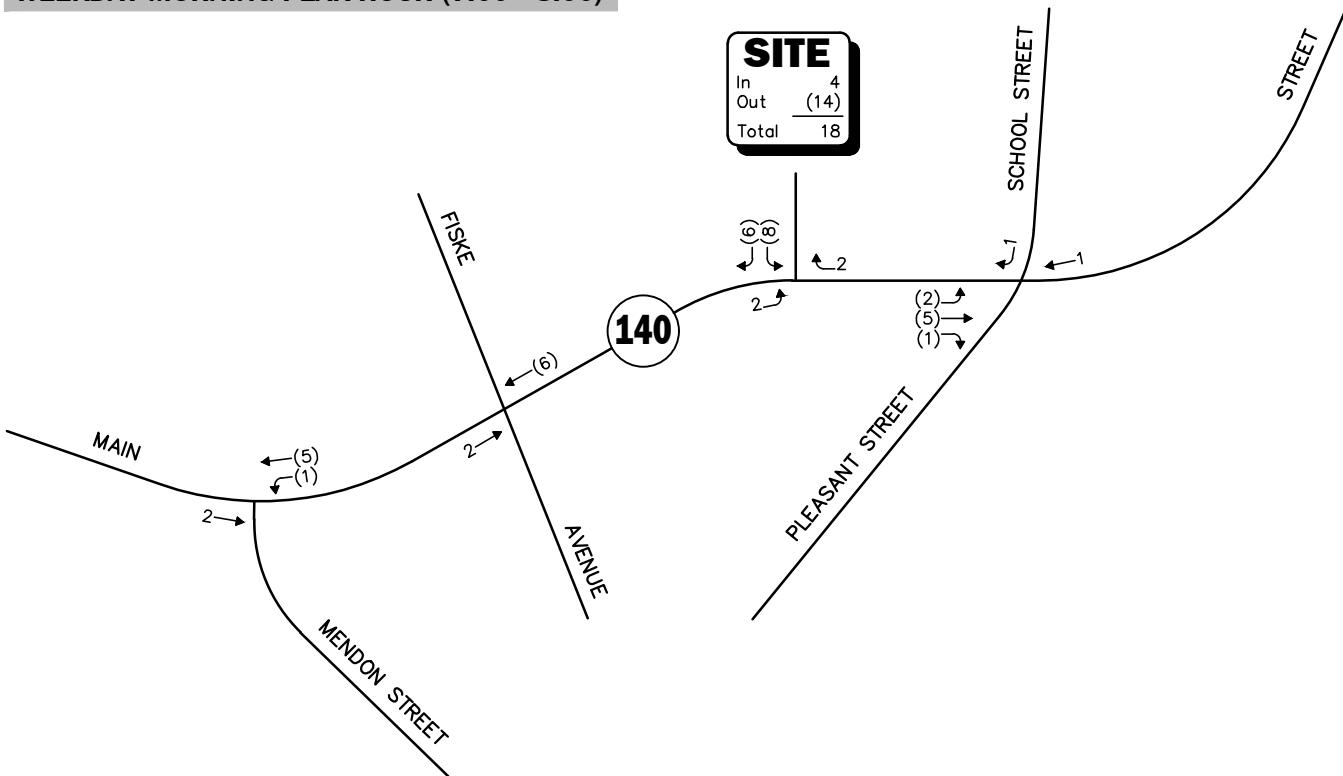


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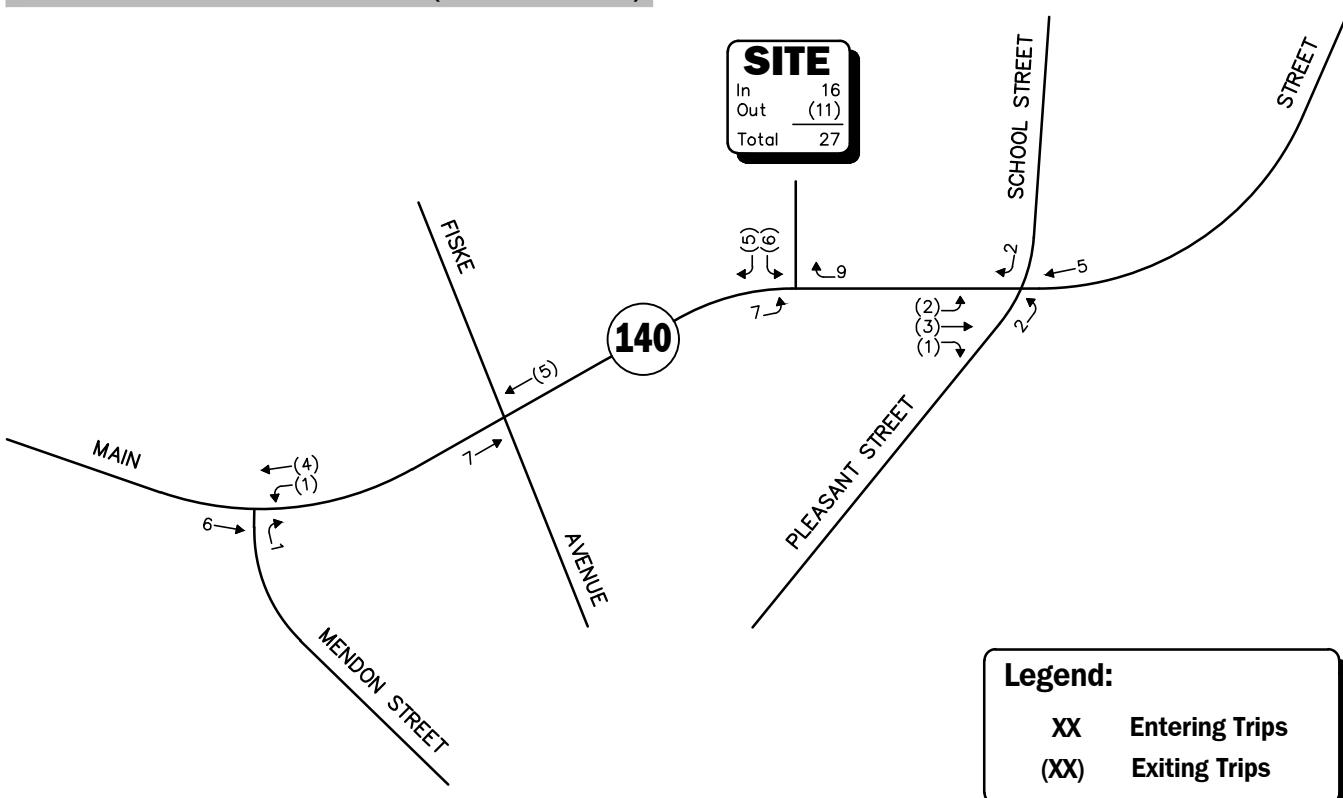
Figure 6

Trip Distribution Map

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Legend:

- XX Entering Trips
- (XX) Exiting Trips

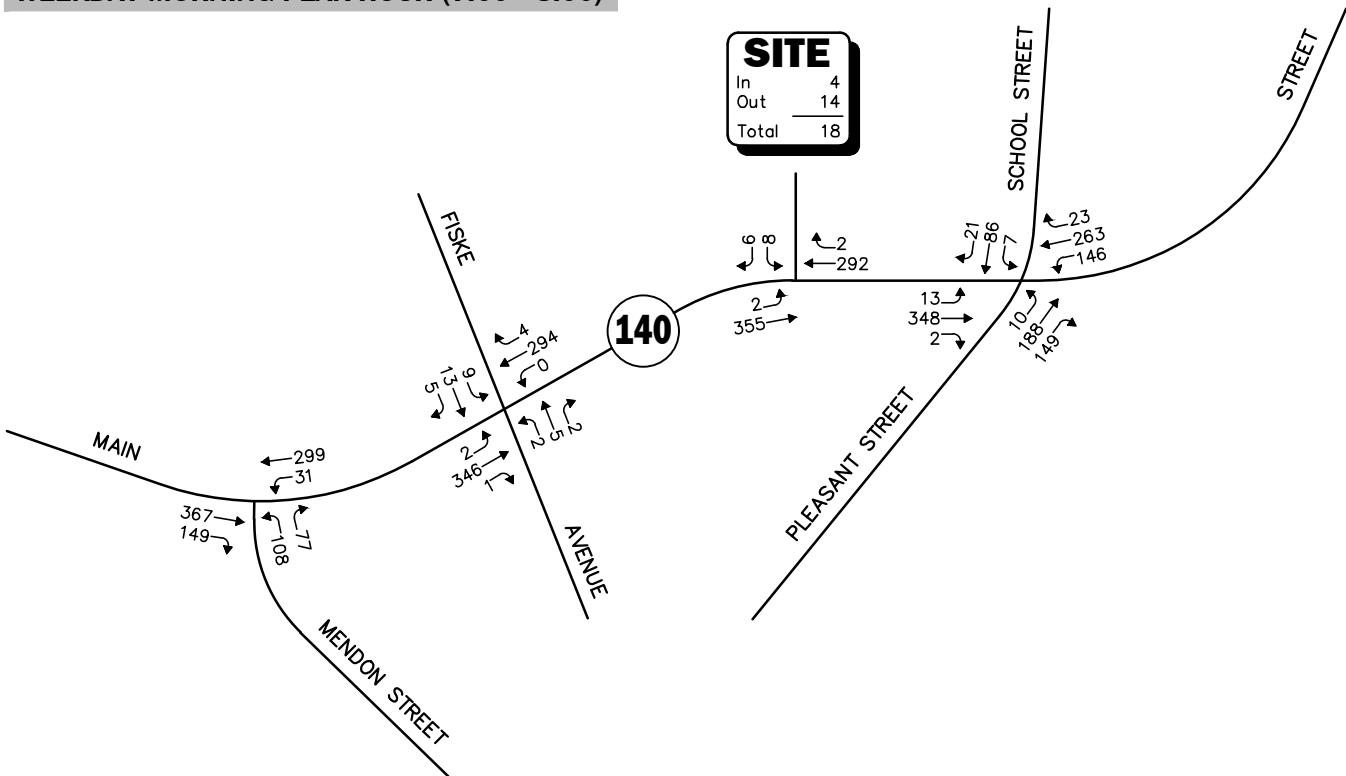


Not To Scale

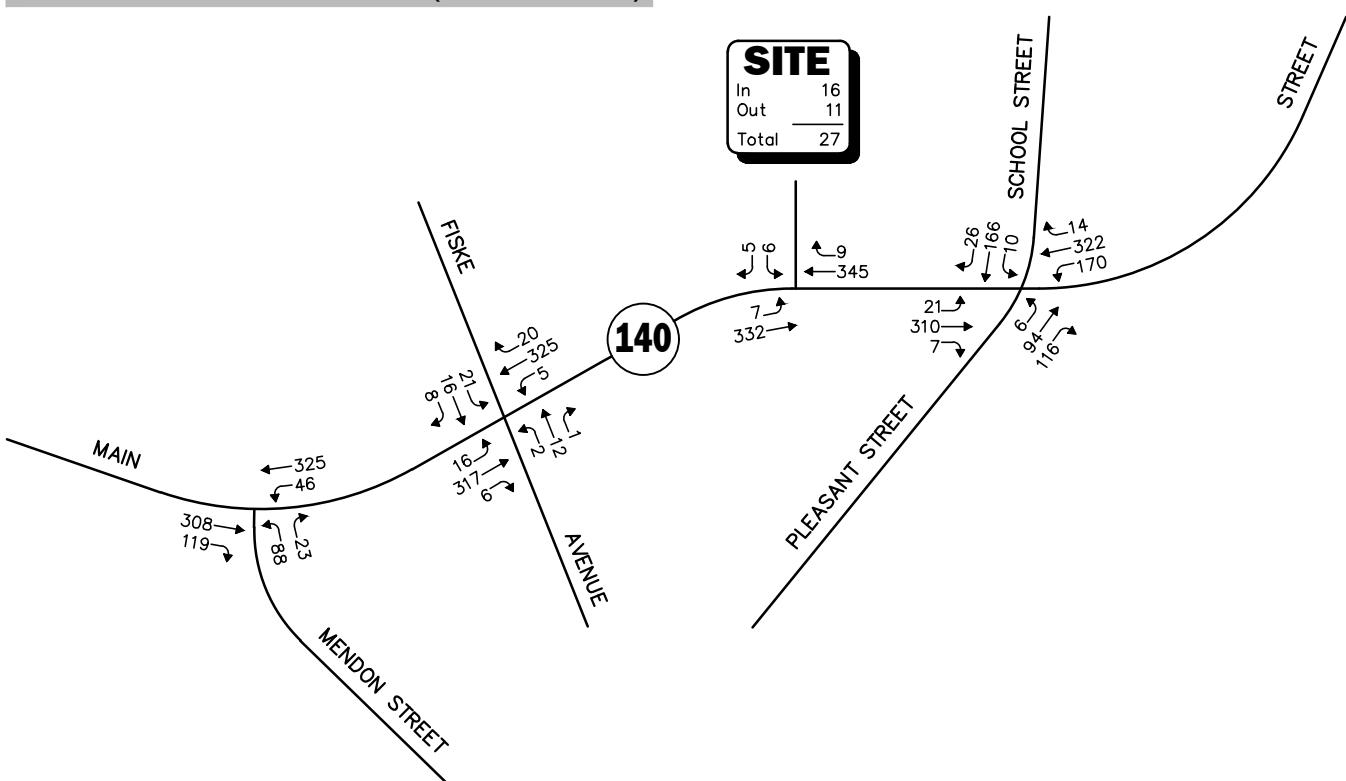
Figure 7

Project-Generated
Peak-Hour Traffic Volumes

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 8

TRAFFIC OPERATIONS ANALYSIS

In order to assess the potential impact of the Project on the roadway network, a detailed traffic operations analysis (motorist delays, vehicle queuing and level-of-service) was performed for the study intersections. Capacity analyses provide an indication of how well transportation facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

In brief, six levels of service are defined for each type of facility. They are given letter designations ranging from A to F, with LOS “A” representing the best operating conditions and LOS “F” representing congested or constrained operations. An LOS of “E” is representative of a transportation facility that is operating at its design capacity with an LOS of “D” generally defined as the limit of “acceptable” traffic operations. Since the level-of-service of a traffic facility is a function of the flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of the year. The Synchro® intersection capacity analysis software, which is based on the analysis methodologies and procedures presented in the *6th Edition Highway Capacity Manual (HCM)*⁹ for unsignalized intersections was used to complete the level-of-service and vehicle queue analyses.

Analysis Results

Level-of-service and vehicle queue analysis were conducted for 2024 Existing, 2031 No-Build, and 2031 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 6, with the detailed analysis results attached.

The following is a summary of the level-of-service and vehicle queue analyses for intersections within the study area. For context, we note that an LOS of “D” or better is generally defined as “acceptable” operating conditions.

Route 140 at School Street and Pleasant Street

No change in level-of-service is predicted to occur for any movement over No-Build conditions, with Project-related impacts generally defined as a predicted increase in average motorist delay that was not shown to result in an increase in vehicle queuing. Independent of the Project, both side streets (School Street and Pleasant Street) are currently operating over capacity (i.e., LOS “F”) during the commuter peak hours.

Route 140 at Mendon Street

No change in level-of-service or vehicle queuing is predicted to occur for any movement over No-Build conditions, with Project-related impacts generally defined as a predicted increase in average motorist delay of up to 1.1 seconds. Independent of the Project, the Mendon Street approach is predicted to operate at capacity (i.e., LOS “E”) during the weekday morning peak-hour under 2031 No-Build conditions.

Route 140 at Fiske Avenue

No change in level-of-service or vehicle queuing is predicted to occur for any movement over No-Build conditions, with Project-related impacts generally defined as a predicted increase in average motorist delay of up to 0.4 seconds. All movements on the Fiske Avenue approaches are predicted to continue to operate at LOS C with the addition of Project-related traffic with vehicle queues of up to one (1) vehicle. All

⁹*Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2016.

movements along Route 140 approaching the intersection are predicted to operate at LOS A with negligible vehicle queuing predicted.

Route 140 at the Project Site Driveway

All movements exiting the Project site driveway to Route 140 are predicted to operate at LOS B with negligible vehicle queuing. All movements along Route 140 approaching the Project site driveway were shown to operate at LOS A, also with negligible vehicle queuing predicted.

Table 6
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue ^d 95 th	Demand	Delay	LOS	Queue ^d 95 th
Route 140 at School Street and Pleasant Street												
Weekday Morning:												
Route 140 EB LT/TH/RT	325	0.2	A	0	355	0.3	A	0	363	0.3	A	0
Route 140 WB LT/TH/RT	380	3.1	A	1	431	3.1	A	1	432	3.1	A	1
Pleasant Street NB LT/TH/RT	322	>50.0	F	29	347	>50.0	F	N/C	347	>50.0	F	N/C
School Street SB: LT/TH/RT	104	>50.0	F	N/C	113	>50.0	F	N/C	114	>50.0	F	N/C
Weekday Evening:												
Route 140 EB LT/TH/RT	295	0.5	A	0	332	0.5	A	0	338	0.5	A	0
Route 140 WB LT/TH/RT	450	3.0	A	1	501	3.0	A	1	506	3.0	A	1
Pleasant Street NB LT/TH/RT	197	>50.0	F	N/C	214	>50.0	F	N/C	216	>50.0	F	N/C
School Street SB: LT/TH/RT	182	>50.0	F	13	200	>50.0	F	20	202	>50.0	F	20
Route 140 at Mendon Street												
Weekday Morning:												
Route 140 EB TH/RT	475	0.0	A	0	514	0.0	A	0	516	0.0	A	0
Route 140 WB LT/TH	288	0.8	A	0	324	0.8	A	0	330	0.8	A	0
Mendon Street NB LT/RT	125	27.6	D	3	135	37.2	E	4	135	38.3	E	4
Weekday Evening:												
Route 140 EB TH/RT	380	0.0	A	0	421	0.0	A	0	427	0.0	A	0
Route 140 WB LT/TH	329	1.0	A	0	366	1.0	A	0	371	1.0	A	0
Mendon Street NB LT/RT	101	19.5	C	2	110	23.4	C	2	111	24.1	C	2
Route 140 at Fiske Avenue												
Weekday Morning:												
Route 140 EB LT/TH/RT	318	0.0	A	0	347	0.0	A	0	349	0.0	A	0
Route 140 WB LT/TH/RT	258	0.0	A	0	292	0.0	A	0	298	0.0	A	0
Fiske Avenue NB LT/TH/RT	9	14.4	B	0	9	15.4	C	0	9	15.6	C	0
Fiske Avenue SB: LT/TH/RT	25	15.3	C	1	27	16.9	C	1	27	17.1	C	1
Weekday Evening:												
Route 140 EB LT/TH/RT	295	0.4	A	0	332	0.4	A	0	339	0.4	A	0
Route 140 WB LT/TH/RT	310	0.1	A	0	345	0.1	A	0	350	0.1	A	0
Fiske Avenue NB LT/TH/RT	14	16.5	C	0	15	18.2	C	0	15	18.5	C	0
Fiske Avenue SB: LT/TH/RT	42	18.6	C	1	45	21.3	C	1	45	21.7	C	1

See notes at end of Table.



Table 6 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak-Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Route 140 at the Project Site Driveway												
Weekday Morning:												
Route 140 EB LT/TH	--	--	--	--	--	--	--	--	357	0.0	A	0
Route 140 WB TH/RT	--	--	--	--	--	--	--	--	294	0.0	A	0
Project Site Driveway SB LT/RT	--	--	--	--	--	--	--	--	14	14.8	B	0
Weekday Evening:												
Route 140 EB LT/TH	--	--	--	--	--	--	--	--	339	0.1	A	0
Route 140 WB TH/RT	--	--	--	--	--	--	--	--	354	0.0	A	0
Project Site Driveway SB LT/RT	--	--	--	--	--	--	--	--	11	14.0	B	0

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel of service.

^dQueue length in vehicles.

NB = northbound; EB = eastbound; SB = southbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

N/C = Not Calculated.

SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site driveway intersection with Route 140 in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)¹⁰ requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an oncoming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 7 presents the measured SSD and ISD at the subject intersection.

Table 7
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
<i>Route 140 at the Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Route 140 approaching from the east	305	--	650+
Route 140 approaching from the west	305	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	305	385	650+
Looking to the west from the Project Site Driveway	305	445	650+

^aRecommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 40 mph approach speed on Route 140.

^bValues shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

As can be seen in Table 7, the available lines of sight to and from the Project site driveway intersection with Route 140 exceed the recommended minimum sight distance to function in a safe (SSD) and efficient (ISD) manner based on a 40 mph approach speed, which is above both the measured 85th percentile vehicle travel speed (34/36 mph) and the posted speed limit (35 mph) in the vicinity of the Project site.

¹⁰American Association of State Highway and Transportation Officials, op. cit. 2.

SUMMARY

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of a multifamily residential development to be located off of Main Street (Route 140) in Upton, Massachusetts. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE,¹¹ the Project is expected to generate approximately 310 vehicle trips on an average weekday (two-way, 24-hour volume), with 18 vehicle trips expected during the weekday morning peak-hour, 17 vehicle trips expected during the peak-hour that coincides with the afternoon release for the Memorial Elementary School and 27 vehicle trips expected during the weekday evening peak-hour;
2. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), acknowledging that one or more movements at the study area intersections are currently operating or are predicted to operate at or over capacity (i.e., LOS "E" or "F", respectively) independent of the Project;
3. All movements exiting the Project site driveway to Route 140 are predicted to operate at LOS B during the peak hours with negligible vehicle queuing predicted. All movements along Route 140 approaching the driveway are predicted to operate at LOS A, also with negligible vehicle queuing;
4. Independent of the Project, the Route 140/School Street/Pleasant Street intersection was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for similar intersections. MassDOT is currently advancing improvements along Route 140 that include improvements at this intersection that will enhance safety and mobility; and
5. Lines of sight at the Project site driveway intersection with Route 140 were found to exceed the AASHTO¹² recommended minimum distance for the intersection to operate in a safe and efficient manner based on the appropriate approach speed.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified as a part of this assessment. The following improvements have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

¹¹Institute of Transportation Engineers, op. cit. 1.

¹²American Association of State Highway and Transportation Officials, op. cit. 2.

Project Access

Access to the Project site will be provided by way of a new drive that will intersect the north side of Route 140 approximately 700 feet west of School Street (between the Pickering & Son Upton Funeral Home and 51 Main Street properties). The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the site plan:

- The Project site driveway will be a minimum of 24 feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.
- Where perpendicular parking is proposed the drive aisle behind the parking will be a minimum of 23 feet in order to facilitate parking maneuvers.
- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.
- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).¹³
- A sidewalk has been provided along at least one side of the Project site driveway that extends to Route 140 where it will connect to the existing sidewalk along the north side of Route 140.
- Americans with Disabilities Act (ADA)-compliant wheelchair ramps should be provided for crossing the Project site driveway and at pedestrian crossings within the Project site. Alternatively, the Project site driveway can be constructed such that the sidewalk crosses the driveway (i.e., pan-type driveway).
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveway should be designed and maintained so as not to restrict lines of sight.
- Snow accumulations (windrows) within sight triangle areas should be promptly removed where such accumulations would impede sight lines.
- Secure bicycle parking will be provided proximate to the residential building.

Off-Site

Route 140 at School Street and Pleasant Street

Independent of the Project, one or more movements at the Route 140/School Street/Pleasant Street intersection are currently or are predicted to operate at or over capacity during the peak hours. Absent improvement, motorist delays are expected to further increase in the future, again, independent of the Project. In addition to and also independent of the Project, the intersection was identified to have a motor vehicle crash history that warrants further review and the advancement of specific improvements to enhance safety. As previously discussed, MassDOT is currently advancing improvements along Route 140 that include improvements at this intersection that will enhance safety and mobility. As such, no additional improvements are necessary at this intersection to accommodate the Project.

¹³*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

Transportation Demand Management

In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles (SOVs), the following Transportation Demand Management (TDM) measures should be implemented as part of the Project:

- A transportation coordinator should be assigned for the Project to coordinate the TDM program;
- A “welcome packet” should be provided to residents detailing available transportation options, including those offered by the Council on Aging (COA); and
- Secure bicycle parking will be provided for residents and visitors.

With implementation of the aforementioned recommendations, safe and efficient access will be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

cc: File

ATTACHMENTS

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
VEHICLE TRAVEL SPEED DATA
MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING
GENERAL BACKGROUND TRAFFIC GROWTH
BACKGROUND DEVELOPMENT NETWORKS
TRIP-GENERATION CALCULATIONS
TRIP-DISTRIBUTION DATA
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA

95680001

1/11/2023	WB		Hour Totals		EB		Hour Totals		Combined Totals		
	Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		3	37			3	42				
12:15		2	42			1	39				
12:30		1	38			3	51				
12:45		5	50	11	167	0	23	7	155	18	322
1:00		2	34			1	37				
1:15		1	42			0	54				
1:30		2	45			0	30				
1:45		2	58	7	179	1	48	2	169	9	348
2:00		2	46			0	41				
2:15		2	48			1	54				
2:30		2	56			0	61				
2:45		0	57	6	207	1	41	2	197	8	404
3:00		5	76			1	53				
3:15		2	81			2	73				
3:30		0	70			3	50				
3:45		1	74	8	301	4	58	10	234	18	535
4:00		2	77			5	60				
4:15		0	81			2	61				
4:30		4	69			3	105				
4:45		2	53	8	280	6	52	16	278	24	558
5:00		4	56			9	51				
5:15		7	65			13	44				
5:30		15	71			18	61				
5:45		6	48	32	240	11	43	51	199	83	439
6:00		20	32			17	44				
6:15		18	44			32	33				
6:30		33	40			31	34				
6:45		33	31	104	147	43	31	123	142	227	289
7:00		46	20			58	29				
7:15		82	27			82	31				
7:30		63	33			103	27				
7:45		46	27	237	107	62	20	305	107	542	214
8:00		61	20			68	15				
8:15		52	16			34	20				
8:30		53	26			47	11				
8:45		59	16	225	78	87	10	236	56	461	134
9:00		32	25			52	12				
9:15		33	15			44	8				
9:30		41	13			40	12				
9:45		55	7	161	60	44	4	180	36	341	96
10:00		40	11			52	4				
10:15		34	4			45	9				
10:30		39	9			45	5				
10:45		54	4	167	28	37	8	179	26	346	54
11:00		39	8			46	5				
11:15		48	7			41	7				
11:30		42	11			42	1				
11:45		48	5	177	31	59	1	188	14	365	45
Total		1143	1825			1299	1613			2442	3438
Percent		38.5%	61.5%			44.6%	55.4%			41.5%	58.5%

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA

95680001

1/12/2023	WB		Hour Totals		EB		Hour Totals		Combined Totals		
	Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	38			0	53				
12:15		6	42			4	45				
12:30		1	46			1	42				
12:45		4	39	17	165	1	56	6	196	23	361
1:00		5	43			0	48				
1:15		3	22			0	35				
1:30		2	39			2	48				
1:45		1	64	11	168	1	45	3	176	14	344
2:00		1	40			3	56				
2:15		0	51			2	53				
2:30		1	55			2	44				
2:45		1	53	3	199	2	55	9	208	12	407
3:00		0	81			0	38				
3:15		1	66			3	72				
3:30		4	57			3	59				
3:45		2	66	7	270	2	50	8	219	15	489
4:00		3	81			1	58				
4:15		1	73			3	68				
4:30		7	62			4	66				
4:45		3	68	14	284	3	57	11	249	25	533
5:00		4	64			5	55				
5:15		14	52			13	57				
5:30		6	60			14	47				
5:45		11	45	35	221	18	40	50	199	85	420
6:00		16	45			22	32				
6:15		25	52			28	45				
6:30		31	33			32	48				
6:45		38	30	110	160	35	33	117	158	227	318
7:00		36	33			58	21				
7:15		71	19			83	19				
7:30		48	29			84	14				
7:45		46	33	201	114	77	19	302	73	503	187
8:00		50	18			66	12				
8:15		55	14			34	22				
8:30		53	19			45	11				
8:45		70	13	228	64	91	11	236	56	464	120
9:00		41	18			57	13				
9:15		41	15			35	10				
9:30		40	14			50	10				
9:45		32	9	154	56	43	9	185	42	339	98
10:00		33	6			42	5				
10:15		43	12			26	12				
10:30		42	6			43	9				
10:45		27	4	145	28	41	6	152	32	297	60
11:00		36	6			38	4				
11:15		47	9			37	3				
11:30		55	10			43	1				
11:45		39	2	177	27	42	1	160	9	337	36
Total		1102	1756			1239	1617			2341	3373
Percent		38.6%	61.4%			43.4%	56.6%			41.0%	59.0%
Grand Total		2245	3581			2538	3230			4783	6811
Percent		38.5%	61.5%			44.0%	56.0%			41.3%	58.7%
ADT		ADT: 5,797		AADT: 5,797							

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA

95680001

1/9/2023	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	*	*	11	7	17	6	*	*	*	*	*	*	14	6
1:00	*	*	*	*	7	2	11	3	*	*	*	*	*	*	9	2
2:00	*	*	*	*	6	2	3	9	*	*	*	*	*	*	4	6
3:00	*	*	*	*	8	10	7	8	*	*	*	*	*	*	8	9
4:00	*	*	*	*	8	16	14	11	*	*	*	*	*	*	11	14
5:00	*	*	*	*	32	51	35	50	*	*	*	*	*	*	34	50
6:00	*	*	*	*	104	123	110	117	*	*	*	*	*	*	107	120
7:00	*	*	*	*	237	305	201	302	*	*	*	*	*	*	219	304
8:00	*	*	*	*	225	236	228	236	*	*	*	*	*	*	226	236
9:00	*	*	*	*	161	180	154	185	*	*	*	*	*	*	158	182
10:00	*	*	*	*	167	179	145	152	*	*	*	*	*	*	156	166
11:00	*	*	*	*	177	188	177	160	*	*	*	*	*	*	177	174
12:00 PM	*	*	*	*	167	155	165	196	*	*	*	*	*	*	166	176
1:00	*	*	*	*	179	169	168	176	*	*	*	*	*	*	174	172
2:00	*	*	*	*	207	197	199	208	*	*	*	*	*	*	203	202
3:00	*	*	*	*	301	234	270	219	*	*	*	*	*	*	286	226
4:00	*	*	*	*	280	278	284	249	*	*	*	*	*	*	282	264
5:00	*	*	*	*	240	199	221	199	*	*	*	*	*	*	230	199
6:00	*	*	*	*	147	142	160	158	*	*	*	*	*	*	154	150
7:00	*	*	*	*	107	107	114	73	*	*	*	*	*	*	110	90
8:00	*	*	*	*	78	56	64	56	*	*	*	*	*	*	71	56
9:00	*	*	*	*	60	36	56	42	*	*	*	*	*	*	58	39
10:00	*	*	*	*	28	26	28	32	*	*	*	*	*	*	28	29
11:00	*	*	*	*	31	14	6	4	*	*	*	*	*	*	18	9
Total Day	0	0	0	0	2968	2912	2837	2851	0	0	0	0	0	0	2903	2881
AM Peak Volume			7:00	7:00	8:00	7:00									8:00	7:00
PM Peak Volume			237	305	228	302									226	304
Comb Total ADT	0	0	5880	5880	5688	5688	0	0	0	0	0	0	0	0	5784	5784
ADT	ADT: 5,797		AADT: 5,797													

TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

Page No : 1

Groups Printed- Cars - Trucks

Start Time	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	24	0	21	43	5	1	50	21	2	60	0	227
07:15 AM	3	20	7	60	74	6	3	32	33	2	74	0	314
07:30 AM	2	18	8	36	59	3	2	29	43	4	96	1	301
07:45 AM	0	13	3	7	39	2	2	52	32	1	63	0	214
Total	5	75	18	124	215	16	8	163	129	9	293	1	1056
08:00 AM	1	5	3	13	57	7	3	30	24	1	65	0	209
08:15 AM	0	7	3	12	48	5	2	23	22	2	39	1	164
08:30 AM	0	5	2	15	53	6	2	38	19	3	42	3	188
08:45 AM	0	9	11	17	49	1	2	25	20	8	70	3	215
Total	1	26	19	57	207	19	9	116	85	14	216	7	776
Grand Total	6	101	37	181	422	35	17	279	214	23	509	8	1832
Apprch %	4.2	70.1	25.7	28.4	66.1	5.5	3.3	54.7	42	4.3	94.3	1.5	
Total %	0.3	5.5	2	9.9	23	1.9	0.9	15.2	11.7	1.3	27.8	0.4	
Cars	5	100	37	177	415	34	16	276	207	23	506	8	1804
% Cars	83.3	99	100	97.8	98.3	97.1	94.1	98.9	96.7	100	99.4	100	98.5
Trucks	1	1	0	4	7	1	1	3	7	0	3	0	28
% Trucks	16.7	1	0	2.2	1.7	2.9	5.9	1.1	3.3	0	0.6	0	1.5

Start Time	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	24	0	24	21	43	5	69	1	50	21	72	2	60	0	62	227
07:15 AM	3	20	7	30	60	74	6	140	3	32	33	68	2	74	0	76	314
07:30 AM	2	18	8	28	36	59	3	98	2	29	43	74	4	96	1	101	301
07:45 AM	0	13	3	16	7	39	2	48	2	52	32	86	1	63	0	64	214
Total Volume	5	75	18	98	124	215	16	355	8	163	129	300	9	293	1	303	1056
% App. Total	5.1	76.5	18.4		34.9	60.6	4.5		2.7	54.3	43		3	96.7	0.3		
PHF	.417	.781	.563	.817	.517	.726	.667	.634	.667	.784	.750	.872	.563	.763	.250	.750	.841
Cars	4	74	18	96	120	212	16	348	8	162	123	293	9	290	1	300	1037
% Cars	80.0	98.7	100	98.0	96.8	98.6	100	98.0	100	99.4	95.3	97.7	100	99.0	100	99.0	98.2
Trucks	1	1	0	2	4	3	0	7	0	1	6	7	0	3	0	3	19
% Trucks	20.0	1.3	0	2.0	3.2	1.4	0	2.0	0	0.6	4.7	2.3	0	1.0	0	1.0	1.8

Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

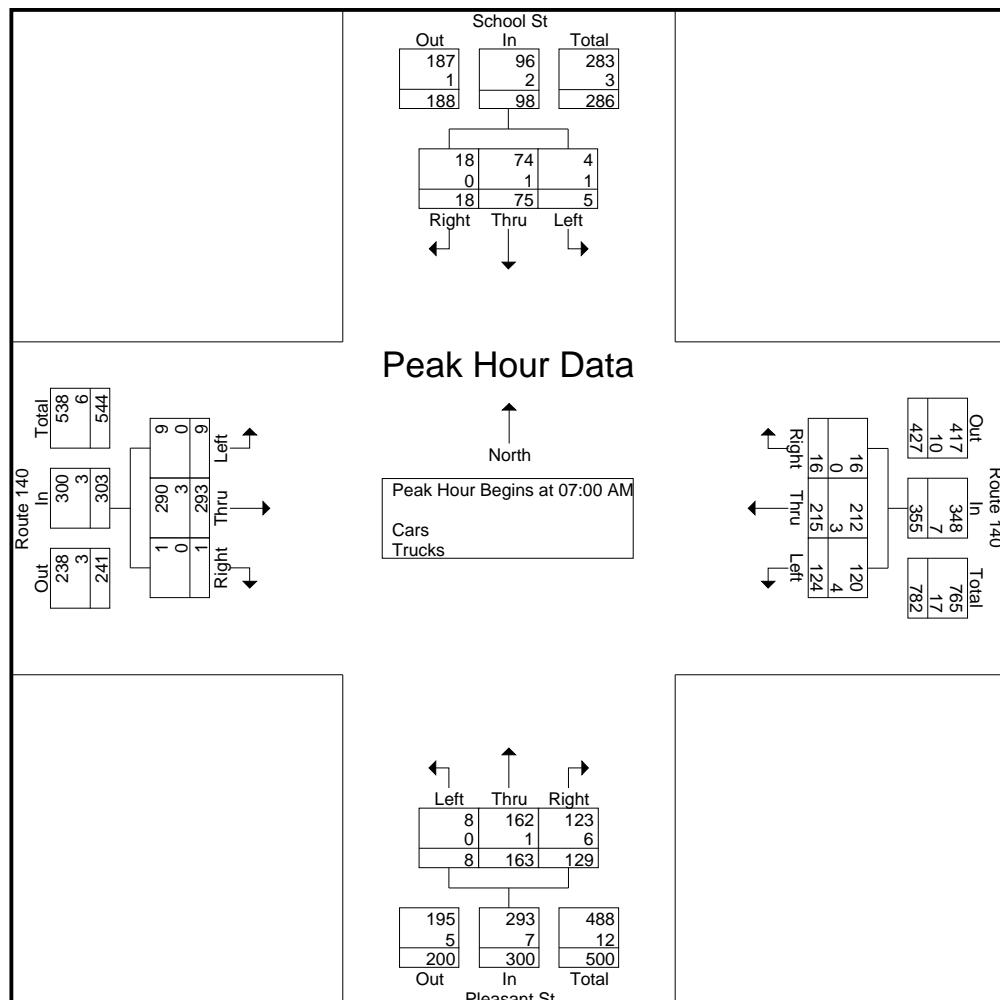
Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

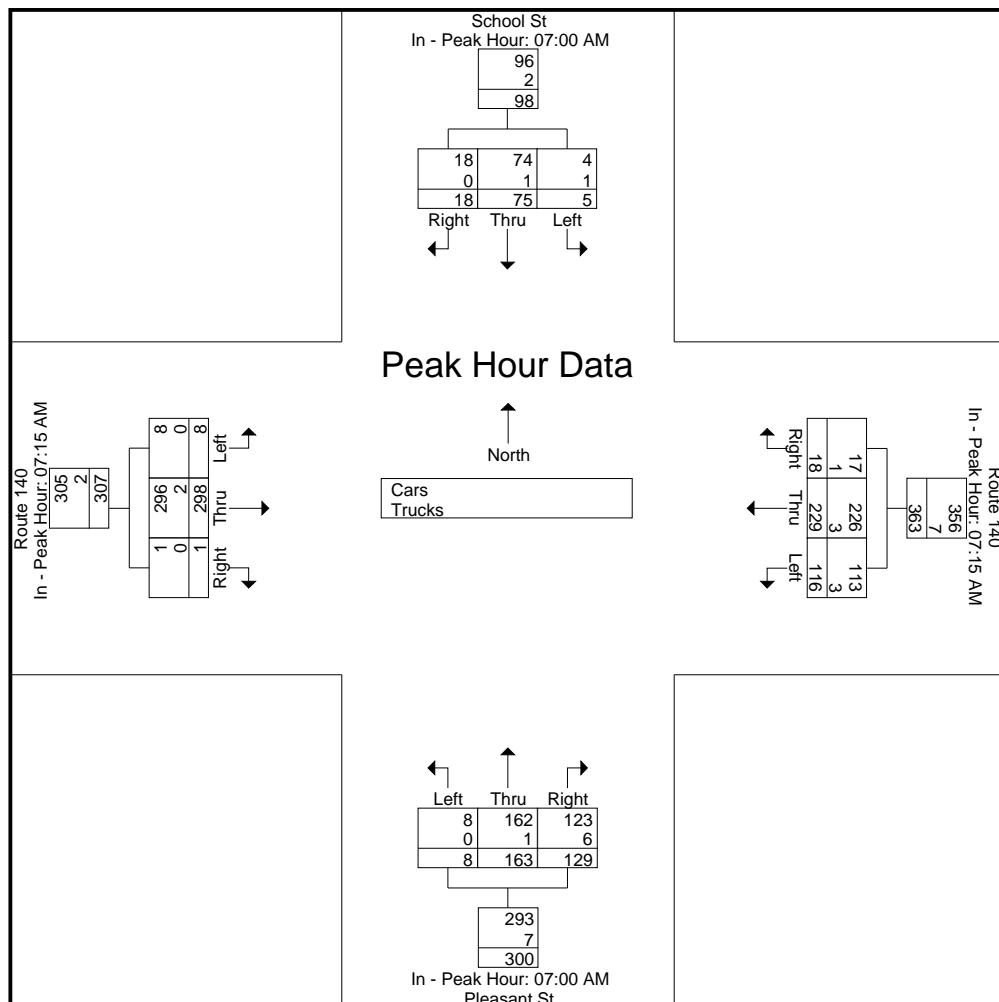
Peak Hour Analysis From 07:00 AM to 08:00 AM

Peak Hour for Each Approach Begins at:																
	07:00 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	0	24	0	24	60	74	6	140	1	50	21	72	2	74	0	76
+15 mins.	3	20	7	30	36	59	3	98	3	32	33	68	4	96	1	101
+30 mins.	2	18	8	28	7	39	2	48	2	29	43	74	1	63	0	64
+45 mins.	0	13	3	16	13	57	7	77	2	52	32	86	1	65	0	66
Total Volume	5	75	18	98	116	229	18	363	8	163	129	300	8	298	1	307
% App. Total	5.1	76.5	18.4		32	63.1	5		2.7	54.3	43		2.6	97.1	0.3	
PHF	.417	.781	.563	.817	.483	.774	.643	.648	.667	.784	.750	.872	.500	.776	.250	.760
Cars	4	74	18	96	113	226	17	356	8	162	123	293	8	296	1	305
% Cars	80	98.7	100	98	97.4	98.7	94.4	98.1	100	99.4	95.3	97.7	100	99.3	100	99.3
Trucks	1	1	0	2	3	3	1	7	0	1	6	7	0	2	0	2
% Trucks	20	1.3	0	2	2.6	1.3	5.6	1.9	0	0.6	4.7	2.3	0	0.7	0	0.7

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

Page No : 4

Groups Printed- Cars

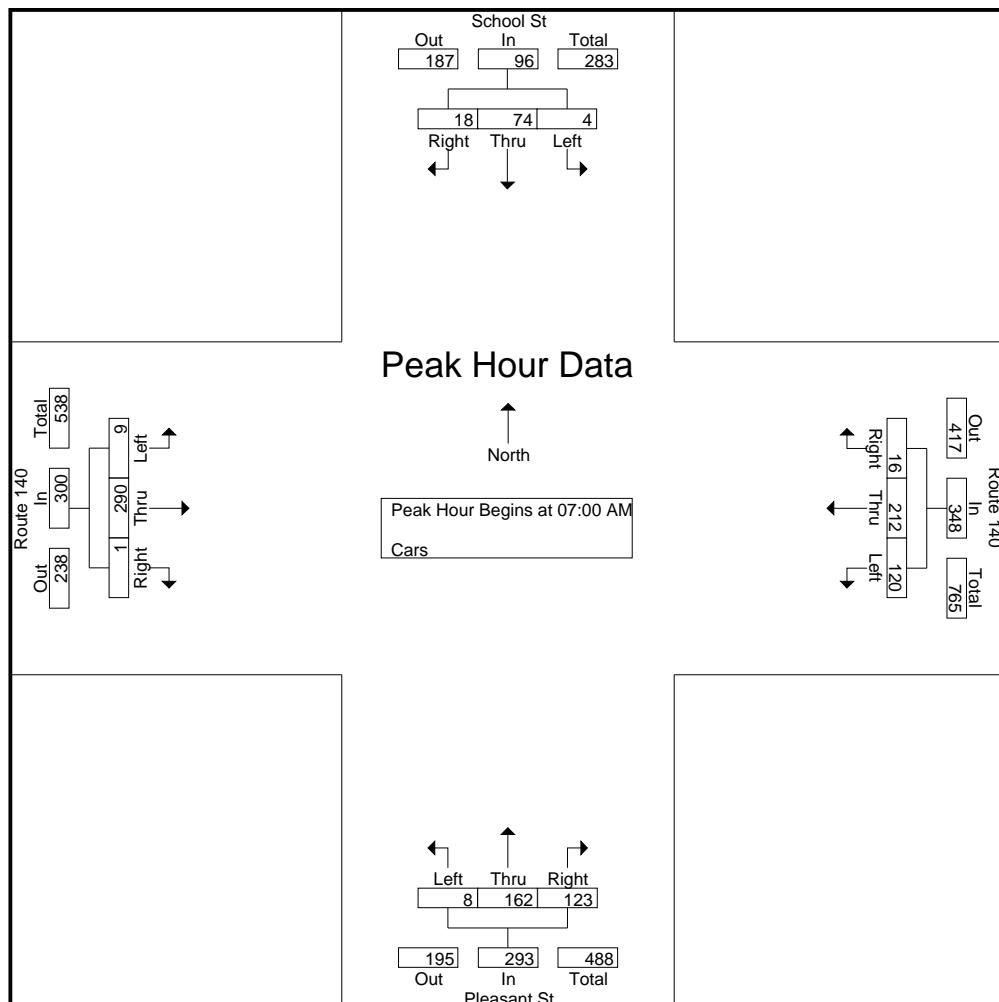
	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	23	0	20	43	5	1	49	19	2	59	0	221
07:15 AM	3	20	7	58	73	6	3	32	32	2	74	0	310
07:30 AM	1	18	8	35	57	3	2	29	41	4	94	1	293
07:45 AM	0	13	3	7	39	2	2	52	31	1	63	0	213
Total	4	74	18	120	212	16	8	162	123	9	290	1	1037
08:00 AM	1	5	3	13	57	6	3	29	24	1	65	0	207
08:15 AM	0	7	3	12	47	5	2	23	22	2	39	1	163
08:30 AM	0	5	2	15	50	6	1	38	19	3	42	3	184
08:45 AM	0	9	11	17	49	1	2	24	19	8	70	3	213
Total	1	26	19	57	203	18	8	114	84	14	216	7	767
Grand Total	5	100	37	177	415	34	16	276	207	23	506	8	1804
Apprch %	3.5	70.4	26.1	28.3	66.3	5.4	3.2	55.3	41.5	4.3	94.2	1.5	
Total %	0.3	5.5	2.1	9.8	23	1.9	0.9	15.3	11.5	1.3	28	0.4	

	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	23	0	23	20	43	5	68	1	49	19	69	2	59	0	61	221
07:15 AM	3	20	7	30	58	73	6	137	3	32	32	67	2	74	0	76	310
07:30 AM	1	18	8	27	35	57	3	95	2	29	41	72	4	94	1	99	293
07:45 AM	0	13	3	16	7	39	2	48	2	52	31	85	1	63	0	64	213
Total Volume	4	74	18	96	120	212	16	348	8	162	123	293	9	290	1	300	1037
% App. Total	4.2	77.1	18.8		34.5	60.9	4.6		2.7	55.3	42		3	96.7	0.3		
PHF	.333	.804	.563	.800	.517	.726	.667	.635	.667	.779	.750	.862	.563	.771	.250	.758	.836

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

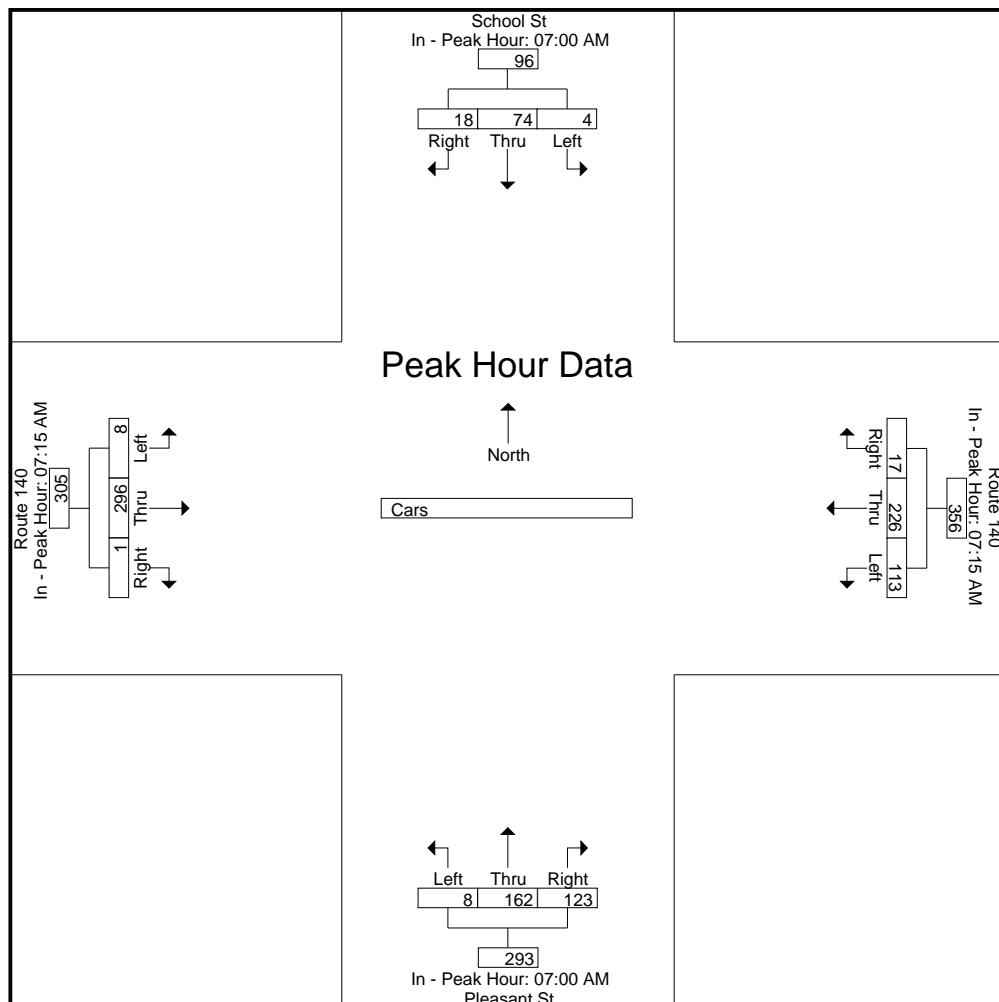
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	0	23	0	23	58	73	6	137	1	49	19	69	2	74	0	76
+15 mins.	3	20	7	30	35	57	3	95	3	32	32	67	4	94	1	99
+30 mins.	1	18	8	27	7	39	2	48	2	29	41	72	1	63	0	64
+45 mins.	0	13	3	16	13	57	6	76	2	52	31	85	1	65	0	66
Total Volume	4	74	18	96	113	226	17	356	8	162	123	293	8	296	1	305
% App. Total	4.2	77.1	18.8		31.7	63.5	4.8		2.7	55.3	42		2.6	97	0.3	
PHF	.333	.804	.563	.800	.487	.774	.708	.650	.667	.779	.750	.862	.500	.787	.250	.770

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 6



Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

Page No : 7

Groups Printed- Trucks

	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM		0	1	0	1	0	0	0	1	2	0	1	0	6
07:15 AM		0	0	0	2	1	0	0	0	1	0	0	0	4
07:30 AM		1	0	0	1	2	0	0	0	2	0	2	0	8
07:45 AM		0	0	0	0	0	0	0	0	1	0	0	0	1
Total		1	1	0	4	3	0	0	1	6	0	3	0	19
08:00 AM		0	0	0	0	0	1	0	1	0	0	0	0	2
08:15 AM		0	0	0	0	1	0	0	0	0	0	0	0	1
08:30 AM		0	0	0	0	3	0	1	0	0	0	0	0	4
08:45 AM		0	0	0	0	0	0	0	1	1	0	0	0	2
Total		0	0	0	0	4	1	1	2	1	0	0	0	9
Grand Total		1	1	0	4	7	1	1	3	7	0	3	0	28
Apprch %		50	50	0	33.3	58.3	8.3	9.1	27.3	63.6	0	100	0	
Total %		3.6	3.6	0	14.3	25	3.6	3.6	10.7	25	0	10.7	0	

	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:00 AM																		
07:00 AM		0	1	0	1	1	0	0	1	0	1	2	3	0	1	0	1	6
07:15 AM		0	0	0	0	2	1	0	3	0	0	1	1	0	0	0	0	4
07:30 AM		1	0	0	1	1	2	0	3	0	0	2	2	0	2	0	2	8
07:45 AM		0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total Volume		1	1	0	2	4	3	0	7	0	1	6	7	0	3	0	3	19
% App. Total		50	50	0		57.1	42.9	0		0	14.3	85.7		0	100	0		
PHF		.250	.250	.000	.500	.500	.375	.000	.583	.000	.250	.750	.583	.000	.375	.000	.375	.594

Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

E/W Street : Route 146

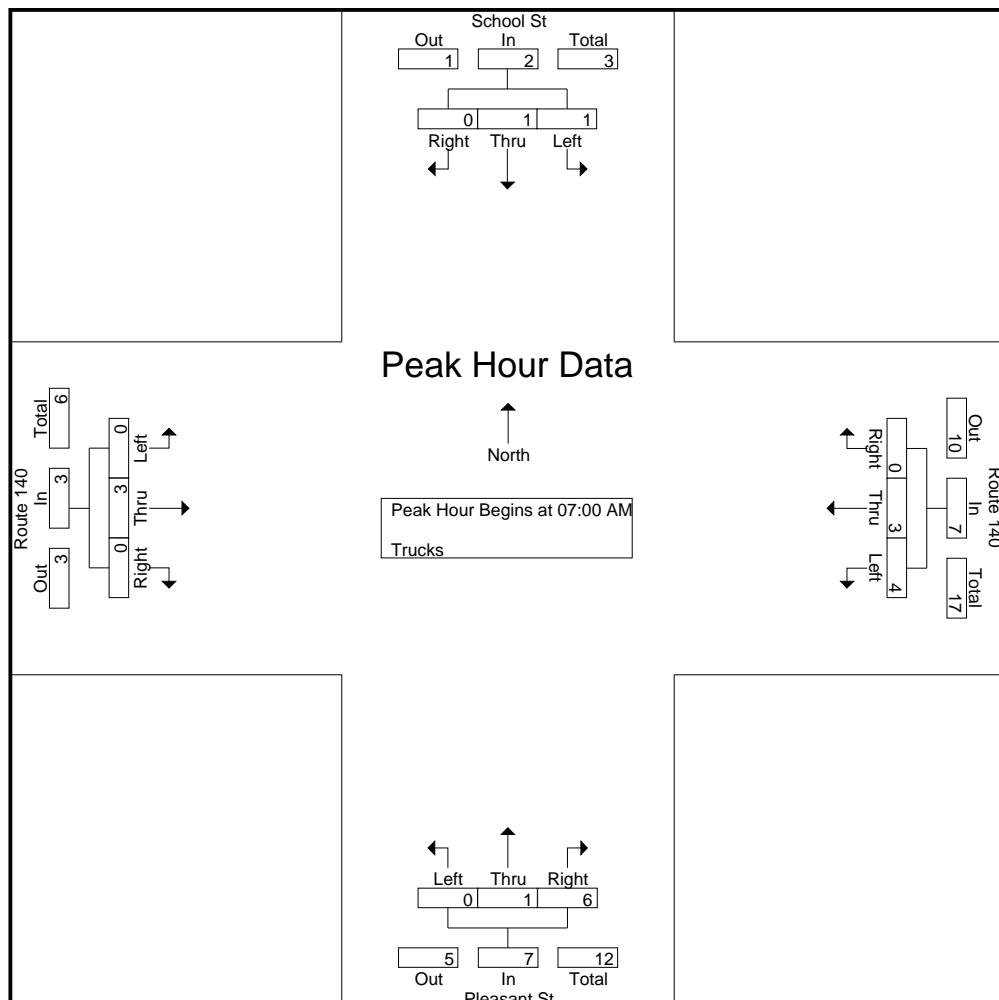
City/State : Oregon
Weather : Clear

File Name : 95680001

File Name : 5555551
Site Code : 95680001

Site Code : 33333331
Start Date : 1/11/2023

Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour Analysis From 07:00 AM to 08:00 AM

Peak Hour for Each Approach Begins at:

Peak Hour for Each Approach Begins at:				07:00 AM															
+0 mins.	0	1	0	1	1	0	0	1	0	1	2	3	0	1	0	1	0	1	0
+15 mins.	0	0	0	0	2	1	0	3	0	0	1	1	1	0	0	0	0	0	0
+30 mins.	1	0	0	1	1	2	0	3	0	0	2	2	0	2	0	0	2	0	2
+45 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Total Volume	1	1	0	2	4	3	0	7	0	1	6	7	0	3	0	0	3	0	3
% App. Total	50	50	0		57.1	42.9	0		0	14.3	85.7		0	100	0	0	100	0	0
PHF	.250	.250	.000	.500	.500	.375	.000	.583	.000	.250	.750	.583	.000	.375	.000	.375			

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

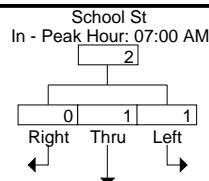
Weather : Clear

File Name : 95680001

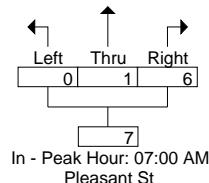
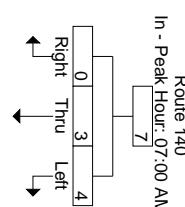
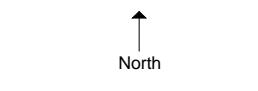
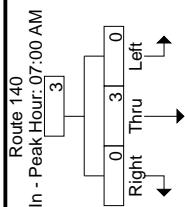
Site Code : 95680001

Start Date : 1/11/2023

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Peak Hour Data



Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

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Groups Printed- Bikes Peds

		School St From North				Route 140 From East				Pleasant St From South				Route 140 From West							
Start Time		Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total	
07:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
07:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:45 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	1	1	0	1
08:00 AM		0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	
08:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:30 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
08:45 AM		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Total		0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	0	3	
Grand Total		0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	4	0	4	
Apprch %		0	0	0		0	0	0		0	0	0		0	0	0					
Total %																		100	0		

Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

N/S Street : School St
E/W Street : Route 140

E/W Street : Route 146

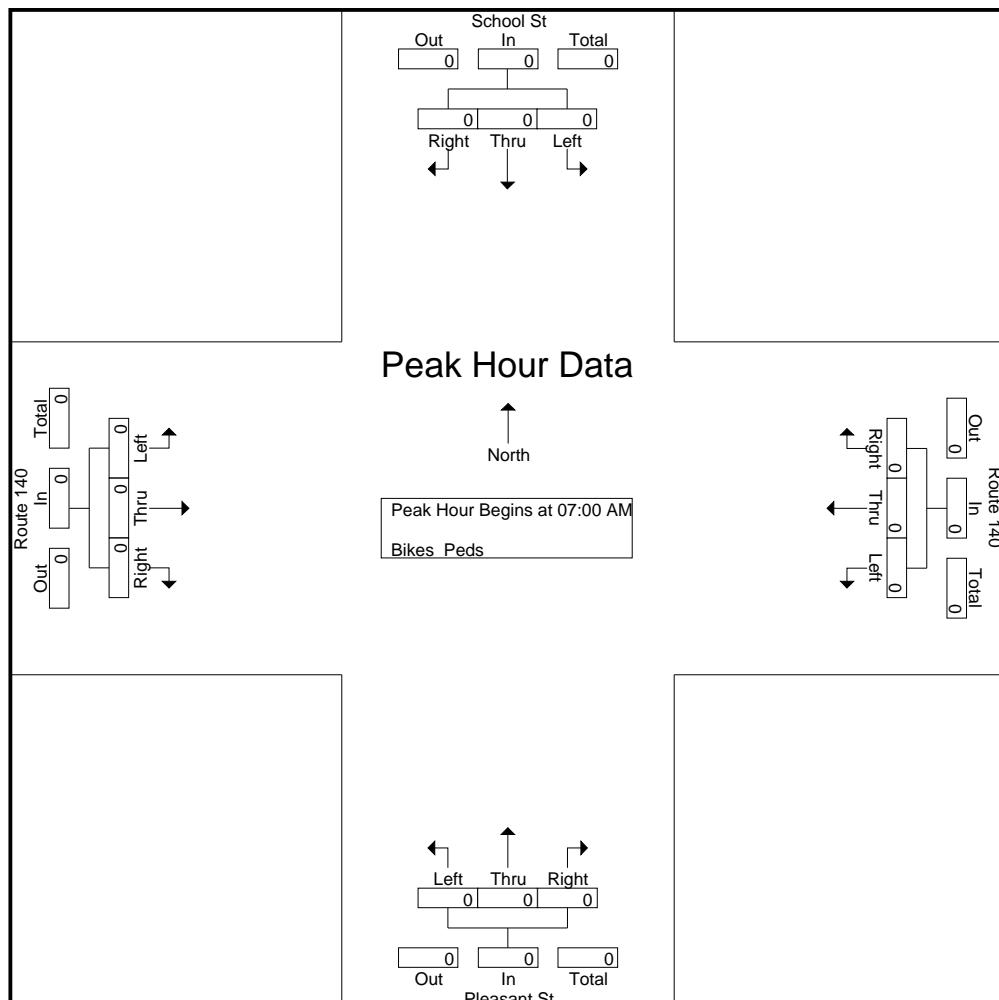
City/State : Oregon
Weather : Clear

File Name : 95680001

File Name : 5555551
Site Code : 95680001

Site Code : 33333331

Page No : 11



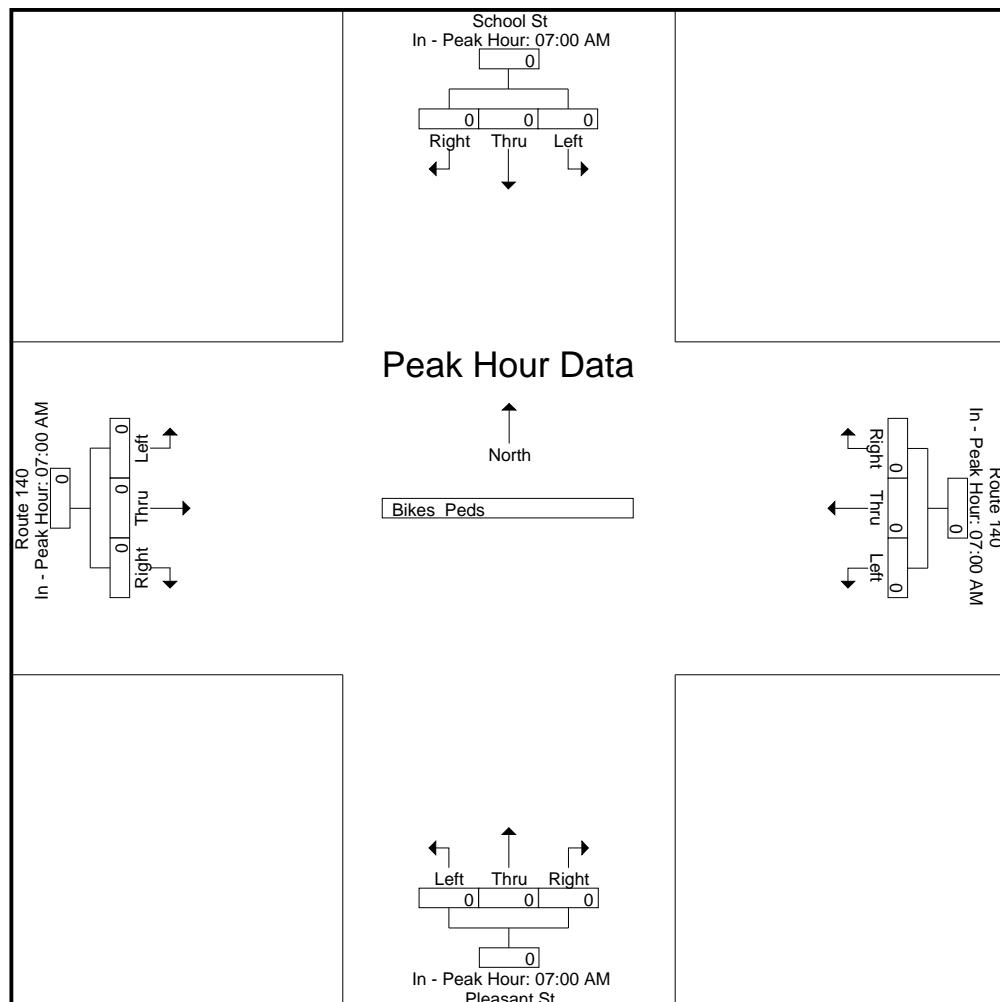
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

Page No : 1

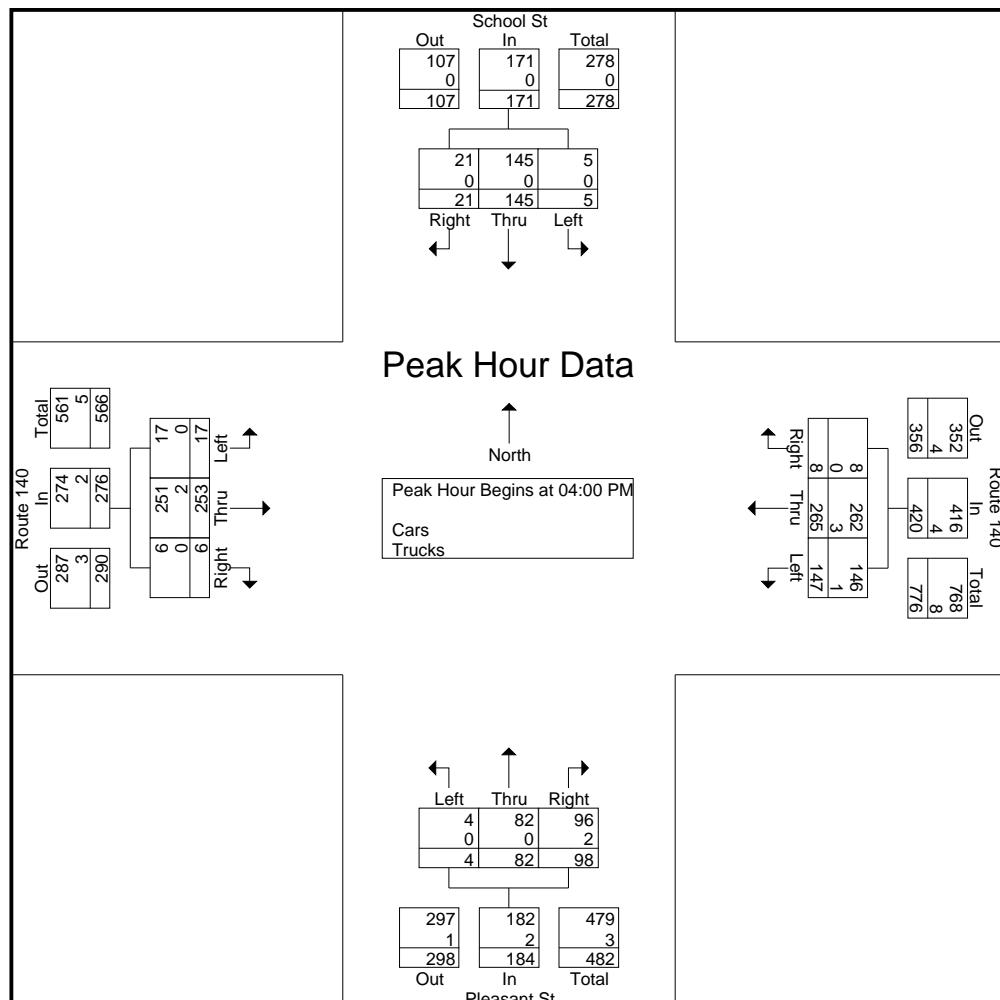
Groups Printed- Cars - Trucks

Start Time	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	2	37	3	32	75	4	2	21	24	2	57	1	260
04:15 PM	1	29	6	31	74	3	1	23	25	5	53	1	252
04:30 PM	0	43	10	40	66	0	0	21	26	6	95	3	310
04:45 PM	2	36	2	44	50	1	1	17	23	4	48	1	229
Total	5	145	21	147	265	8	4	82	98	17	253	6	1051
05:00 PM	2	38	5	31	50	2	1	23	19	3	48	0	222
05:15 PM	3	38	2	31	62	3	2	16	27	1	38	0	223
05:30 PM	5	45	9	27	66	5	2	17	21	2	62	1	262
05:45 PM	2	42	2	31	49	4	2	15	19	1	43	0	210
Total	12	163	18	120	227	14	7	71	86	7	191	1	917
Grand Total	17	308	39	267	492	22	11	153	184	24	444	7	1968
Apprch %	4.7	84.6	10.7	34.2	63	2.8	3.2	44	52.9	5.1	93.5	1.5	
Total %	0.9	15.7	2	13.6	25	1.1	0.6	7.8	9.3	1.2	22.6	0.4	
Cars	17	307	39	266	488	22	11	152	181	24	441	7	1955
% Cars	100	99.7	100	99.6	99.2	100	100	99.3	98.4	100	99.3	100	99.3
Trucks	0	1	0	1	4	0	0	1	3	0	3	0	13
% Trucks	0	0.3	0	0.4	0.8	0	0	0.7	1.6	0	0.7	0	0.7

Start Time	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	37	3	42	32	75	4	111	2	21	24	47	2	57	1	60	260
04:15 PM	1	29	6	36	31	74	3	108	1	23	25	49	5	53	1	59	252
04:30 PM	0	43	10	53	40	66	0	106	0	21	26	47	6	95	3	104	310
04:45 PM	2	36	2	40	44	50	1	95	1	17	23	41	4	48	1	53	229
Total Volume	5	145	21	171	147	265	8	420	4	82	98	184	17	253	6	276	1051
% App. Total	2.9	84.8	12.3		35	63.1	1.9		2.2	44.6	53.3		6.2	91.7	2.2		
PHF	.625	.843	.525	.807	.835	.883	.500	.946	.500	.891	.942	.939	.708	.666	.500	.663	.848
Cars	5	145	21	171	146	262	8	416	4	82	96	182	17	251	6	274	1043
% Cars	100	100	100	100	99.3	98.9	100	99.0	100	100	98.0	98.9	100	99.2	100	99.3	99.2
Trucks	0	0	0	0	1	3	0	4	0	0	2	2	0	2	0	2	8
% Trucks	0	0	0	0	0.7	1.1	0	1.0	0	0	2.0	1.1	0	0.8	0	0.7	0.8

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour Analysis From 04:00 AM to 05:00 AM

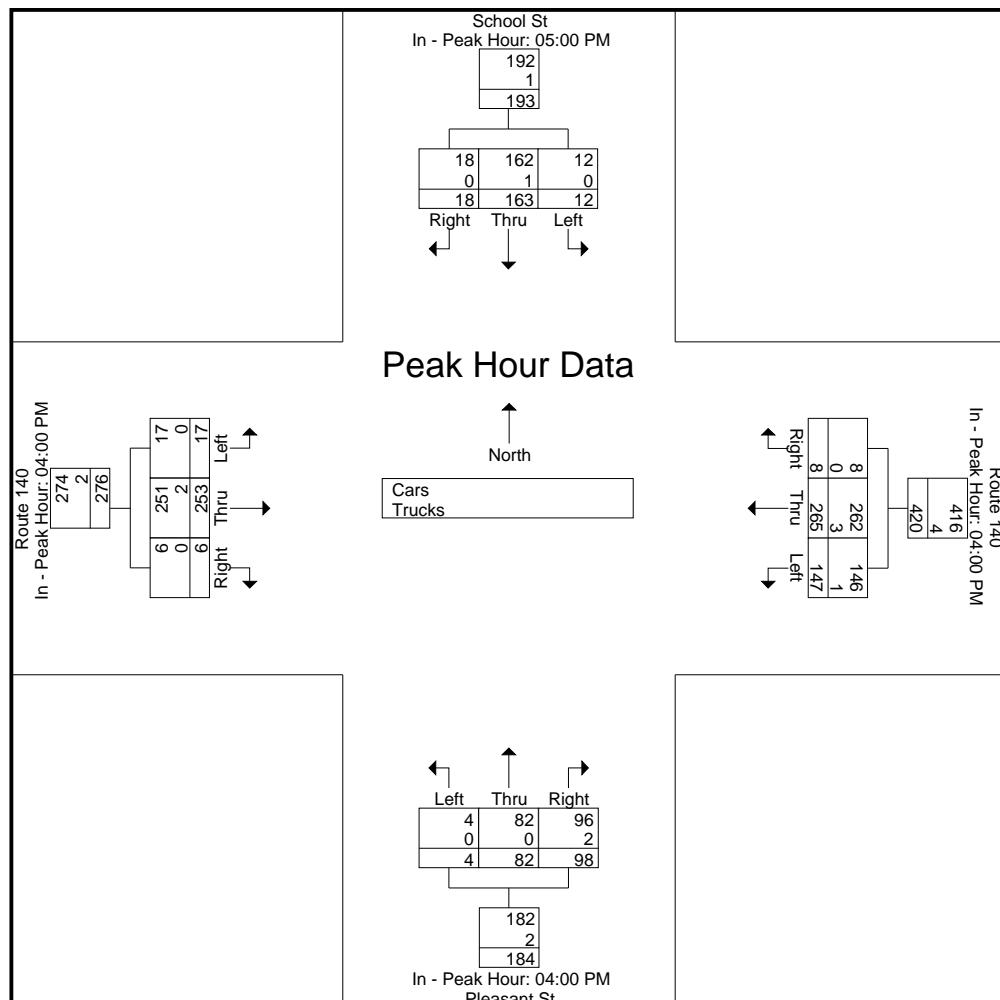
Peak Hour for Each Approach Begins at:

Peak Hour for Each Approach Begins at:				05:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	2	38	5	45	32	75	4	111	2	21	24	47	2	57	1	60			
+15 mins.	3	38	2	43	31	74	3	108	1	23	25	49	5	53	1	59			
+30 mins.	5	45	9	59	40	66	0	106	0	21	26	47	6	95	3	104			
+45 mins.	2	42	2	46	44	50	1	95	1	17	23	41	4	48	1	53			
Total Volume	12	163	18	193	147	265	8	420	4	82	98	184	17	253	6	276			
% App. Total	6.2	84.5	9.3		35	63.1	1.9		2.2	44.6	53.3		6.2	91.7	2.2				
PHF	.600	.906	.500	.818	.835	.883	.500	.946	.500	.891	.942	.939	.708	.666	.500	.663			
Cars	12	162	18	192	146	262	8	416	4	82	96	182	17	251	6	274			
% Cars	100	99.4	100	99.5	99.3	98.9	100	99	100	100	98	98.9	100	99.2	100	99.3			
Trucks	0	1	0	1	1	3	0	4	0	0	2	2	0	2	0	2			
% Trucks	0	0.6	0	0.5	0.7	1.1	0	1	0	0	2	1.1	0	0.8	0	0.7			

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

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Groups Printed- Cars

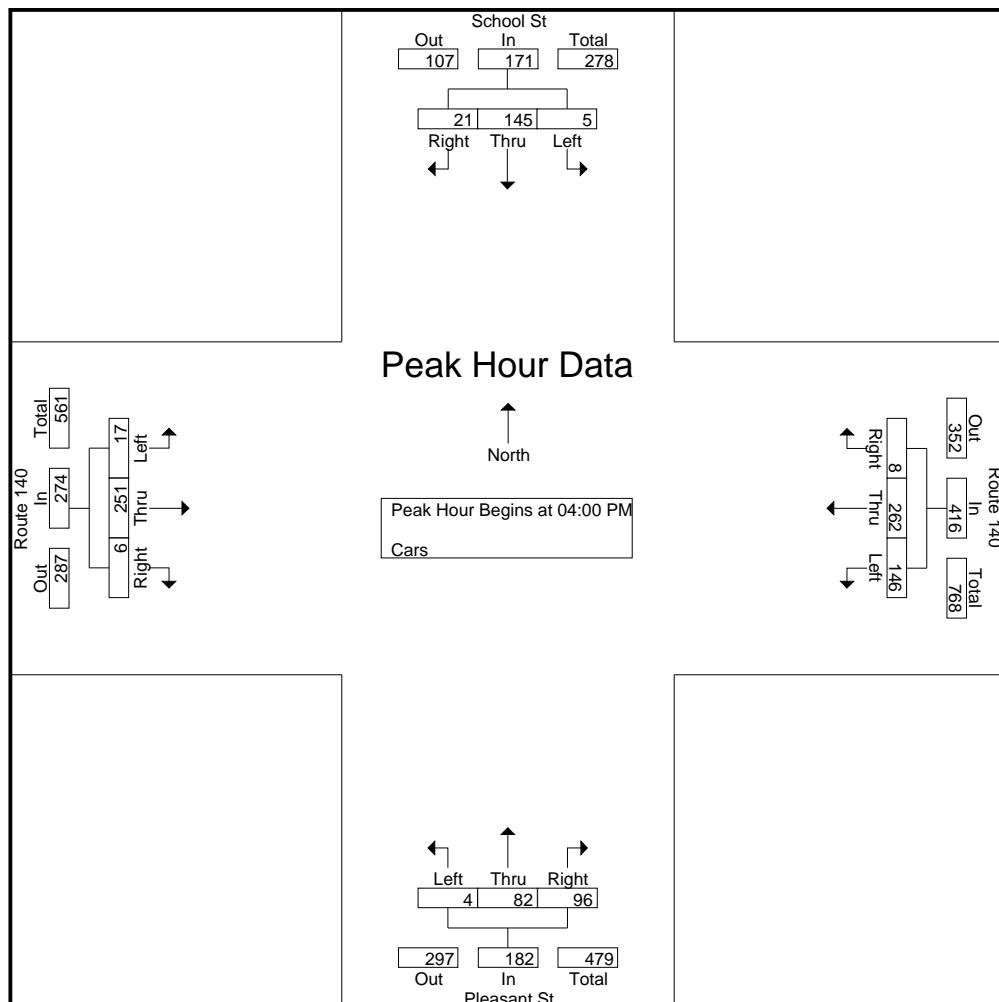
	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM		2	37	3	31	73	4	2	21	23	2	57	1	256
04:15 PM		1	29	6	31	73	3	1	23	24	5	53	1	250
04:30 PM		0	43	10	40	66	0	0	21	26	6	93	3	308
04:45 PM		2	36	2	44	50	1	1	17	23	4	48	1	229
Total		5	145	21	146	262	8	4	82	96	17	251	6	1043
05:00 PM		2	38	5	31	50	2	1	23	19	3	48	0	222
05:15 PM		3	38	2	31	62	3	2	16	27	1	37	0	222
05:30 PM		5	45	9	27	65	5	2	17	21	2	62	1	261
05:45 PM		2	41	2	31	49	4	2	14	18	1	43	0	207
Total		12	162	18	120	226	14	7	70	85	7	190	1	912
Grand Total		17	307	39	266	488	22	11	152	181	24	441	7	1955
Apprch %		4.7	84.6	10.7	34.3	62.9	2.8	3.2	44.2	52.6	5.1	93.4	1.5	
Total %		0.9	15.7	2	13.6	25	1.1	0.6	7.8	9.3	1.2	22.6	0.4	

	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:00 PM																		
04:00 PM		2	37	3	42	31	73	4	108	2	21	23	46	2	57	1	60	256
04:15 PM		1	29	6	36	31	73	3	107	1	23	24	48	5	53	1	59	250
04:30 PM		0	43	10	53	40	66	0	106	0	21	26	47	6	93	3	102	308
04:45 PM		2	36	2	40	44	50	1	95	1	17	23	41	4	48	1	53	229
Total Volume		5	145	21	171	146	262	8	416	4	82	96	182	17	251	6	274	1043
% App. Total		2.9	84.8	12.3		35.1	63	1.9		2.2	45.1	52.7		6.2	91.6	2.2		
PHF		.625	.843	.525	.807	.830	.897	.500	.963	.500	.891	.923	.948	.708	.675	.500	.672	.847

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

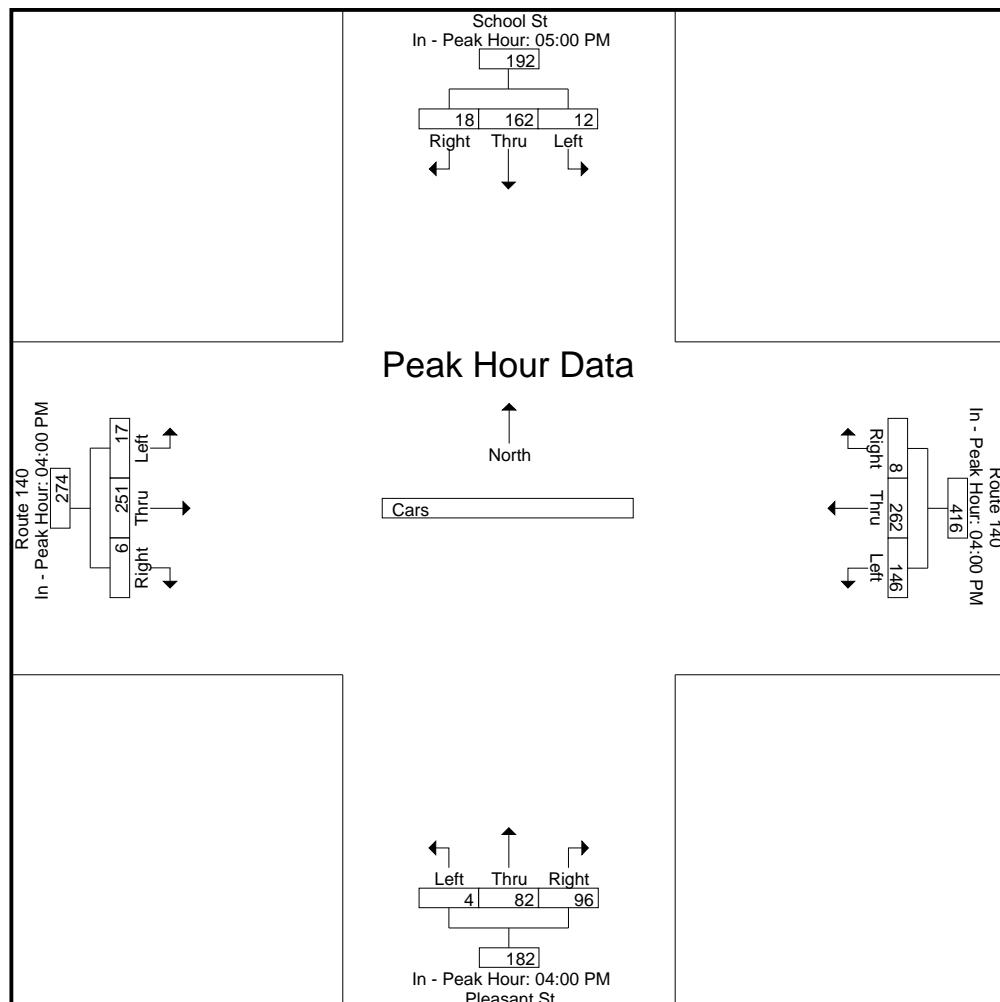
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	2	38	5	45	31	73	4	108	2	21	23	46	2	57	1	60
+15 mins.	3	38	2	43	31	73	3	107	1	23	24	48	5	53	1	59
+30 mins.	5	45	9	59	40	66	0	106	0	21	26	47	6	93	3	102
+45 mins.	2	41	2	45	44	50	1	95	1	17	23	41	4	48	1	53
Total Volume	12	162	18	192	146	262	8	416	4	82	96	182	17	251	6	274
% App. Total	6.2	84.4	9.4		35.1	63	1.9		2.2	45.1	52.7		6.2	91.6	2.2	
PHF	.600	.900	.500	.814	.830	.897	.500	.963	.500	.891	.923	.948	.708	.675	.500	.672

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
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Accurate Counts

978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

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Groups Printed- Trucks

	School St From North			Route 140 From East			Pleasant St From South			Route 140 From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM		0	0	0	1	2	0	0	0	1	0	0	0	4
04:15 PM		0	0	0	0	1	0	0	0	1	0	0	0	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	2	0	2
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	1	3	0	0	0	2	0	2	0	8
05:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM		0	0	0	0	0	0	0	0	0	0	1	0	1
05:30 PM		0	0	0	0	1	0	0	0	0	0	0	0	1
05:45 PM		0	1	0	0	0	0	0	1	1	0	0	0	3
Total		0	1	0	0	1	0	0	1	1	0	1	0	5
Grand Total		0	1	0	1	4	0	0	1	3	0	3	0	13
Apprch %		0	100	0	20	80	0	0	25	75	0	100	0	
Total %		0	7.7	0	7.7	30.8	0	0	7.7	23.1	0	23.1	0	

	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:00 PM																		
04:00 PM		0	0	0	0	1	2	0	3	0	0	1	1	0	0	0	0	4
04:15 PM		0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume		0	0	0	0	1	3	0	4	0	0	2	2	0	2	0	2	8
% App. Total		0	0	0	25	75	0	0	0	100	0	100	0	0	100	0	0	
PHF	.000	.000	.000	.000	.250	.375	.000	.333	.000	.000	.500	.500	.000	.250	.000	.250	.500	

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

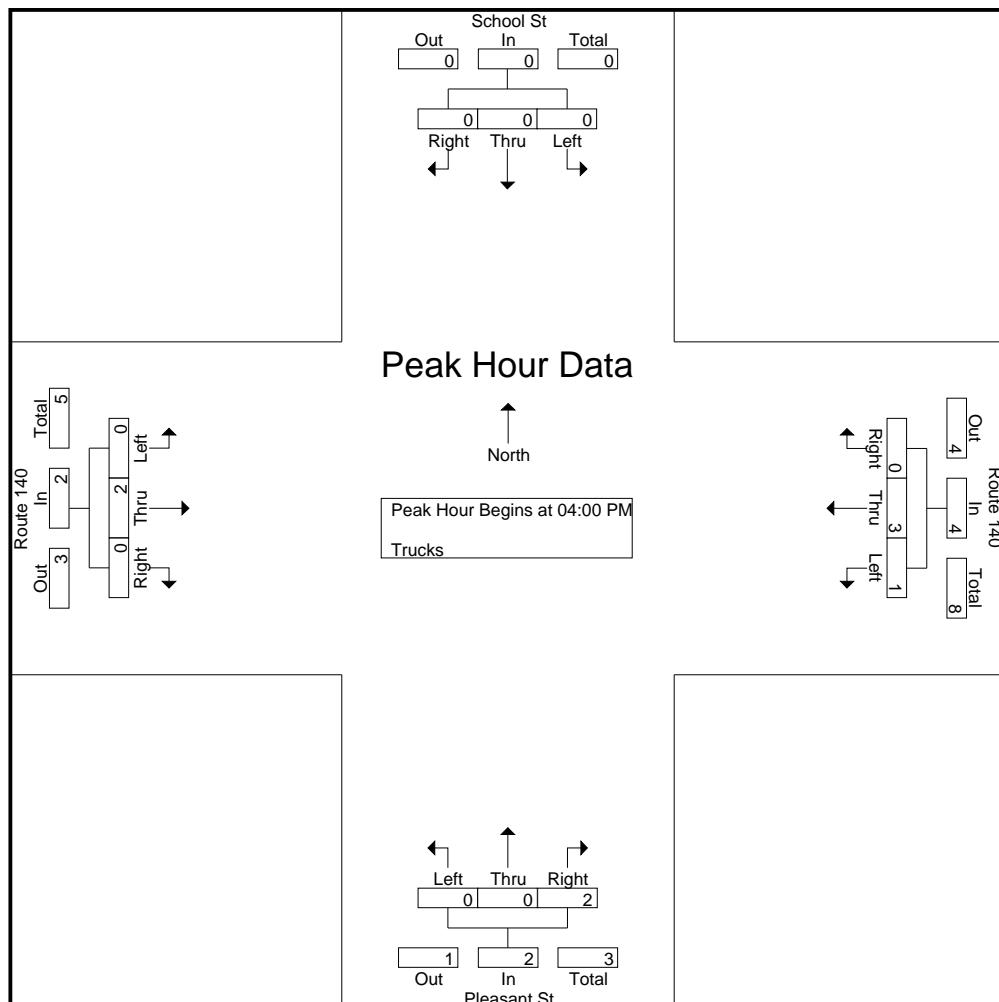
Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	0	0	1	2	0	3	0	0	1	1	0	2	0	2
+15 mins.	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
Total Volume	0	1	0	1	1	3	0	4	0	0	2	2	0	3	0	3
% App. Total	0	100	0	0	25	75	0	0	0	0	100	0	100	0	0	0
PHF	.000	.250	.000	.250	.250	.375	.000	.333	.000	.000	.500	.500	.000	.375	.000	.375

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St

E/W Street : Route 140

City/State : Upton, MA

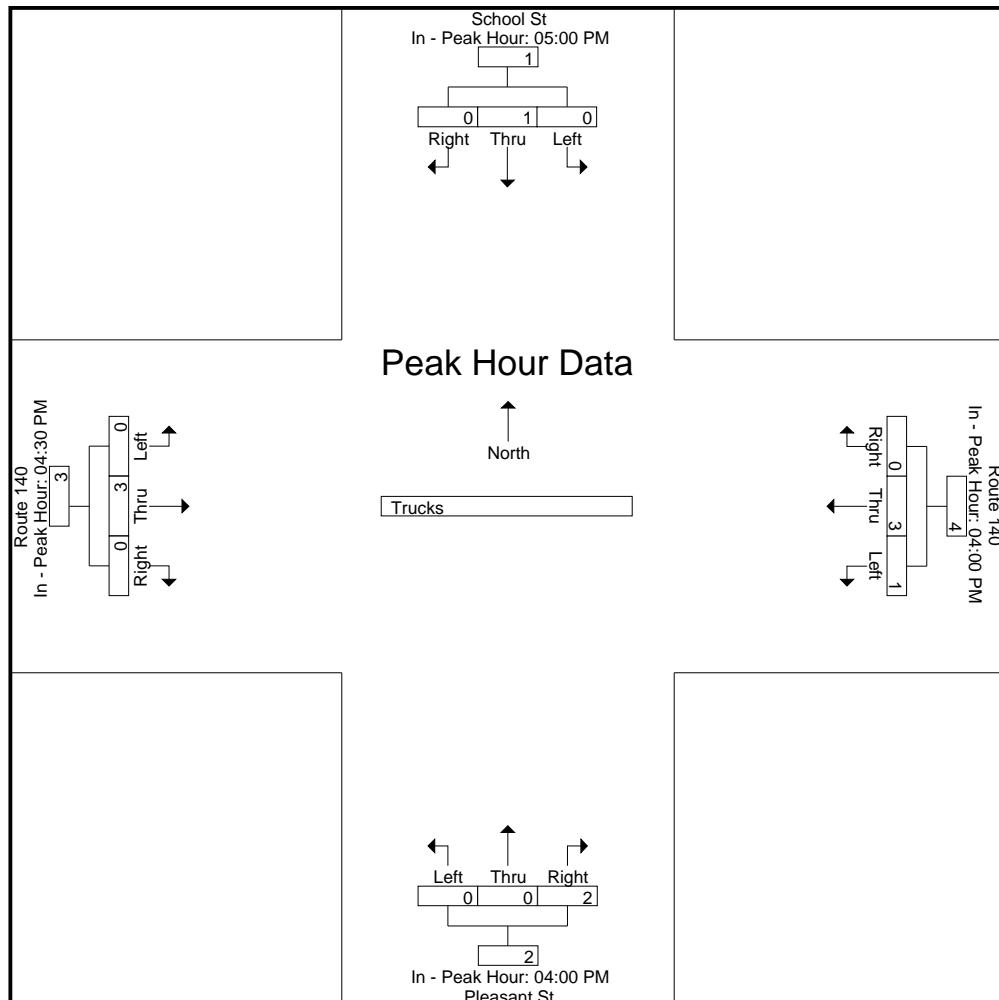
Weather : Clear

File Name : 95680001

Site Code : 95680001

Start Date : 1/11/2023

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Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
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Groups Printed- Bikes Peds

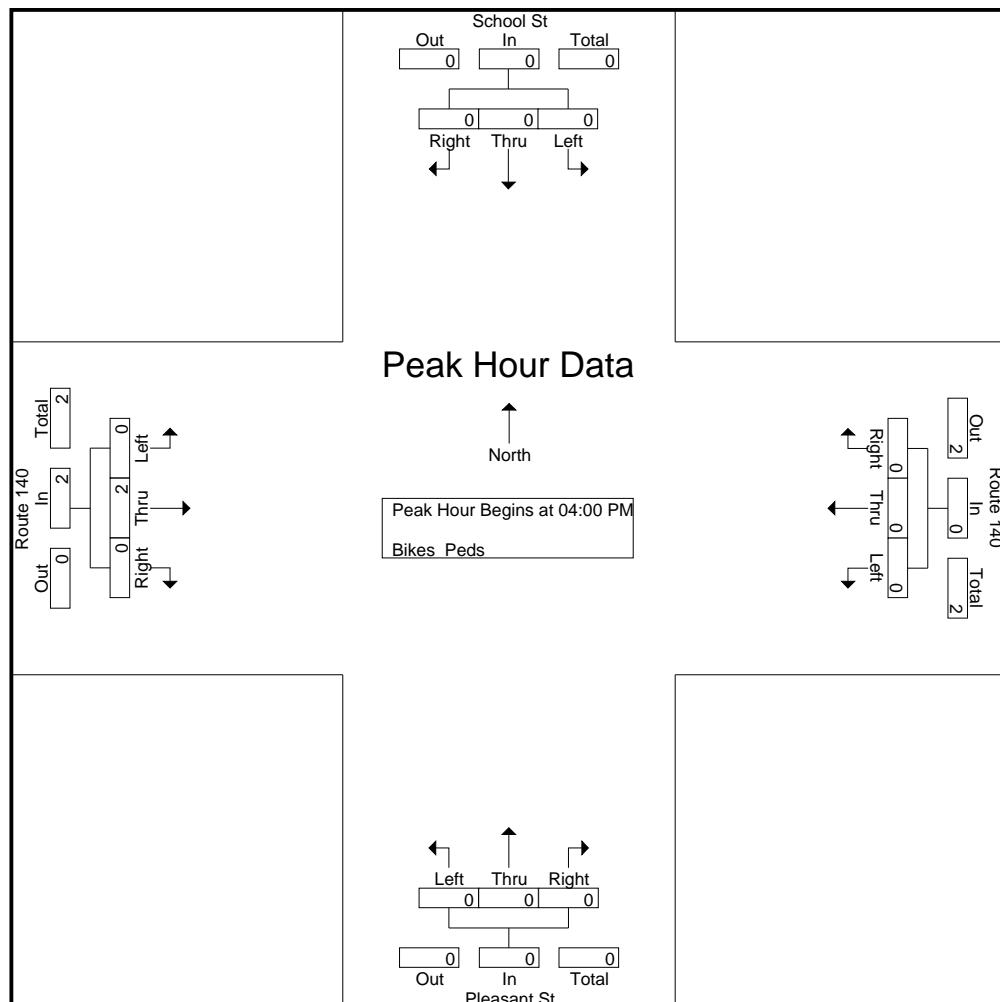
	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total	
	Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2
Total		0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	1	2	2
05:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM		0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
05:45 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	1	0	0	0	0	1	0	1
Grand Total		0	0	0	1	0	0	0	0	0	0	0	1	0	2	0	1	3	2	5
Apprch %		0	0	0		0	0	0		0	0	0		0	100	0				
Total %		0	0	0		0	0	0		0	0	0		0	100	0		60	40	

	School St From North				Route 140 From East				Pleasant St From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 04:00 PM																				
04:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2
% App. Total		0	0	0		0	0	0		0	0	0		0	100	0				
PHF		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

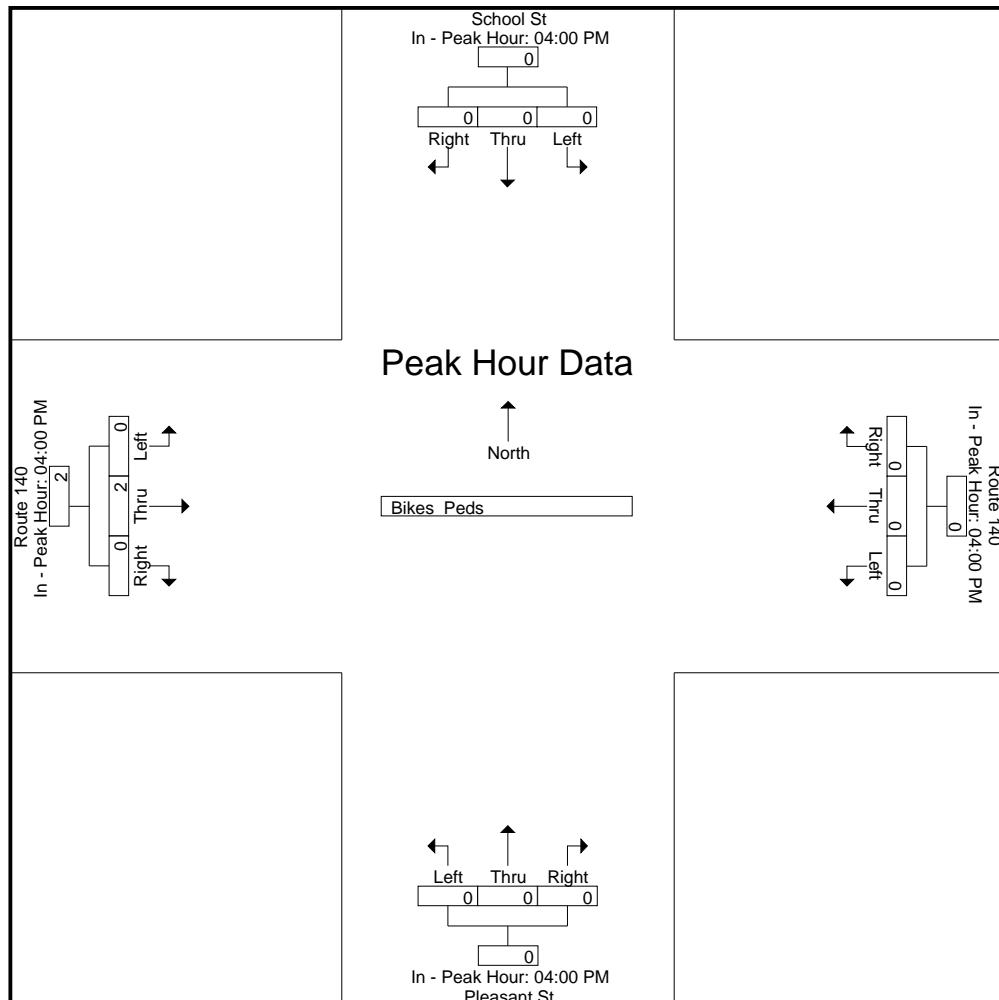
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

Accurate Counts
978-664-2565

N/S Street : School St / Pleasant St
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680001
Site Code : 95680001
Start Date : 1/11/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Mendon Street
 E/W Street : Route 140
 City/State : Upton, MA
 Weather : Clear

File Name : 95680002
 Site Code : 95680002
 Start Date : 1/11/2023
 Page No : 1

Groups Printed- Cars - Trucks

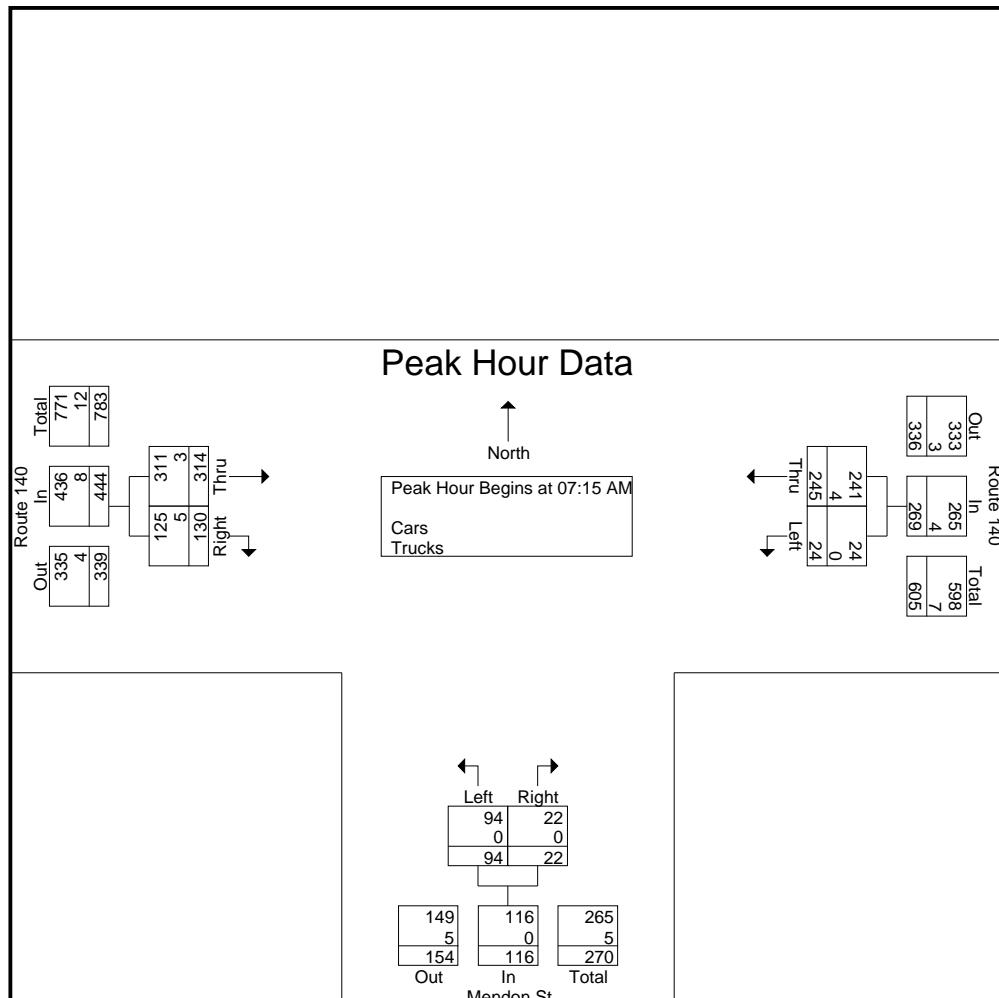
		Route 140 From East		Mendon St From South		Route 140 From West		
Start Time		Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM		1	40	24	1	57	30	153
07:15 AM		18	67	17	3	83	55	243
07:30 AM		4	75	24	5	96	39	243
07:45 AM		1	40	17	10	69	20	157
Total		24	222	82	19	305	144	796
08:00 AM		1	63	36	4	66	16	186
08:15 AM		0	44	20	4	41	22	131
08:30 AM		0	44	13	18	57	11	143
08:45 AM		9	50	21	9	62	12	163
Total		10	201	90	35	226	61	623
Grand Total		34	423	172	54	531	205	1419
Apprch %		7.4	92.6	76.1	23.9	72.1	27.9	
Total %		2.4	29.8	12.1	3.8	37.4	14.4	
Cars		34	418	172	53	525	199	1401
% Cars		100	98.8	100	98.1	98.9	97.1	98.7
Trucks		0	5	0	1	6	6	18
% Trucks		0	1.2	0	1.9	1.1	2.9	1.3

		Route 140 From East			Mendon St From South			Route 140 From West			
Start Time		Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:15 AM											
07:15 AM		18	67	85	17	3	20	83	55	138	243
07:30 AM		4	75	79	24	5	29	96	39	135	243
07:45 AM		1	40	41	17	10	27	69	20	89	157
08:00 AM		1	63	64	36	4	40	66	16	82	186
Total Volume		24	245	269	94	22	116	314	130	444	829
% App. Total		8.9	91.1		81	19		70.7	29.3		
PHF		.333	.817	.791	.653	.550	.725	.818	.591	.804	.853
Cars		24	241	265	94	22	116	311	125	436	817
% Cars		100	98.4	98.5	100	100	100	99.0	96.2	98.2	98.6
Trucks		0	4	4	0	0	0	3	5	8	12
% Trucks		0	1.6	1.5	0	0	0	1.0	3.8	1.8	1.4

Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
Page No : 2



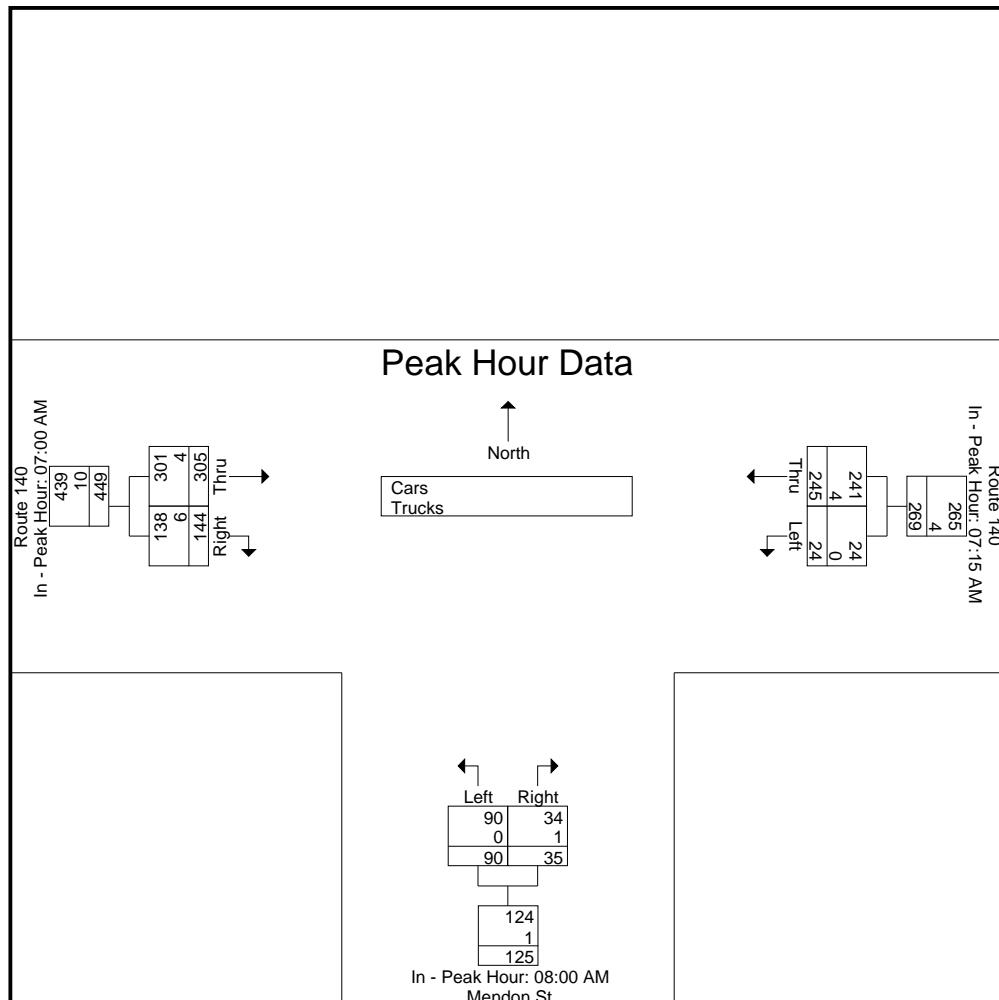
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM		08:00 AM		07:00 AM	
+0 mins.	18	67	85	36	40	57
+15 mins.	4	75	79	20	4	83
+30 mins.	1	40	41	13	18	31
+45 mins.	1	63	64	21	9	30
Total Volume	24	245	269	90	35	125
% App. Total	8.9	91.1		72	28	67.9
PHF	.333	.817	.791	.625	.486	.781
Cars	24	241	265	90	34	124
% Cars	100	98.4	98.5	100	97.1	99.2
Trucks	0	4	4	0	1	1
% Trucks	0	1.6	1.5	0	2.9	0.8

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
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Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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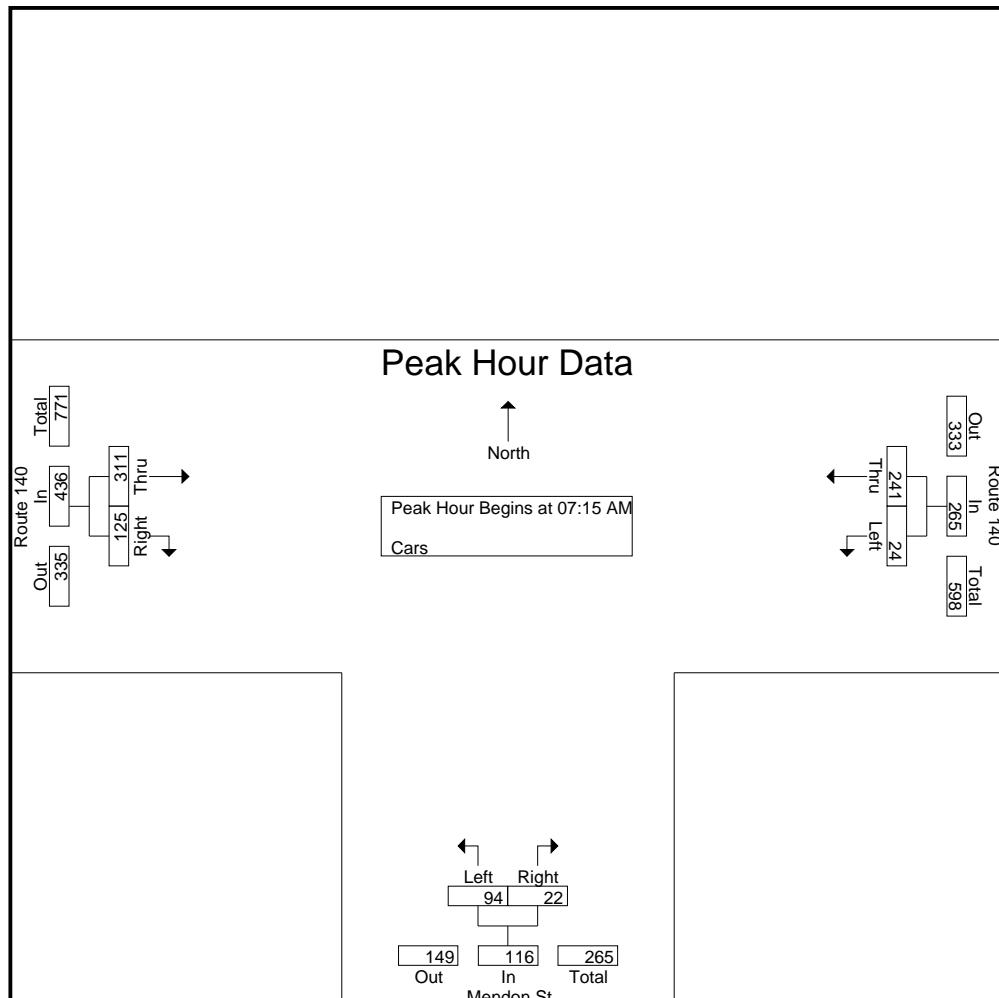
Groups Printed- Cars

		Route 140 From East		Mendon St From South		Route 140 From West		
Start Time		Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM		1	40	24	1	56	29	151
07:15 AM		18	66	17	3	82	52	238
07:30 AM		4	72	24	5	94	37	236
07:45 AM		1	40	17	10	69	20	157
Total		24	218	82	19	301	138	782
08:00 AM		1	63	36	4	66	16	186
08:15 AM		0	43	20	4	41	22	130
08:30 AM		0	44	13	17	55	11	140
08:45 AM		9	50	21	9	62	12	163
Total		10	200	90	34	224	61	619
Grand Total		34	418	172	53	525	199	1401
Apprch %		7.5	92.5	76.4	23.6	72.5	27.5	
Total %		2.4	29.8	12.3	3.8	37.5	14.2	

		Route 140 From East			Mendon St From South			Route 140 From West			
Start Time		Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:15 AM											
07:15 AM		18	66	84	17	3	20	82	52	134	238
07:30 AM		4	72	76	24	5	29	94	37	131	236
07:45 AM		1	40	41	17	10	27	69	20	89	157
08:00 AM		1	63	64	36	4	40	66	16	82	186
Total Volume		24	241	265	94	22	116	311	125	436	817
% App. Total		9.1	90.9		81	19		71.3	28.7		
PHF		.333	.837	.789	.653	.550	.725	.827	.601	.813	.858

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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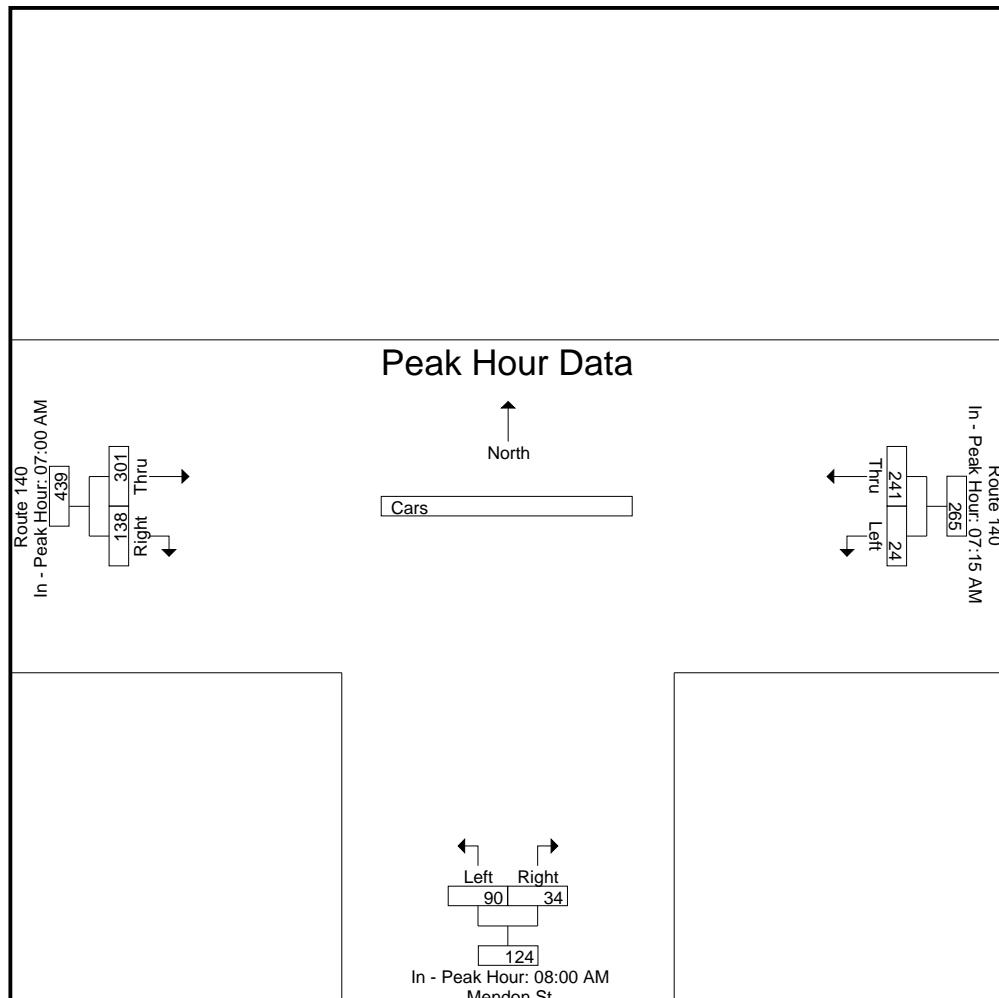
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	18	66	84	36	4	40	56	29	85
+15 mins.	4	72	76	20	4	24	82	52	134
+30 mins.	1	40	41	13	17	30	94	37	131
+45 mins.	1	63	64	21	9	30	69	20	89
Total Volume	24	241	265	90	34	124	301	138	439
% App. Total	9.1	90.9		72.6	27.4		68.6	31.4	
PHF	.333	.837	.789	.625	.500	.775	.801	.663	.819

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
Page No : 7

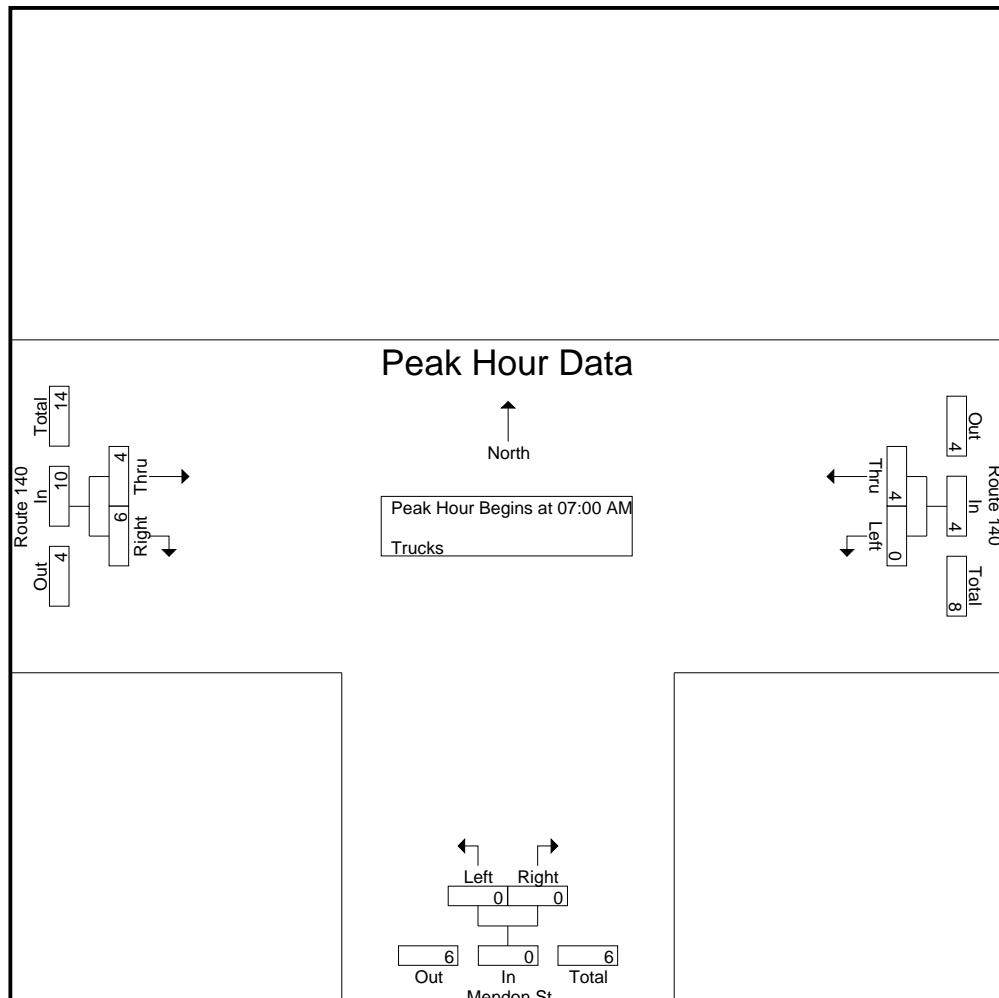
Groups Printed- Trucks

	Route 140 From East		Mendon St From South		Route 140 From West		Int. Total	
	Start Time	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0		0	0	1	1	2
07:15 AM	0	1		0	0	1	3	5
07:30 AM	0	3		0	0	2	2	7
07:45 AM	0	0		0	0	0	0	0
Total	0	4		0	0	4	6	14
08:00 AM	0	0		0	0	0	0	0
08:15 AM	0	1		0	0	0	0	1
08:30 AM	0	0		0	1	2	0	3
08:45 AM	0	0		0	0	0	0	0
Total	0	1		0	1	2	0	4
Grand Total	0	5		0	1	6	6	18
Apprch %	0	100		0	100	50	50	
Total %	0	27.8		0	5.6	33.3	33.3	

	Route 140 From East			Mendon St From South			Route 140 From West			Int. Total	
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:00 AM											
07:00 AM	0	0	0	0	0	0	1	1	2	2	
07:15 AM	0	1	1	0	0	0	1	3	4	5	
07:30 AM	0	3	3	0	0	0	2	2	4	7	
07:45 AM	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	4	4	0	0	0	4	6	10	14	
% App. Total	0	100		0	0		40	60			
PHF	.000	.333	.333	.000	.000	.000	.500	.500	.625	.500	

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
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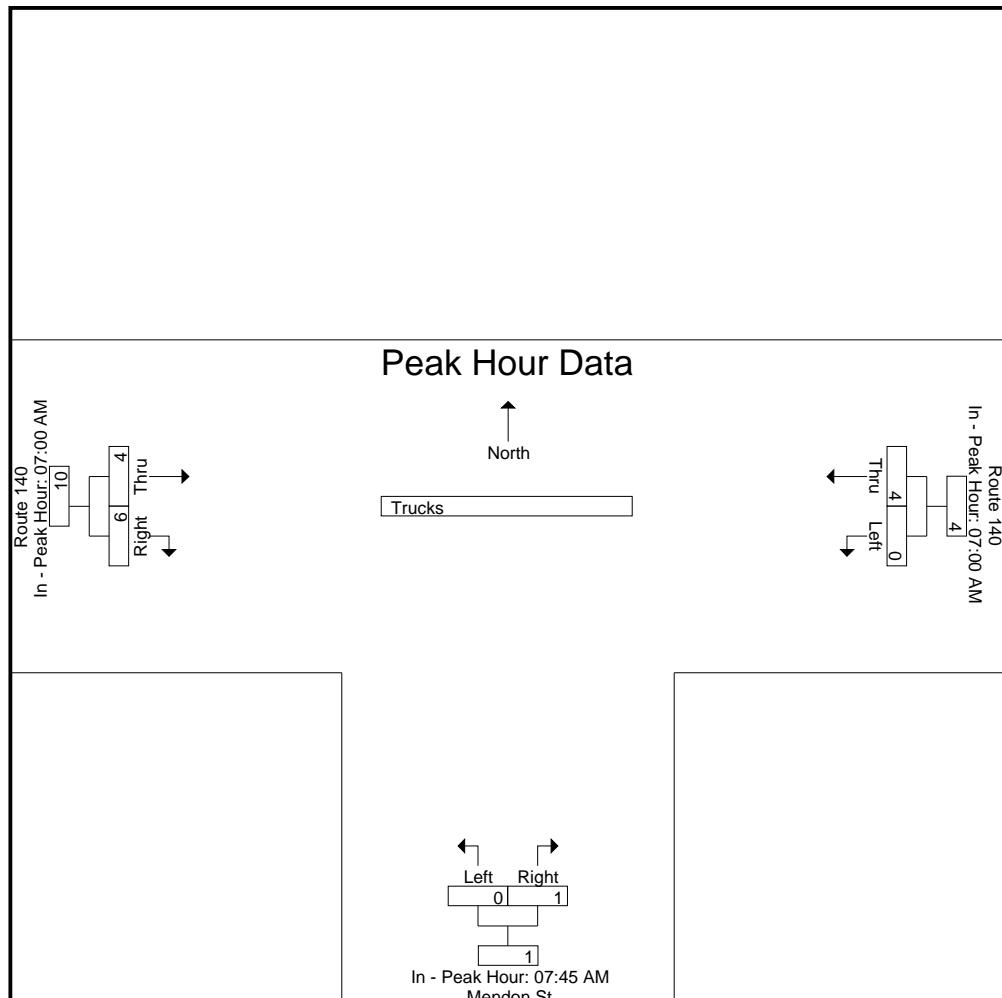
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	1	1	2
+15 mins.	0	1	1	0	0	0	1	3	4
+30 mins.	0	3	3	0	0	0	2	2	4
+45 mins.	0	0	0	0	1	1	0	0	0
Total Volume	0	4	4	0	1	1	4	6	10
% App. Total	0	100		0	100		40	60	
PHF	.000	.333	.333	.000	.250	.250	.500	.500	.625

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

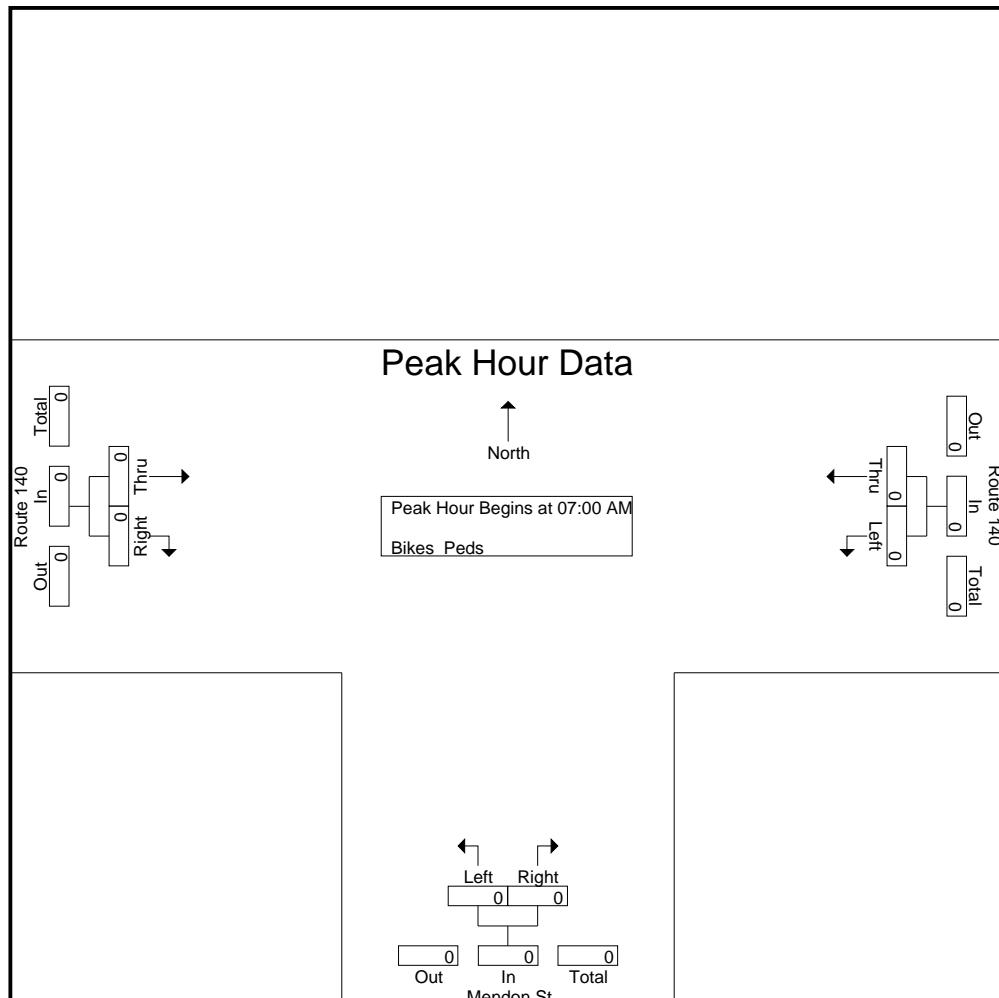
File Name : 95680002
Site Code : 95680002
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Groups Printed- Bikes Peds

	Route 140 From East			Mendon St From South			Route 140 From West			Grand Total		
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Excl. Total	Incl. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	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
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	1	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	1
Grand Total	0	0	0	0	0	1	0	0	0	1	0	1
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0
Total %										100	0	0

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

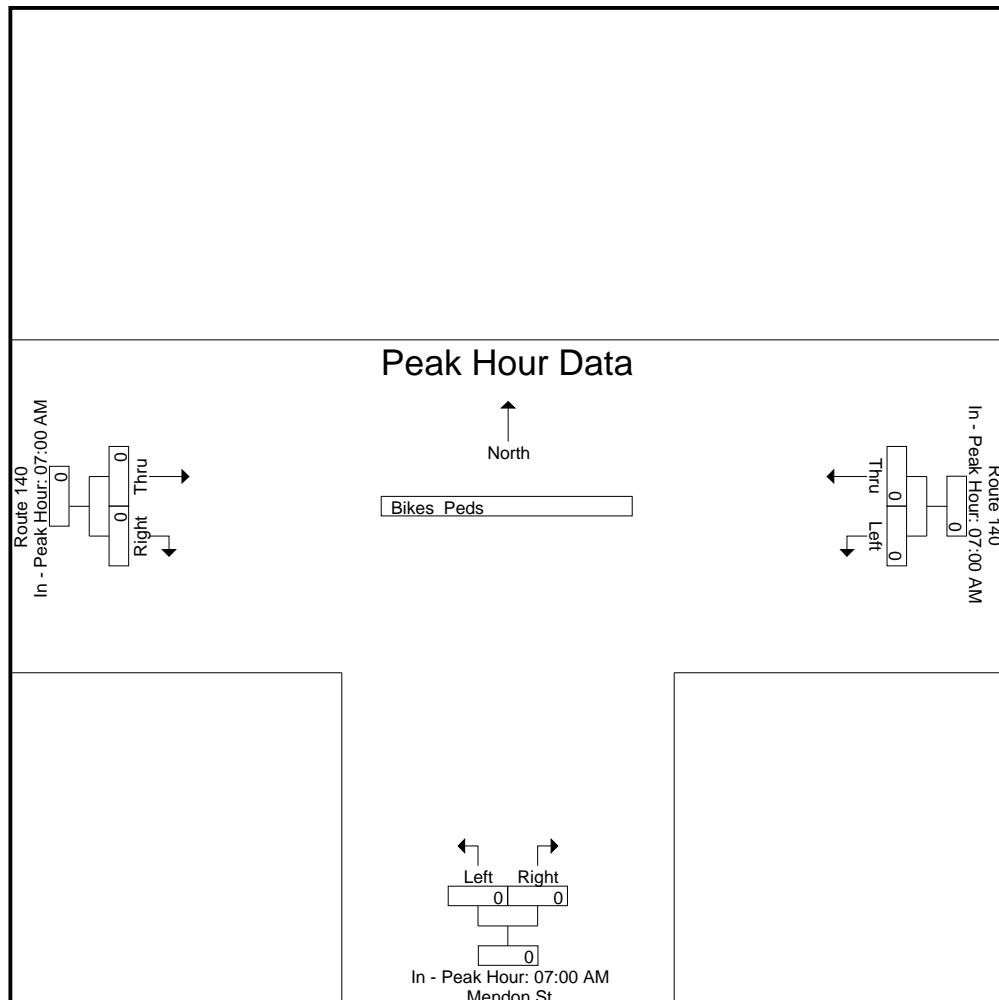
Peak Hour for Each Approach Begins at:

	07:00 AM		07:00 AM		07:00 AM	
+0 mins.	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts

978-664-2565

N/S Street : Mendon Street
 E/W Street : Route 140
 City/State : Upton, MA
 Weather : Clear

File Name : 95680002
 Site Code : 95680002
 Start Date : 1/11/2023
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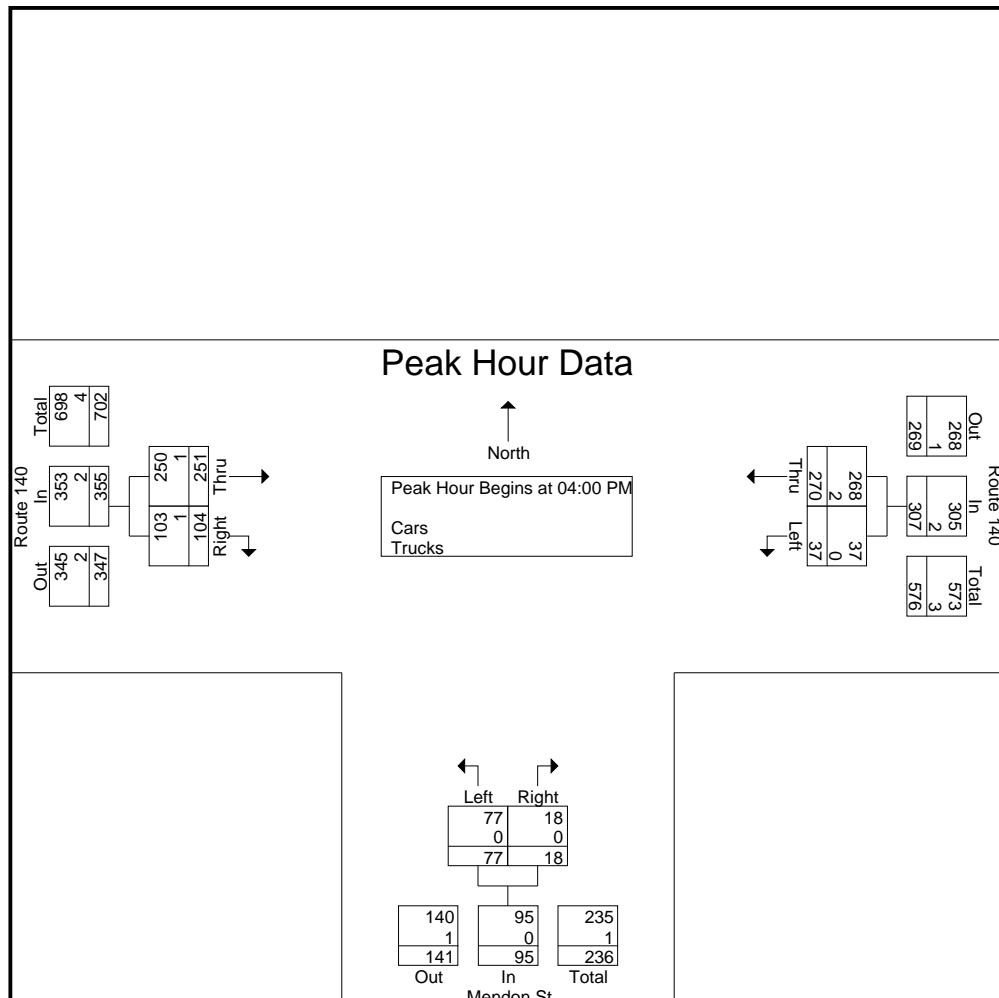
Groups Printed- Cars - Trucks

		Route 140 From East		Mendon St From South		Route 140 From West		
Start Time		Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM		8	83	19	0	61	28	199
04:15 PM		3	57	14	13	65	22	174
04:30 PM		20	71	22	2	77	29	221
04:45 PM		6	59	22	3	48	25	163
Total		37	270	77	18	251	104	757
05:00 PM		0	49	18	2	46	19	134
05:15 PM		3	58	23	1	43	32	160
05:30 PM		3	66	22	1	62	14	168
05:45 PM		3	53	20	0	44	18	138
Total		9	226	83	4	195	83	600
Grand Total		46	496	160	22	446	187	1357
Apprch %		8.5	91.5	87.9	12.1	70.5	29.5	
Total %		3.4	36.6	11.8	1.6	32.9	13.8	
Cars		46	493	158	22	445	186	1350
% Cars		100	99.4	98.8	100	99.8	99.5	99.5
Trucks		0	3	2	0	1	1	7
% Trucks		0	0.6	1.2	0	0.2	0.5	0.5

		Route 140 From East			Mendon St From South			Route 140 From West			
Start Time		Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM		8	83	91	19	0	19	61	28	89	199
04:15 PM		3	57	60	14	13	27	65	22	87	174
04:30 PM		20	71	91	22	2	24	77	29	106	221
04:45 PM		6	59	65	22	3	25	48	25	73	163
Total Volume		37	270	307	77	18	95	251	104	355	757
% App. Total		12.1	87.9		81.1	18.9		70.7	29.3		
PHF		.463	.813	.843	.875	.346	.880	.815	.897	.837	.856
Cars		37	268	305	77	18	95	250	103	353	753
% Cars		100	99.3	99.3	100	100	100	99.6	99.0	99.4	99.5
Trucks		0	2	2	0	0	0	1	1	2	4
% Trucks		0	0.7	0.7	0	0	0	0.4	1.0	0.6	0.5

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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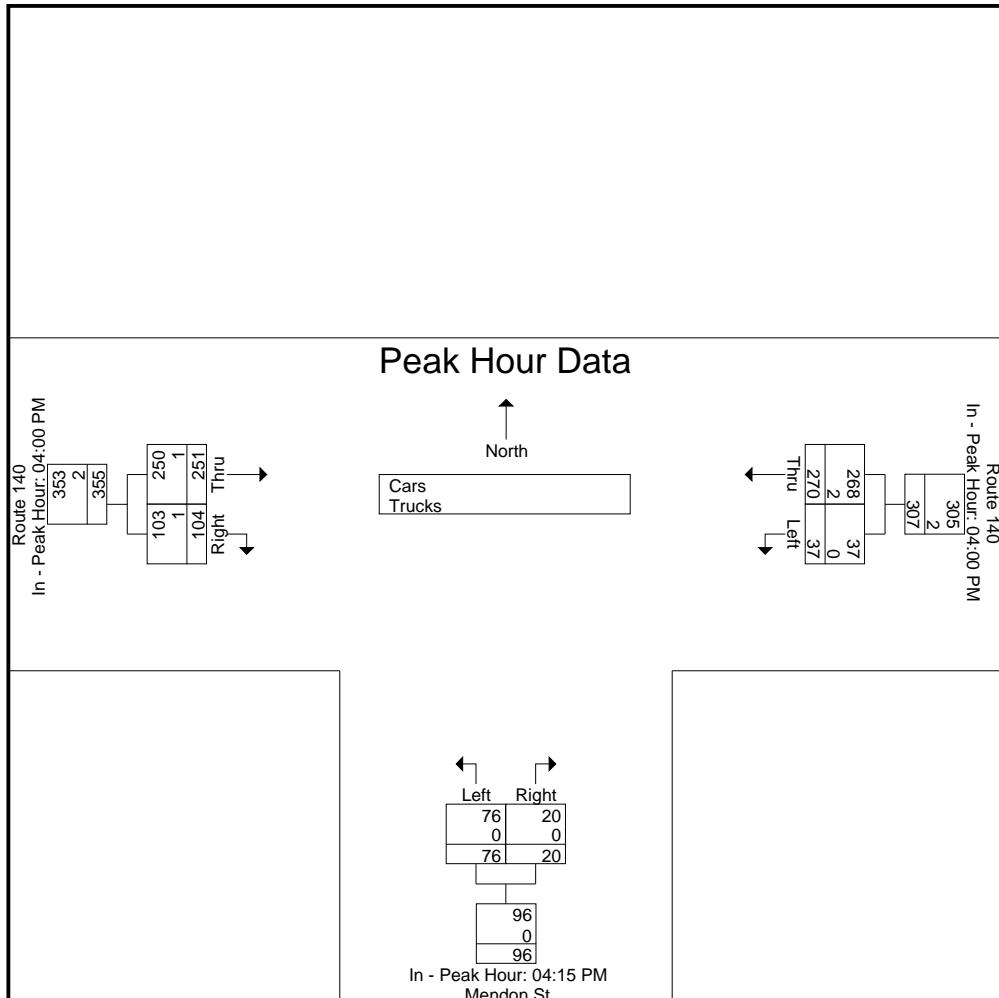
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM		04:15 PM		04:00 PM		
+0 mins.	8	83	91	14	13	27	61
+15 mins.	3	57	60	22	2	24	65
+30 mins.	20	71	91	22	3	25	77
+45 mins.	6	59	65	18	2	20	48
Total Volume	37	270	307	76	20	96	251
% App. Total	12.1	87.9		79.2	20.8		70.7
PHF	.463	.813	.843	.864	.385	.889	.815
Cars	37	268	305	76	20	96	250
% Cars	100	99.3	99.3	100	100	100	99.6
Trucks	0	2	2	0	0	0	1
% Trucks	0	0.7	0.7	0	0	0	0.4

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts
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N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
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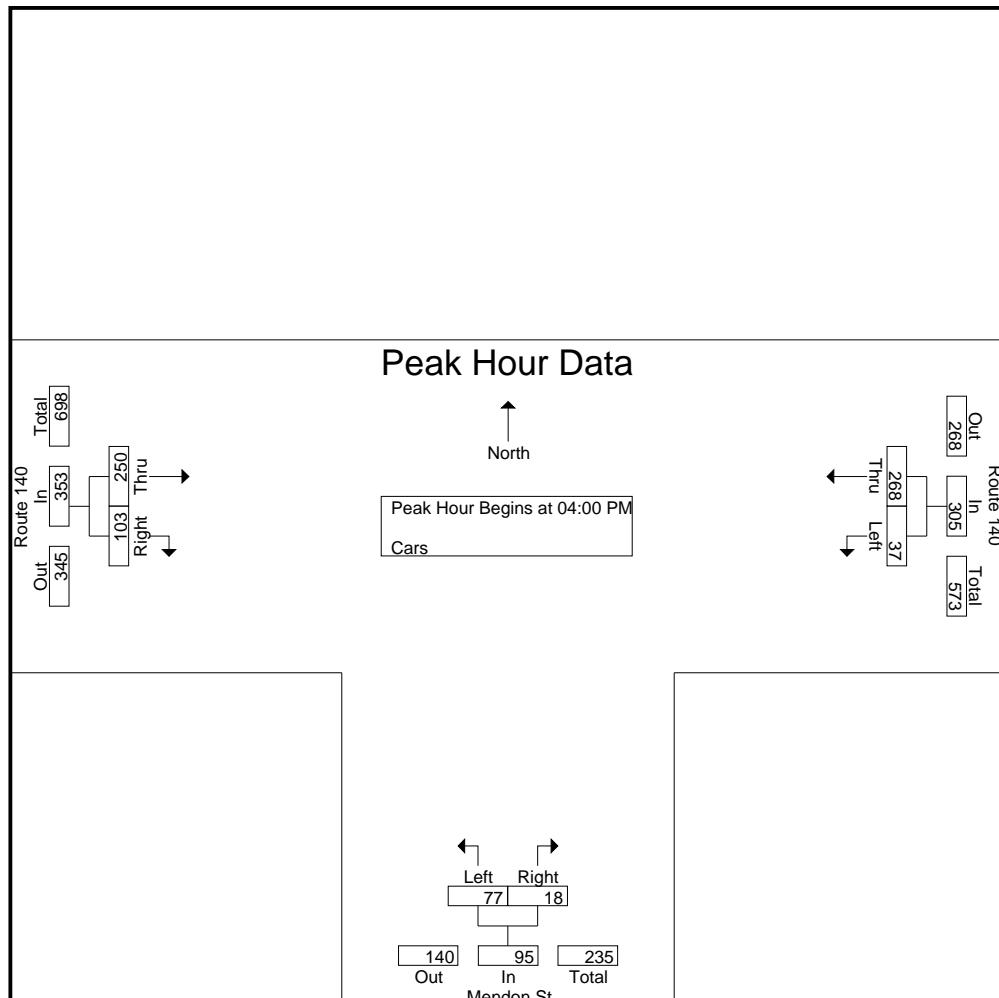
Groups Printed- Cars

		Route 140 From East		Mendon St From South		Route 140 From West		
Start Time		Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM		8	82	19	0	61	27	197
04:15 PM		3	56	14	13	65	22	173
04:30 PM		20	71	22	2	76	29	220
04:45 PM		6	59	22	3	48	25	163
Total		37	268	77	18	250	103	753
05:00 PM		0	49	18	2	46	19	134
05:15 PM		3	58	22	1	43	32	159
05:30 PM		3	65	22	1	62	14	167
05:45 PM		3	53	19	0	44	18	137
Total		9	225	81	4	195	83	597
Grand Total		46	493	158	22	445	186	1350
Apprch %		8.5	91.5	87.8	12.2	70.5	29.5	
Total %		3.4	36.5	11.7	1.6	33	13.8	

		Route 140 From East			Mendon St From South			Route 140 From West			
Start Time		Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM		8	82	90	19	0	19	61	27	88	197
04:15 PM		3	56	59	14	13	27	65	22	87	173
04:30 PM		20	71	91	22	2	24	76	29	105	220
04:45 PM		6	59	65	22	3	25	48	25	73	163
Total Volume		37	268	305	77	18	95	250	103	353	753
% App. Total		12.1	87.9		81.1	18.9		70.8	29.2		
PHF		.463	.817	.838	.875	.346	.880	.822	.888	.840	.856

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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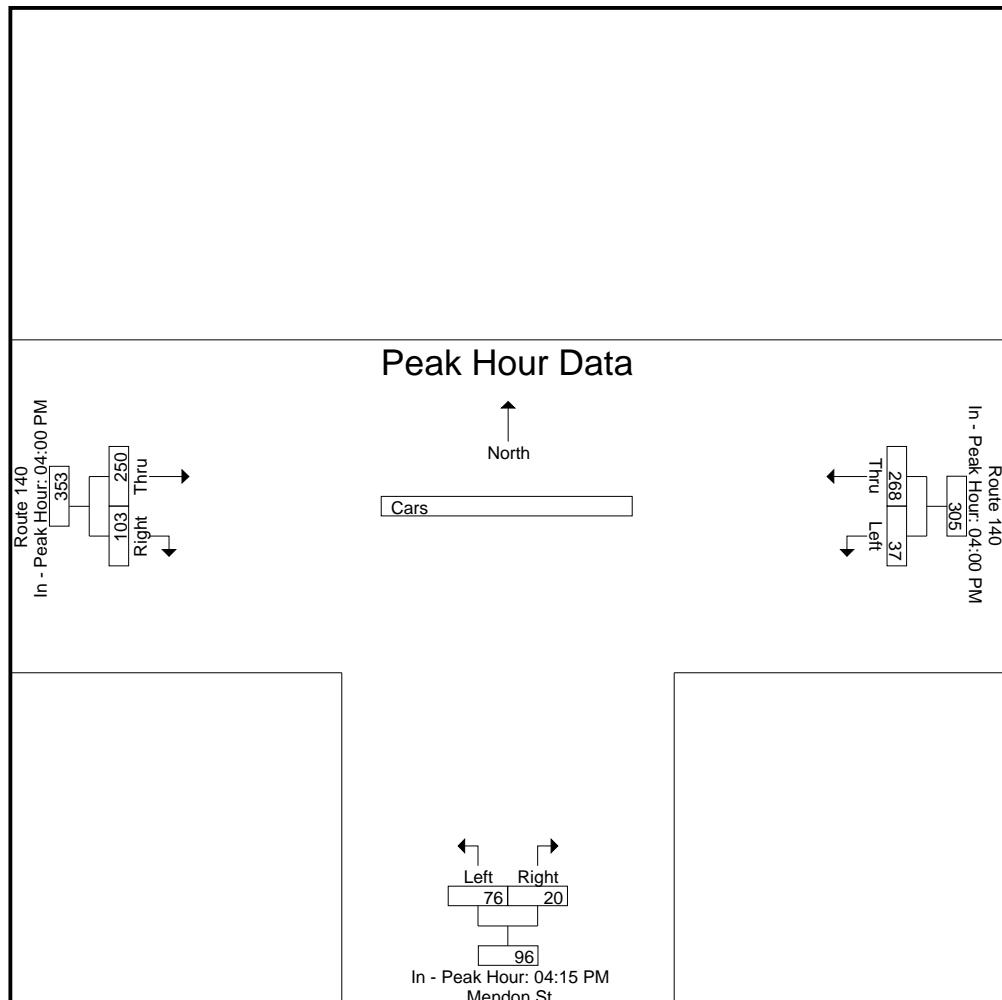
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:00 PM		
+0 mins.	8	82	90	14	13	27	61	27	88
+15 mins.	3	56	59	22	2	24	65	22	87
+30 mins.	20	71	91	22	3	25	76	29	105
+45 mins.	6	59	65	18	2	20	48	25	73
Total Volume	37	268	305	76	20	96	250	103	353
% App. Total	12.1	87.9		79.2	20.8		70.8	29.2	
PHF	.463	.817	.838	.864	.385	.889	.822	.888	.840

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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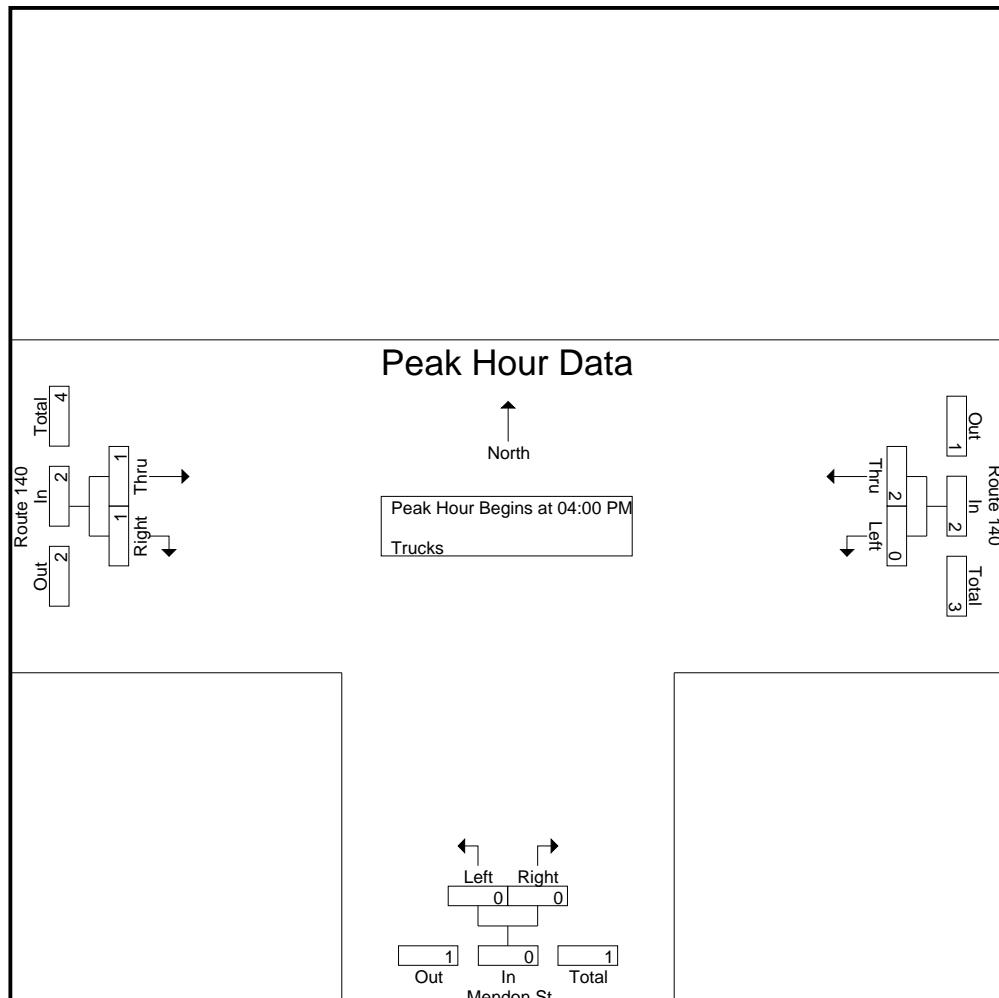
Groups Printed- Trucks

	Route 140 From East		Mendon St From South		Route 140 From West		Int. Total	
	Start Time	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	1		0	0	0	1	2
04:15 PM	0	1		0	0	0	0	1
04:30 PM	0	0		0	0	1	0	1
04:45 PM	0	0		0	0	0	0	0
Total	0	2		0	0	1	1	4
05:00 PM	0	0		0	0	0	0	0
05:15 PM	0	0		1	0	0	0	1
05:30 PM	0	1		0	0	0	0	1
05:45 PM	0	0		1	0	0	0	1
Total	0	1		2	0	0	0	3
Grand Total	0	3		2	0	1	1	7
Apprch %	0	100		100	0	50	50	
Total %	0	42.9		28.6	0	14.3	14.3	

	Route 140 From East			Mendon St From South			Route 140 From West			Int. Total	
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM	0	1	1	0	0	0	0	1	1	2	
04:15 PM	0	1	1	0	0	0	0	0	0	1	
04:30 PM	0	0	0	0	0	0	1	0	1	1	
04:45 PM	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	2	2	0	0	0	1	1	2	4	
% App. Total	0	100		0	0		50	50			
PHF	.000	.500	.500	.000	.000	.000	.250	.250	.500	.500	

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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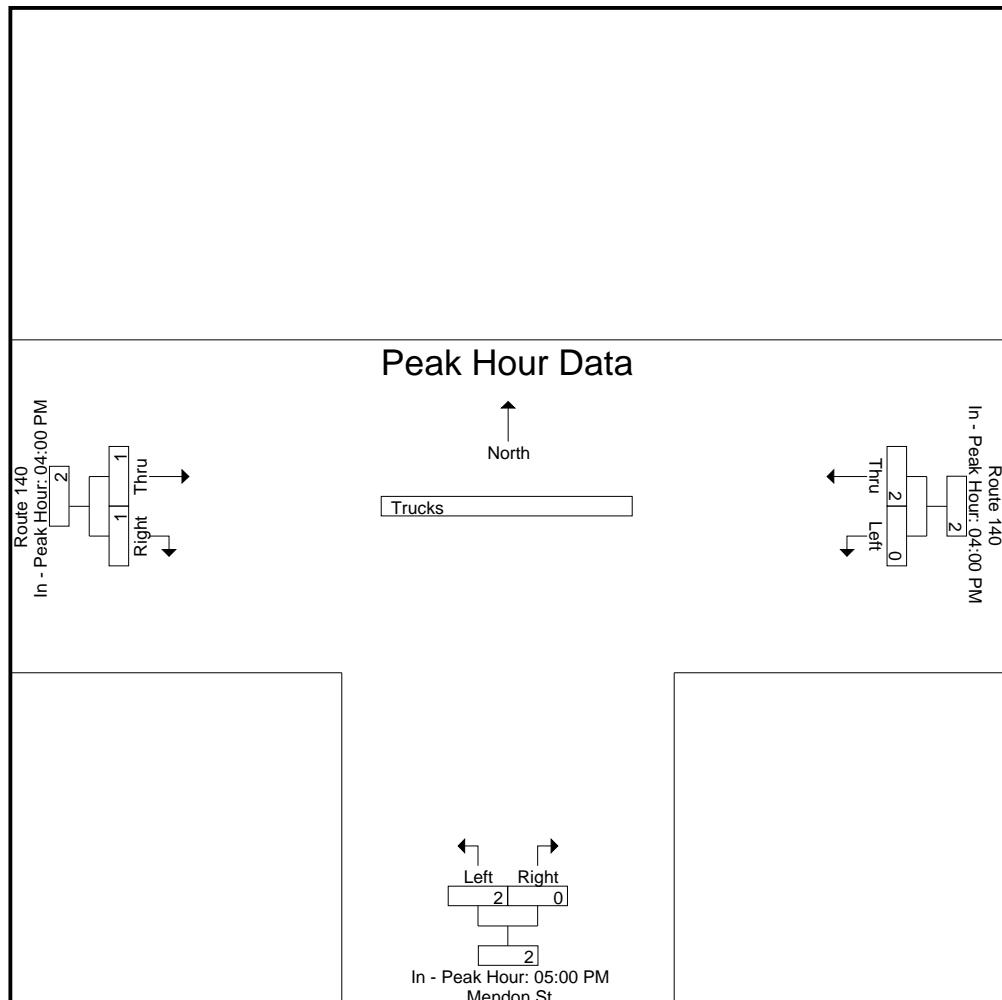
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			05:00 PM			04:00 PM		
+0 mins.	0	1	1	0	0	0	0	1	1
+15 mins.	0	1	1	1	0	1	0	0	0
+30 mins.	0	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	0	2	2	2	0	2	1	1	2
% App. Total	0	100		100	0		50	50	
PHF	.000	.500	.500	.500	.000	.500	.250	.250	.500

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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Accurate Counts
978-664-2565

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
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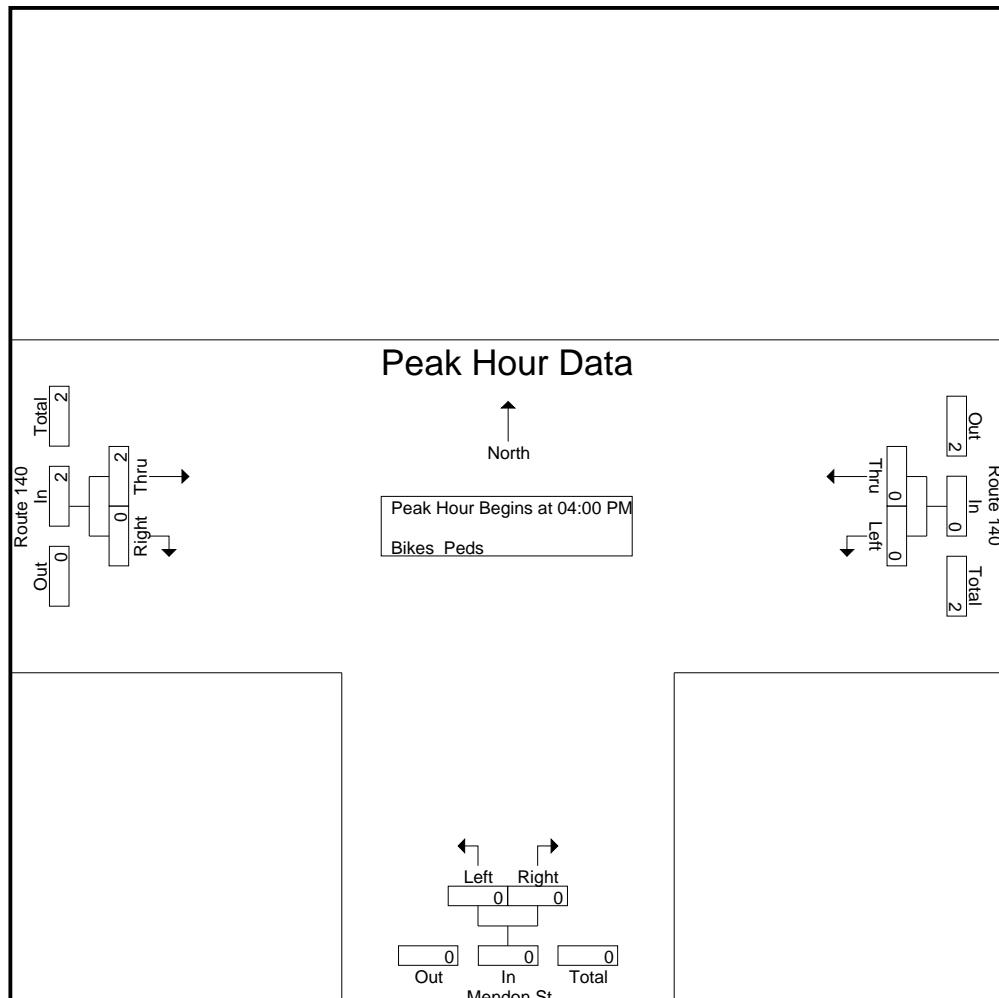
Groups Printed- Bikes Peds

	Route 140 From East			Mendon St From South			Route 140 From West			Groups Printed- Bikes Peds			
	Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Excl. Total	Incl. Total	Int. Total
04:00 PM		0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM		0	0	0	0	0	0	2	0	0	0	2	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	2	0	0	0	2	2
05:00 PM		0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM		0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM		0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM		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
Grand Total		0	0	0	0	0	0	2	0	0	0	2	2
Apprch %		0	0	0	0	0	0	100	0	0	0	0	0
Total %		0	0	0	0	0	0	100	0	0	0	100	100

	Route 140 From East			Mendon St From South			Route 140 From West			Groups Printed- Bikes Peds			
	Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Excl. Total	Incl. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM		0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM		0	0	0	0	0	0	2	0	0	2	2	2
04:30 PM		0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0
Total Volume		0	0	0	0	0	0	2	0	2	2	2	2
% App. Total		0	0	0	0	0	0	100	0	0	0	0	0
PHF		.000	.000	.000	.000	.000	.000	.250	.000	.250	.250	.250	.250

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
Page No : 11



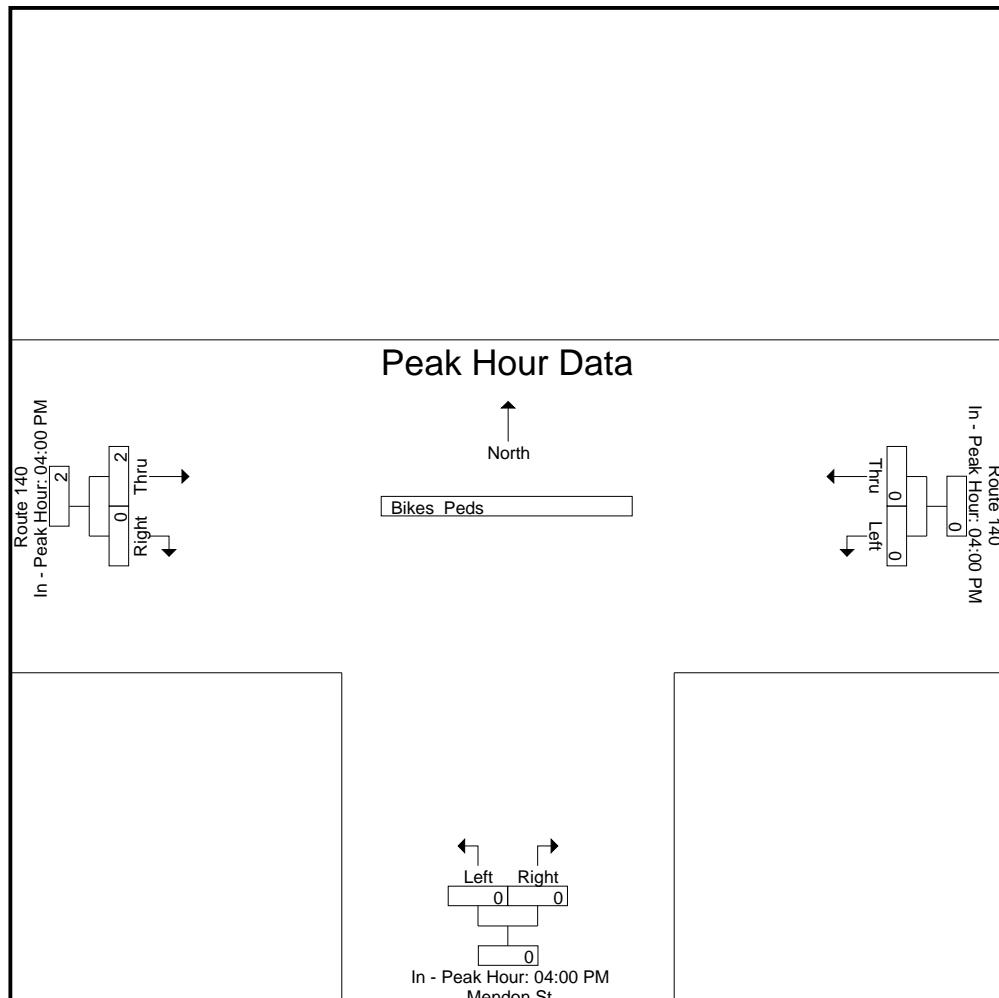
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM	04:00 PM	04:00 PM	
+0 mins.	0	0	0	0
+15 mins.	0	0	0	2
+30 mins.	0	0	0	0
+45 mins.	0	0	0	0
Total Volume	0	0	0	2
% App. Total	0	0	100	0
PHF	.000	.000	.000	.250
				.250

N/S Street : Mendon Street
E/W Street : Route 140
City/State : Upton, MA
Weather : Clear

File Name : 95680002
Site Code : 95680002
Start Date : 1/11/2023
Page No : 12



Accurate Counts

978-664-2565

 N/S Street : Fiske Avenue
 E/W Street : Main Street
 City/State : Upton, MA
 Weather : Cloudy

 File Name : 95680001
 Site Code : 95680001
 Start Date : 1/10/2024
 Page No : 1

Groups Printed- Cars - Trucks

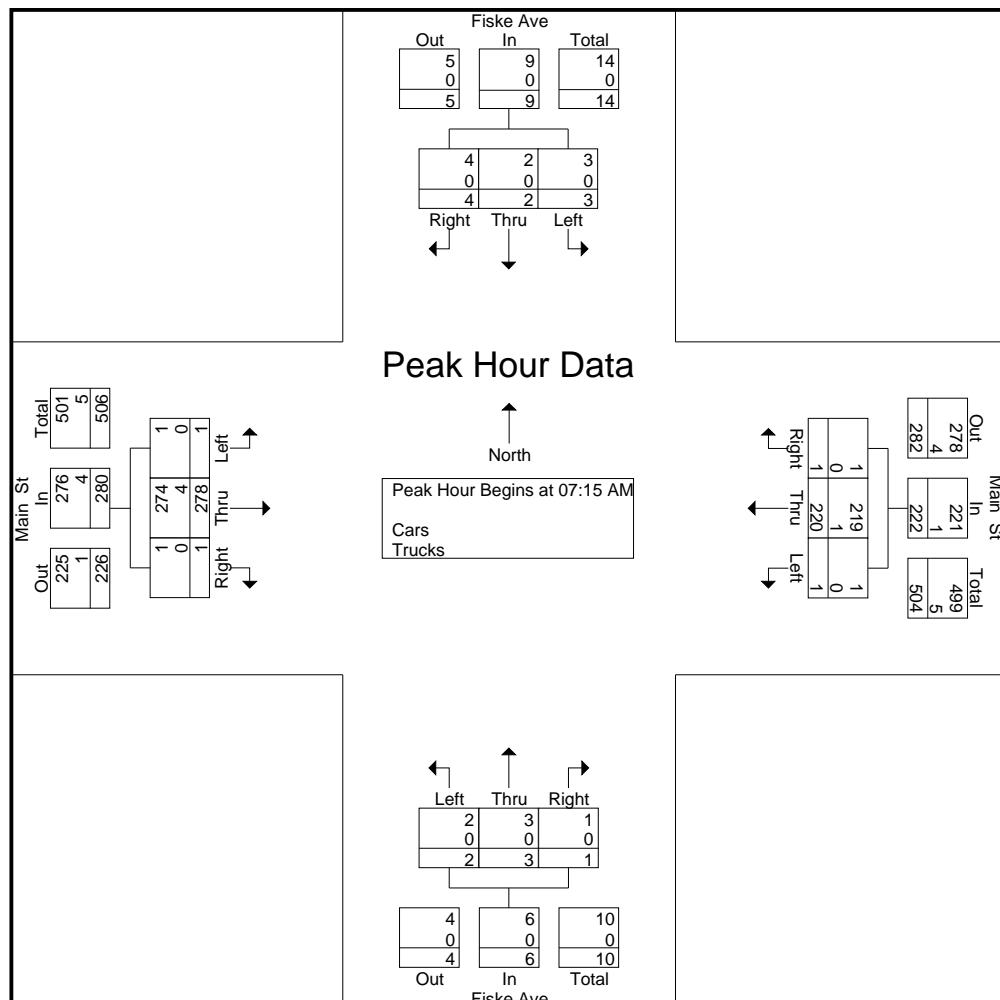
	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM		1	0	1	1	31	0	0	2	1	0	51	0	88
07:15 AM		1	0	1	0	55	1	1	2	0	0	67	0	128
07:30 AM		1	1	0	0	71	0	0	0	0	0	86	0	159
07:45 AM		1	0	1	1	45	0	1	0	1	1	60	1	112
Total		4	1	3	2	202	1	2	4	2	1	264	1	487
08:00 AM		0	1	2	0	49	0	0	1	0	0	65	0	118
08:15 AM		3	6	3	0	59	2	0	1	1	1	52	0	128
08:30 AM		1	2	0	0	44	1	1	1	1	1	52	0	104
08:45 AM		4	2	0	0	35	1	1	2	0	0	55	1	101
Total		8	11	5	0	187	4	2	5	2	2	224	1	451
Grand Total		12	12	8	2	389	5	4	9	4	3	488	2	938
Apprch %		37.5	37.5	25	0.5	98.2	1.3	23.5	52.9	23.5	0.6	99	0.4	
Total %		1.3	1.3	0.9	0.2	41.5	0.5	0.4	1	0.4	0.3	52	0.2	
Cars		12	12	8	2	378	5	4	9	4	3	481	2	920
% Cars		100	100	100	100	97.2	100	100	100	100	100	98.6	100	98.1
Trucks		0	0	0	0	11	0	0	0	0	0	7	0	18
% Trucks		0	0	0	0	2.8	0	0	0	0	0	1.4	0	1.9

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15 AM																		
07:15 AM		1	0	1	2	0	55	1	56	1	2	0	3	0	67	0	67	128
07:30 AM		1	1	0	2	0	71	0	71	0	0	0	0	0	86	0	86	159
07:45 AM		1	0	1	2	1	45	0	46	1	0	1	2	1	60	1	62	112
08:00 AM		0	1	2	3	0	49	0	49	0	1	0	1	0	65	0	65	118
Total Volume		3	2	4	9	1	220	1	222	2	3	1	6	1	278	1	280	517
% App. Total		33.3	22.2	44.4		0.5	99.1	0.5		33.3	50	16.7		0.4	99.3	0.4		
PHF		.750	.500	.500	.750	.250	.775	.250	.782	.500	.375	.250	.500	.250	.808	.250	.814	.813
Cars		3	2	4	9	1	219	1	221	2	3	1	6	1	274	1	276	512
% Cars		100	100	100	100	100	99.5	100	99.5	100	100	100	100	100	98.6	100	98.6	99.0
Trucks		0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
% Trucks		0	0	0	0	0	0.5	0	0.5	0	0	0	0	0	1.4	0	1.4	1.0

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

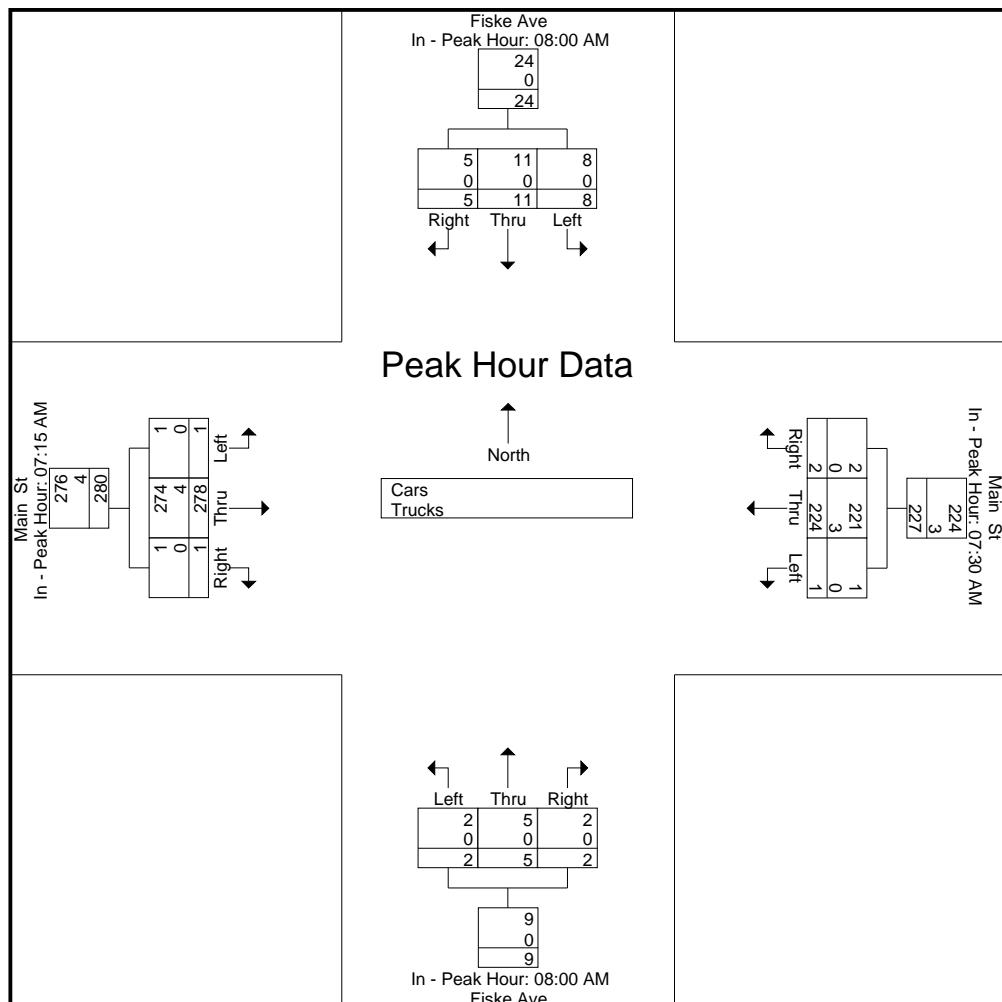
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				08:00 AM				07:15 AM			
+0 mins.	0	1	2	3	0	71	0	71	0	1	0	1	0	67	0	67
+15 mins.	3	6	3	12	1	45	0	46	0	1	1	2	0	86	0	86
+30 mins.	1	2	0	3	0	49	0	49	1	1	1	3	1	60	1	62
+45 mins.	4	2	0	6	0	59	2	61	1	2	0	3	0	65	0	65
Total Volume	8	11	5	24	1	224	2	227	2	5	2	9	1	278	1	280
% App. Total	33.3	45.8	20.8		0.4	98.7	0.9		22.2	55.6	22.2		0.4	99.3	0.4	
PHF	.500	.458	.417	.500	.250	.789	.250	.799	.500	.625	.500	.750	.250	.808	.250	.814
Cars	8	11	5	24	1	221	2	224	2	5	2	9	1	274	1	276
% Cars	100	100	100	100	100	98.7	100	98.7	100	100	100	100	100	98.6	100	98.6
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4
% Trucks	0	0	0	0	0	1.3	0	1.3	0	0	0	0	0	1.4	0	1.4

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 3



N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 4

Groups Printed- Cars

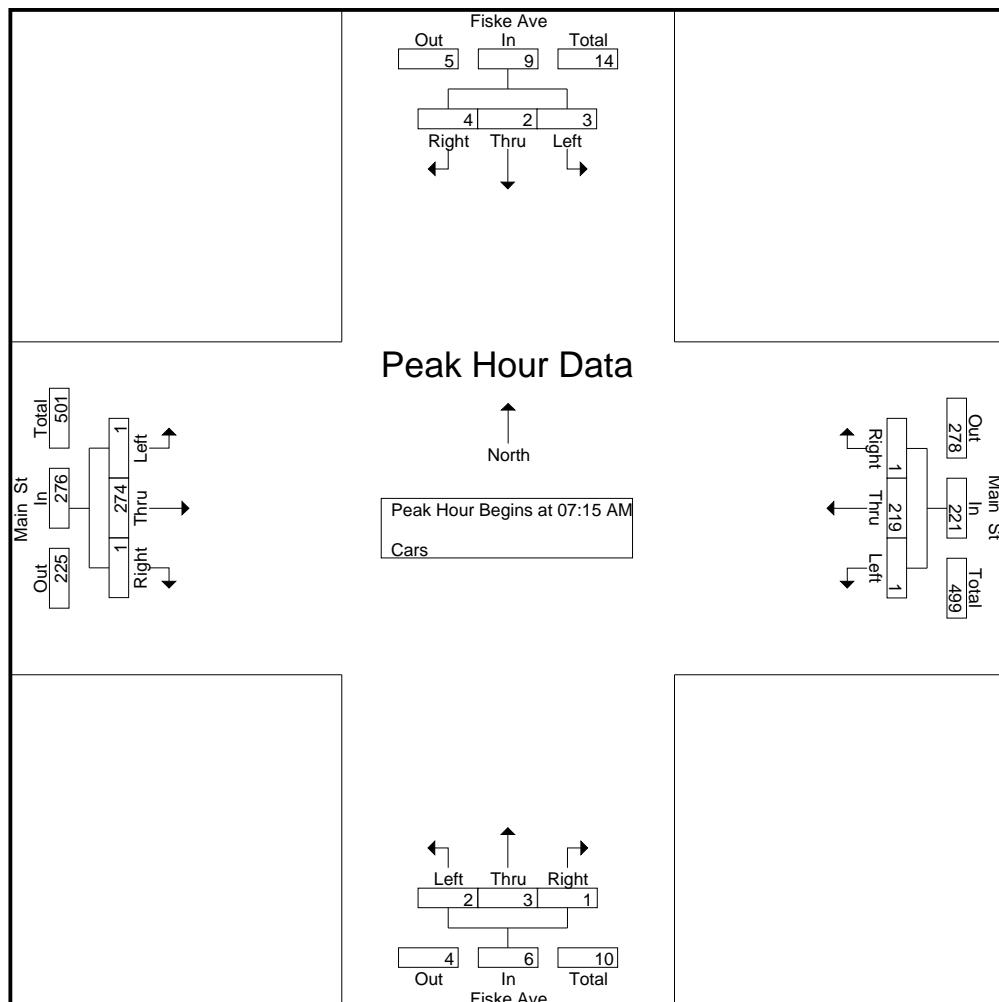
	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	1	1	28	0	0	2	1	0	50	0	84
07:15 AM	1	0	1	0	55	1	1	2	0	0	67	0	128
07:30 AM	1	1	0	0	70	0	0	0	0	0	85	0	157
07:45 AM	1	0	1	1	45	0	1	0	1	1	60	1	112
Total	4	1	3	2	198	1	2	4	2	1	262	1	481
08:00 AM	0	1	2	0	49	0	0	1	0	0	62	0	115
08:15 AM	3	6	3	0	57	2	0	1	1	1	52	0	126
08:30 AM	1	2	0	0	43	1	1	1	1	1	50	0	101
08:45 AM	4	2	0	0	31	1	1	2	0	0	55	1	97
Total	8	11	5	0	180	4	2	5	2	2	219	1	439
Grand Total	12	12	8	2	378	5	4	9	4	3	481	2	920
Approch %	37.5	37.5	25	0.5	98.2	1.3	23.5	52.9	23.5	0.6	99	0.4	
Total %	1.3	1.3	0.9	0.2	41.1	0.5	0.4	1	0.4	0.3	52.3	0.2	

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	0	1	2	0	55	1	56	1	2	0	3	0	67	0	67	128
07:30 AM	1	1	0	2	0	70	0	70	0	0	0	0	0	85	0	85	157
07:45 AM	1	0	1	2	1	45	0	46	1	0	1	2	1	60	1	62	112
08:00 AM	0	1	2	3	0	49	0	49	0	1	0	1	0	62	0	62	115
Total Volume	3	2	4	9	1	219	1	221	2	3	1	6	1	274	1	276	512
% App. Total	33.3	22.2	44.4		0.5	99.1	0.5		33.3	50	16.7		0.4	99.3	0.4		
PHF	.750	.500	.500	.750	.250	.782	.250	.789	.500	.375	.250	.500	.250	.806	.250	.812	.815

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

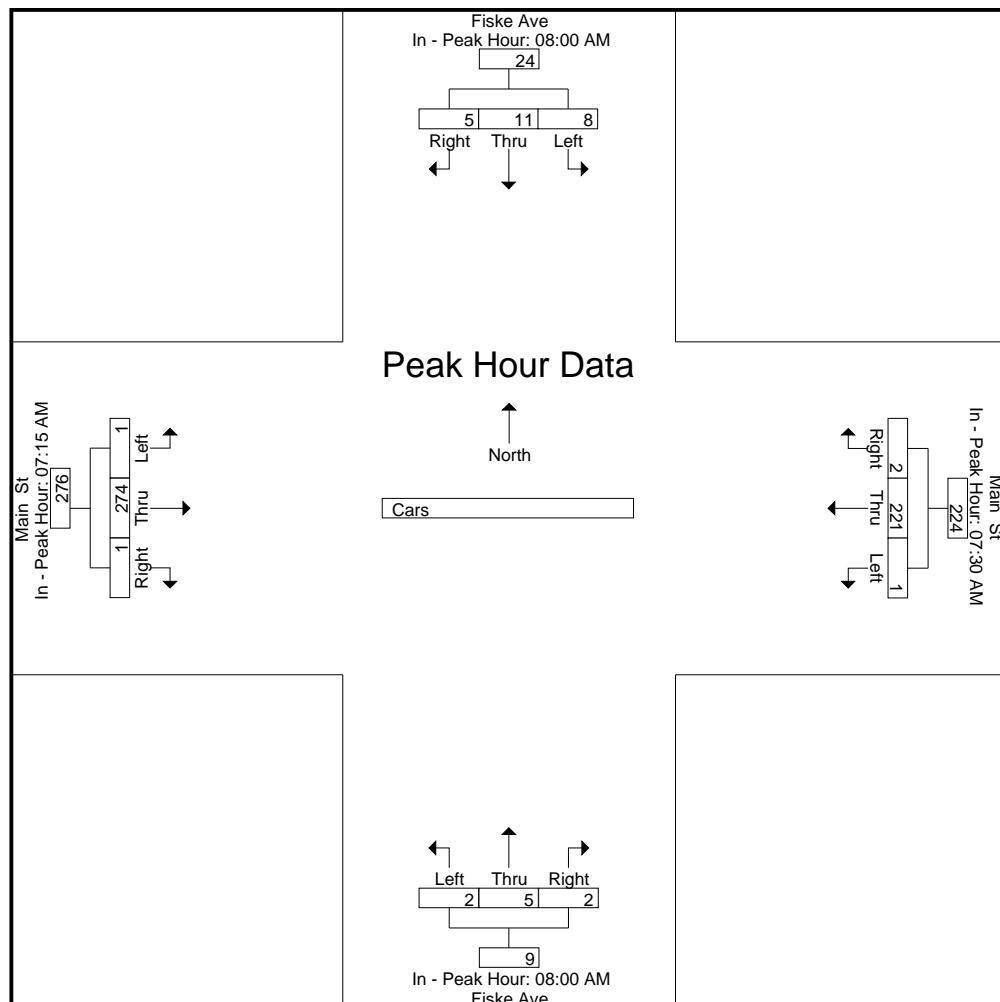
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				08:00 AM				07:15 AM			
+0 mins.	0	1	2	3	0	70	0	70	0	1	0	1	0	67	0	67
+15 mins.	3	6	3	12	1	45	0	46	0	1	1	2	0	85	0	85
+30 mins.	1	2	0	3	0	49	0	49	1	1	1	3	1	60	1	62
+45 mins.	4	2	0	6	0	57	2	59	1	2	0	3	0	62	0	62
Total Volume	8	11	5	24	1	221	2	224	2	5	2	9	1	274	1	276
% App. Total	33.3	45.8	20.8		0.4	98.7	0.9		22.2	55.6	22.2	0.4	99.3	0.4		
PHF	.500	.458	.417	.500	.250	.789	.250	.800	.500	.625	.500	.750	.250	.806	.250	.812

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 6



N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 7

Groups Printed- Trucks

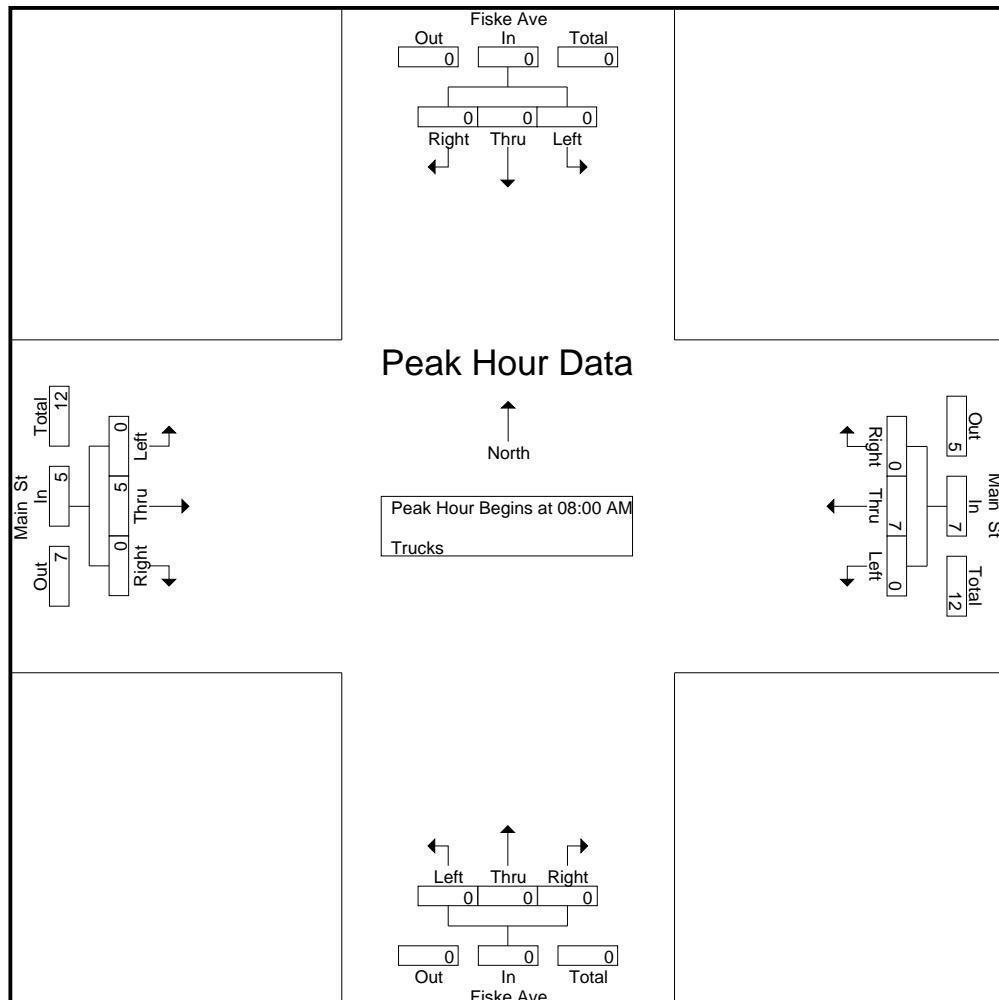
	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	3	0	0	0	0	0	1	0	4
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	4	0	0	0	0	0	2	0	6
08:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
08:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
08:45 AM	0	0	0	0	4	0	0	0	0	0	0	0	4
Total	0	0	0	0	7	0	0	0	0	0	5	0	12
Grand Total	0	0	0	0	11	0	0	0	0	0	7	0	18
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	61.1	0	0	0	0	0	38.9	0	

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
08:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
08:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	5	0	5	12
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	0
PHF	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.000	.000	.000	.417	.000	.417	.750

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

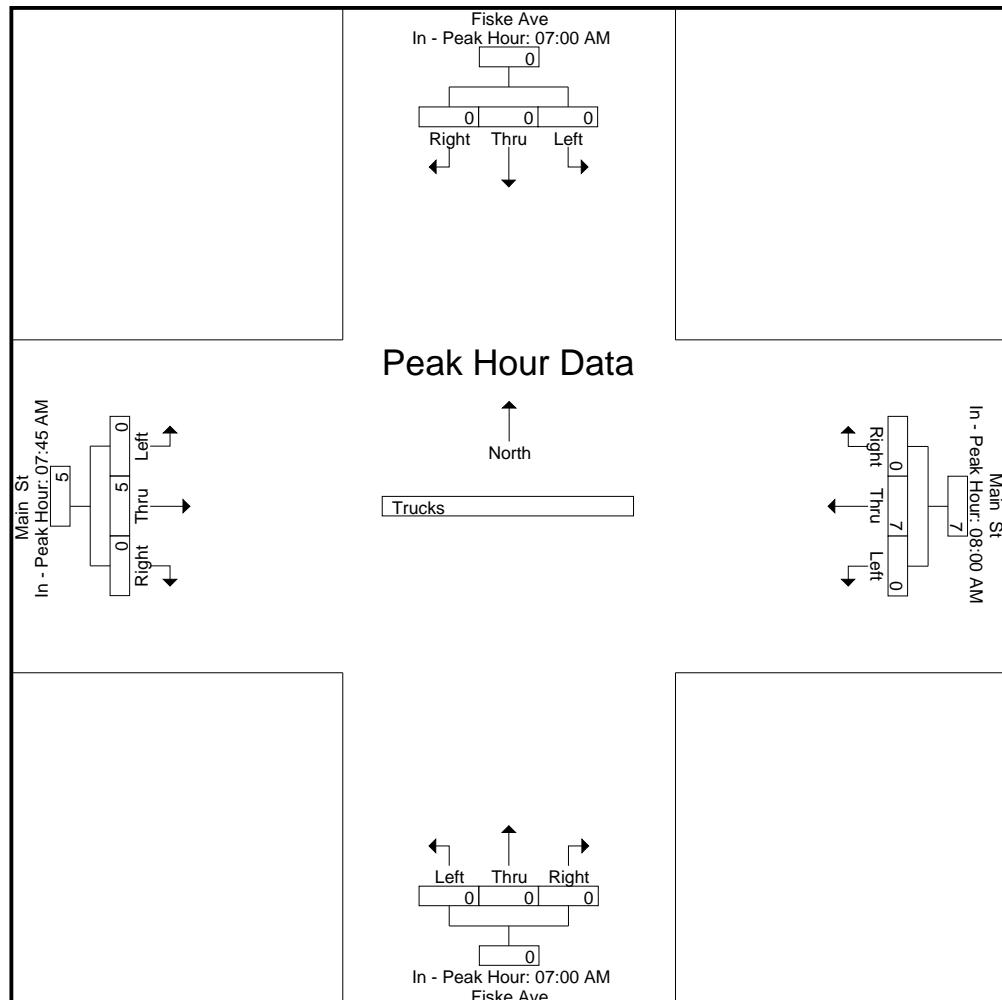
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	5	0	5
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0
PHF	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.000	.000	.000	.417	.000	.417

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 9



Accurate Counts

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

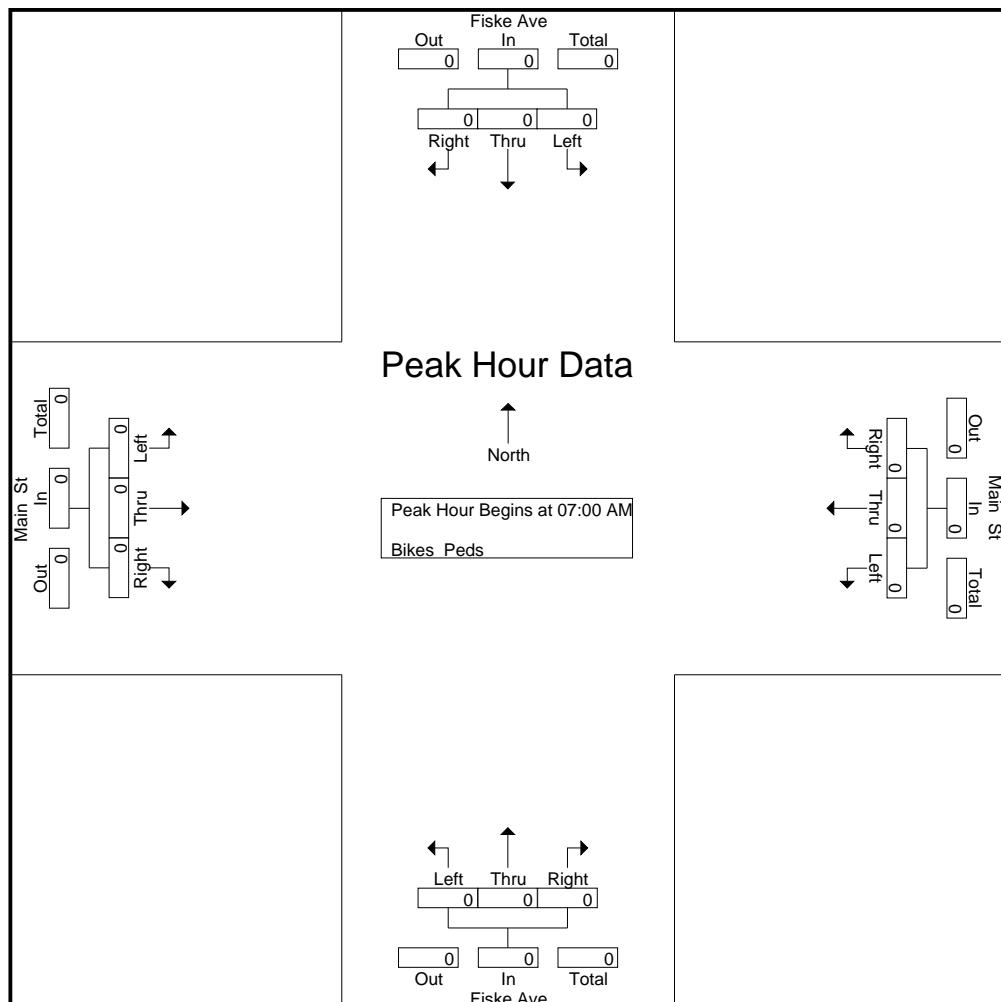
File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 10

Groups Printed- Bikes Peds

		Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West							
Start Time		Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total	
07:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:45 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	0
08:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:15 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:30 AM		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:45 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	0
Grand Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %		0	0	0		0	0	0		0	0	0		0	0	0	0	0	0	0	0
Total %																		0	0		

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

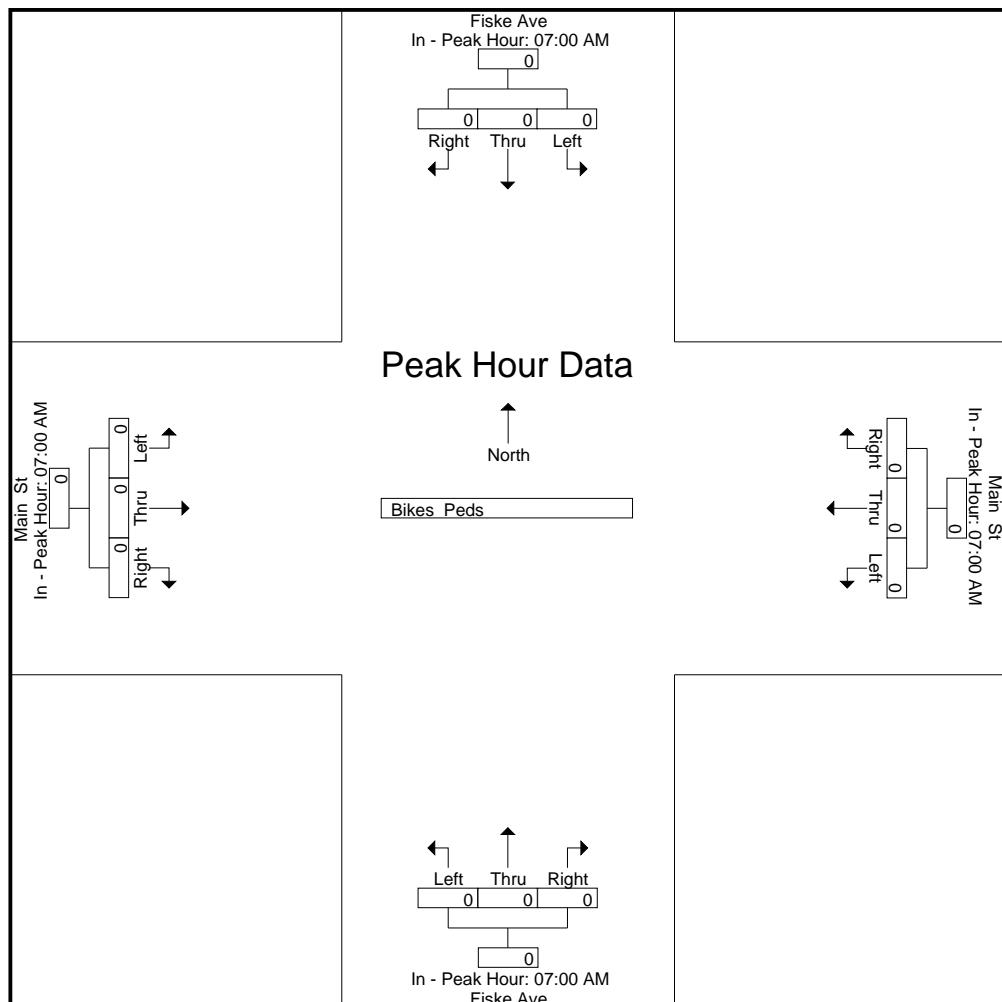
Peak Hour Analysis From 07:00 AM to 08:00 AM

Peak Hour for Each Approach Begins at:

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Fiske Avenue

E/W Street : Main Street

City/State : Upton, MA

Weather : Cloudy

File Name : 95680001

Site Code : 95680001

Start Date : 1/10/2024

Page No : 1

Groups Printed- Cars - Trucks

	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
03:00 PM		0	1	3	0	62	4	4	2	2	3	46	1	128
03:15 PM		8	4	3	3	77	8	0	3	0	6	72	2	186
03:30 PM		3	3	2	1	53	0	2	1	0	3	61	1	130
03:45 PM		4	5	2	0	56	4	0	3	1	0	69	3	147
Total		15	13	10	4	248	16	6	9	3	12	248	7	591
04:00 PM		4	2	0	1	85	6	0	3	0	5	52	0	158
04:15 PM		0	2	1	1	69	2	1	3	0	1	49	0	129
04:30 PM		6	4	2	0	72	5	2	4	0	0	71	0	166
04:45 PM		3	2	0	1	59	6	1	0	0	0	47	0	119
Total		13	10	3	3	285	19	4	10	0	6	219	0	572
05:00 PM		2	0	0	0	48	5	1	0	0	0	54	1	111
05:15 PM		1	2	1	1	51	3	0	1	0	2	49	1	112
05:30 PM		3	4	4	2	67	1	1	0	0	1	47	0	130
05:45 PM		1	2	0	0	51	2	1	4	1	0	39	2	103
Total		7	8	5	3	217	11	3	5	1	3	189	4	456
06:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total		35	31	18	10	750	46	13	24	4	21	656	11	1619
Apprch %		41.7	36.9	21.4	1.2	93.1	5.7	31.7	58.5	9.8	3.1	95.3	1.6	
Total %		2.2	1.9	1.1	0.6	46.3	2.8	0.8	1.5	0.2	1.3	40.5	0.7	
Cars		30	29	15	10	737	42	13	22	4	18	647	11	1578
% Cars		85.7	93.5	83.3	100	98.3	91.3	100	91.7	100	85.7	98.6	100	97.5
Trucks		5	2	3	0	13	4	0	2	0	3	9	0	41
% Trucks		14.3	6.5	16.7	0	1.7	8.7	0	8.3	0	14.3	1.4	0	2.5

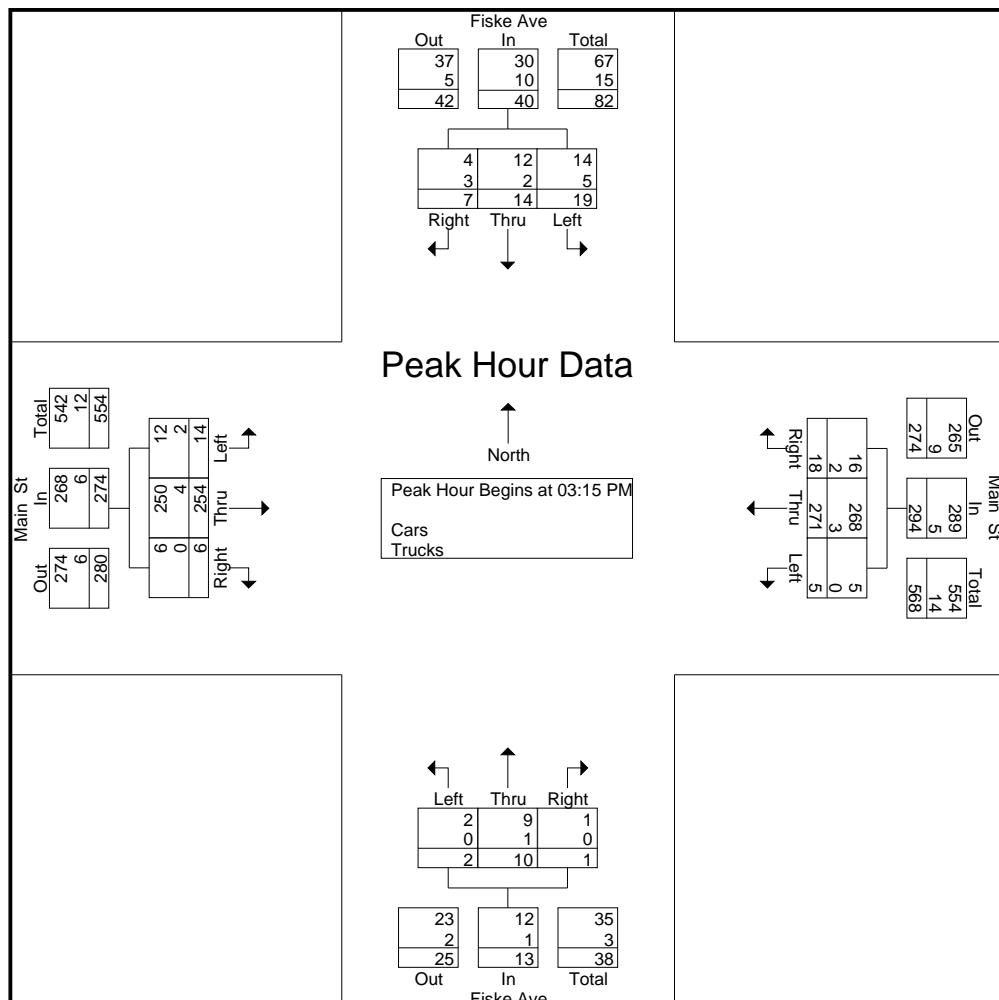
	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				Int. Total
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total
Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:15 PM																	
03:15 PM	8	4	3	15	3	77	8	88	0	3	0	3	6	72	2	80	186
03:30 PM	3	3	2	8	1	53	0	54	2	1	0	3	3	61	1	65	130
03:45 PM	4	5	2	11	0	56	4	60	0	3	1	4	0	69	3	72	147
04:00 PM	4	2	0	6	1	85	6	92	0	3	0	3	5	52	0	57	158
Total Volume	19	14	7	40	5	271	18	294	2	10	1	13	14	254	6	274	621
% App. Total	47.5	35	17.5		1.7	92.2	6.1		15.4	76.9	7.7		5.1	92.7	2.2		
PHF	.594	.700	.583	.667	.417	.797	.563	.799	.250	.833	.250	.813	.583	.882	.500	.856	.835
Cars	14	12	4	30	5	268	16	289	2	9	1	12	12	250	6	268	599
% Cars	73.7	85.7	57.1	75.0	100	98.9	88.9	98.3	100	90.0	100	92.3	85.7	98.4	100	97.8	96.5
Trucks	5	2	3	10	0	3	2	5	0	1	0	1	2	4	0	6	22
% Trucks	26.3	14.3	42.9	25.0	0	1.1	11.1	1.7	0	10.0	0	7.7	14.3	1.6	0	2.2	3.5

Accurate Counts

978-664-2565

N/S Street : Fiske Avenue
 E/W Street : Main Street
 City/State : Upton, MA
 Weather : Cloudy

File Name : 95680001
 Site Code : 95680001
 Start Date : 1/10/2024
 Page No : 2



Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1

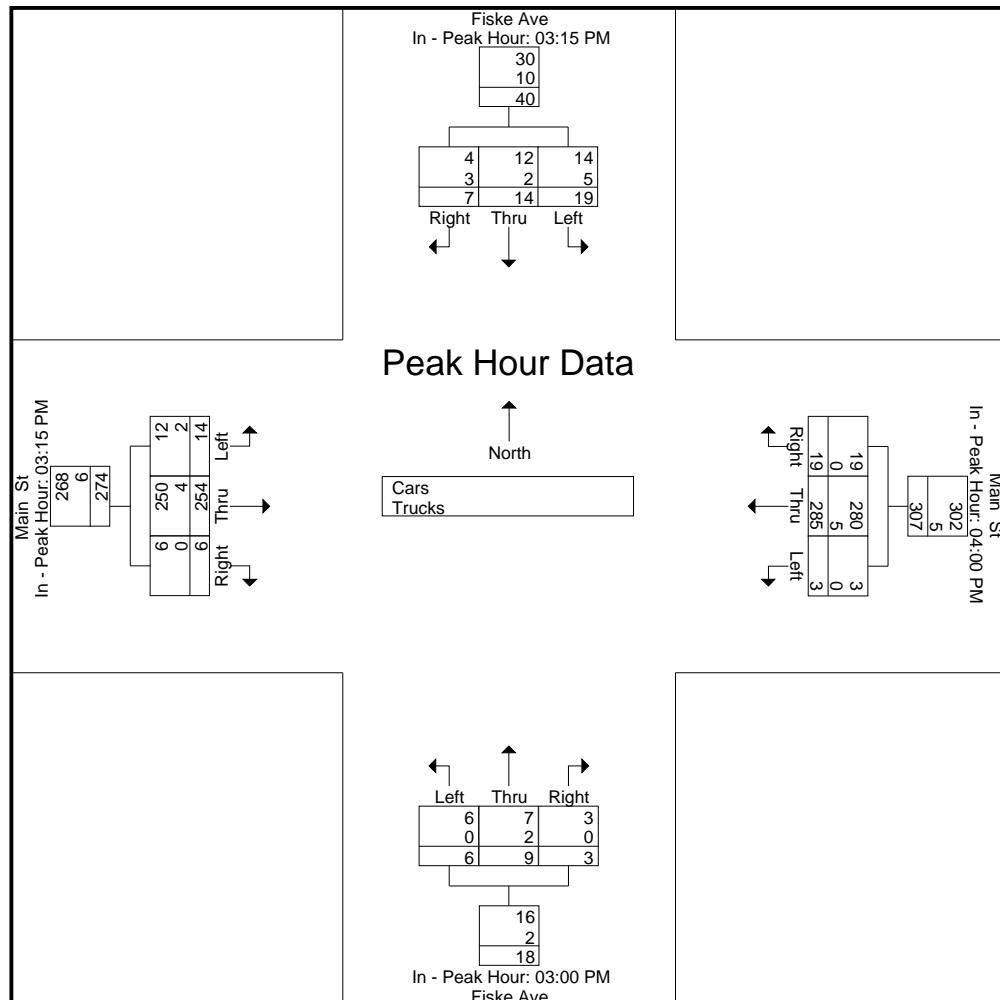
Peak Hour for Each Approach Begins at:

	03:15 PM				04:00 PM				03:00 PM				03:15 PM			
+0 mins.	8	4	3	15	1	85	6	92	4	2	2	8	6	72	2	80
+15 mins.	3	3	2	8	1	69	2	72	0	3	0	3	3	61	1	65
+30 mins.	4	5	2	11	0	72	5	77	2	1	0	3	0	69	3	72
+45 mins.	4	2	0	6	1	59	6	66	0	3	1	4	5	52	0	57
Total Volume	19	14	7	40	3	285	19	307	6	9	3	18	14	254	6	274
% App. Total	47.5	35	17.5		1	92.8	6.2		33.3	50	16.7		5.1	92.7	2.2	
PHF	.594	.700	.583	.667	.750	.838	.792	.834	.375	.750	.375	.563	.583	.882	.500	.856
Cars	14	12	4	30	3	280	19	302	6	7	3	16	12	250	6	268
% Cars	73.7	85.7	57.1	75	100	98.2	100	98.4	100	77.8	100	88.9	85.7	98.4	100	97.8
Trucks	5	2	3	10	0	5	0	5	0	2	0	2	2	4	0	6
% Trucks	26.3	14.3	42.9	25	0	1.8	0	1.6	0	22.2	0	11.1	14.3	1.6	0	2.2

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 4

Groups Printed- Cars

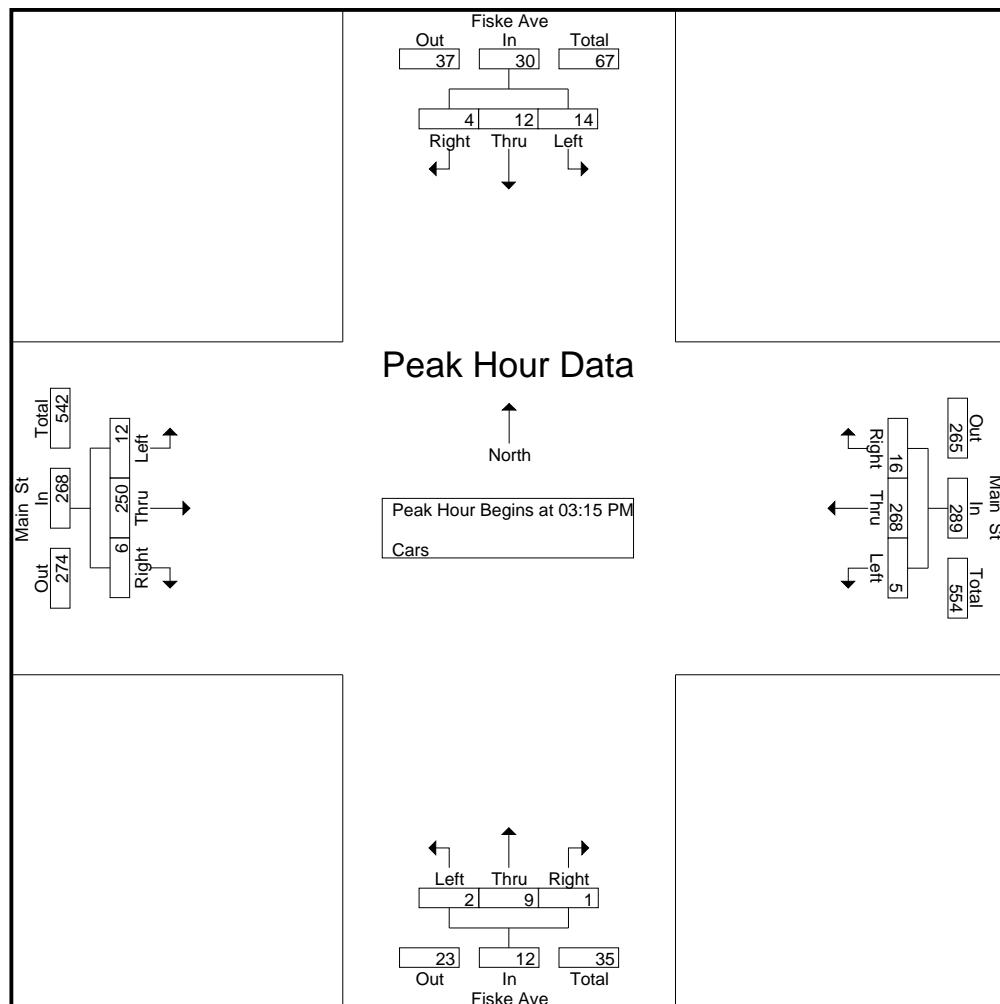
	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
03:00 PM		0	1	3	0	60	2	4	1	2	2	45	1	121
03:15 PM		4	2	0	3	76	6	0	2	0	5	71	2	171
03:30 PM		2	3	2	1	53	0	2	1	0	2	60	1	127
03:45 PM		4	5	2	0	55	4	0	3	1	0	69	3	146
Total		10	11	7	4	244	12	6	7	3	9	245	7	565
04:00 PM		4	2	0	1	84	6	0	3	0	5	50	0	155
04:15 PM		0	2	1	1	67	2	1	3	0	1	49	0	127
04:30 PM		6	4	2	0	70	5	2	4	0	0	70	0	163
04:45 PM		3	2	0	1	59	6	1	0	0	0	47	0	119
Total		13	10	3	3	280	19	4	10	0	6	216	0	564
05:00 PM		2	0	0	0	47	5	1	0	0	0	54	1	110
05:15 PM		1	2	1	1	50	3	0	1	0	2	49	1	111
05:30 PM		3	4	4	2	66	1	1	0	0	1	46	0	128
05:45 PM		1	2	0	0	50	2	1	4	1	0	37	2	100
Total		7	8	5	3	213	11	3	5	1	3	186	4	449
06:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total		30	29	15	10	737	42	13	22	4	18	647	11	1578
Apprch %		40.5	39.2	20.3	1.3	93.4	5.3	33.3	56.4	10.3	2.7	95.7	1.6	
Total %		1.9	1.8	1	0.6	46.7	2.7	0.8	1.4	0.3	1.1	41	0.7	

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 03:15 PM																		
03:15 PM		4	2	0	6	3	76	6	85	0	2	0	2	5	71	2	78	171
03:30 PM		2	3	2	7	1	53	0	54	2	1	0	3	2	60	1	63	127
03:45 PM		4	5	2	11	0	55	4	59	0	3	1	4	0	69	3	72	146
04:00 PM		4	2	0	6	1	84	6	91	0	3	0	3	5	50	0	55	155
Total Volume		14	12	4	30	5	268	16	289	2	9	1	12	12	250	6	268	599
% App. Total		46.7	40	13.3		1.7	92.7	5.5		16.7	75	8.3		4.5	93.3	2.2		
PHF		.875	.600	.500	.682	.417	.798	.667	.794	.250	.750	.250	.750	.600	.880	.500	.859	.876

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 5



Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1

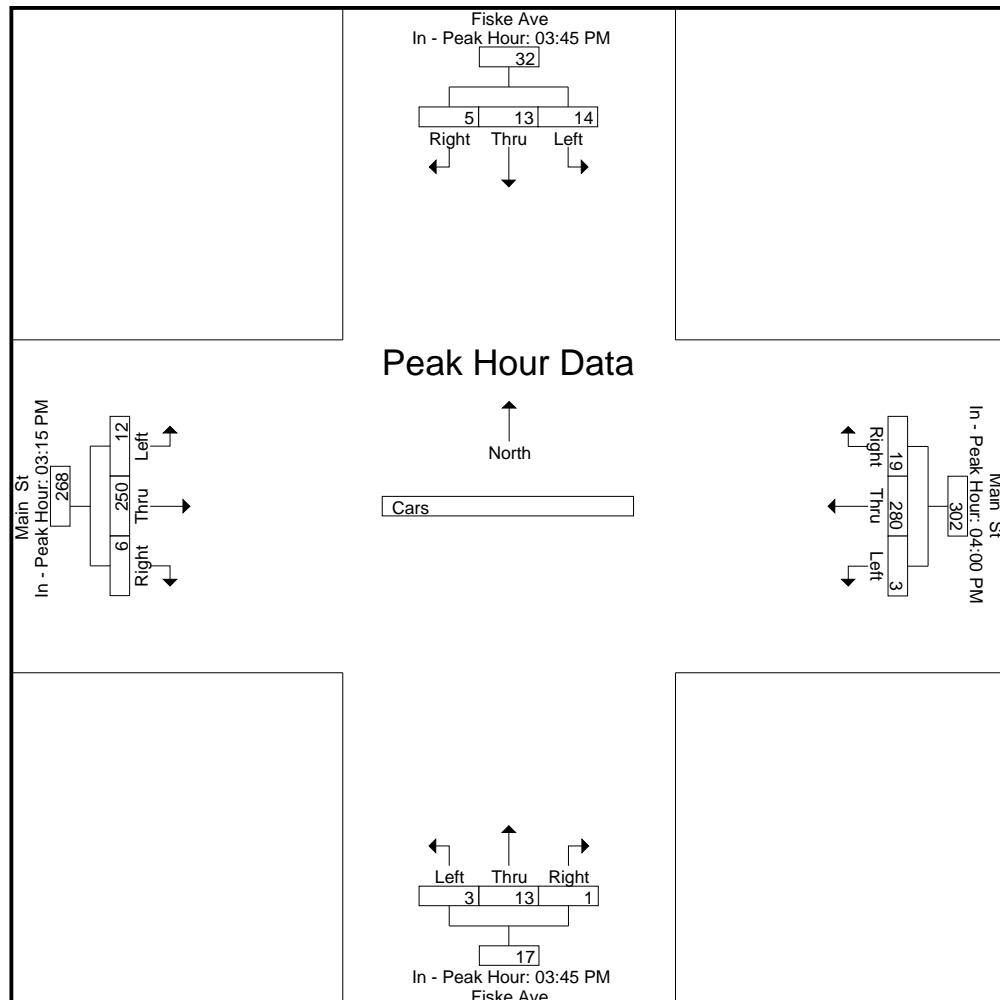
Peak Hour for Each Approach Begins at:

	03:45 PM				04:00 PM				03:45 PM				03:15 PM			
+0 mins.	4	5	2	11	1	84	6	91	0	3	1	4	5	71	2	78
+15 mins.	4	2	0	6	1	67	2	70	0	3	0	3	2	60	1	63
+30 mins.	0	2	1	3	0	70	5	75	1	3	0	4	0	69	3	72
+45 mins.	6	4	2	12	1	59	6	66	2	4	0	6	5	50	0	55
Total Volume	14	13	5	32	3	280	19	302	3	13	1	17	12	250	6	268
% App. Total	43.8	40.6	15.6		1	92.7	6.3		17.6	76.5	5.9		4.5	93.3	2.2	
PHF	.583	.650	.625	.667	.750	.833	.792	.830	.375	.813	.250	.708	.600	.880	.500	.859

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Fiske Avenue

E/W Street : Main Street

City/State : Upton, MA

Weather : Cloudy

File Name : 95680001

Site Code : 95680001

Start Date : 1/10/2024

Page No : 7

Groups Printed- Trucks

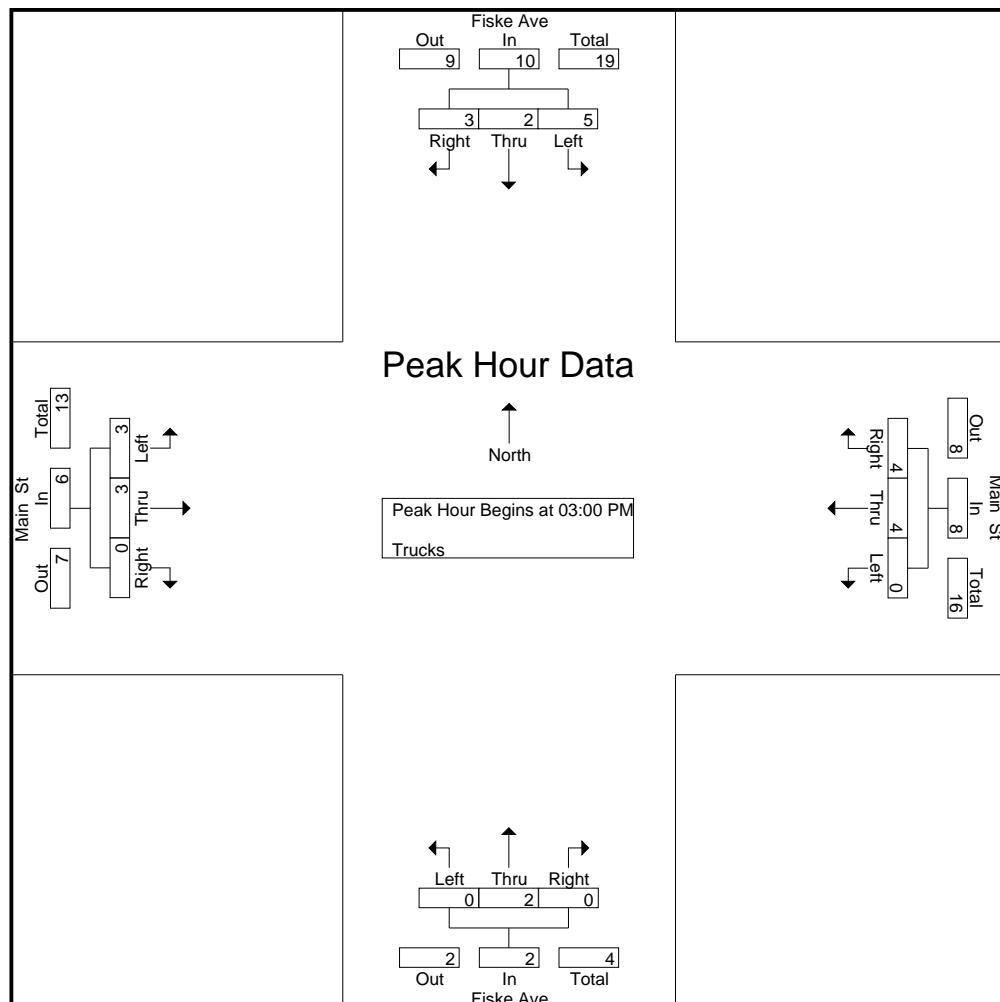
	Fiske Ave From North			Main St From East			Fiske Ave From South			Main St From West			Int. Total	
	Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
03:00 PM		0	0	0	0	2	2	0	1	0	1	1	0	7
03:15 PM		4	2	3	0	1	2	0	1	0	1	1	0	15
03:30 PM		1	0	0	0	0	0	0	0	0	1	1	0	3
03:45 PM		0	0	0	0	1	0	0	0	0	0	0	0	1
Total		5	2	3	0	4	4	0	2	0	3	3	0	26
04:00 PM		0	0	0	0	1	0	0	0	0	0	2	0	3
04:15 PM		0	0	0	0	2	0	0	0	0	0	0	0	2
04:30 PM		0	0	0	0	2	0	0	0	0	0	1	0	3
04:45 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	5	0	0	0	0	0	3	0	8
05:00 PM		0	0	0	0	1	0	0	0	0	0	0	0	1
05:15 PM		0	0	0	0	1	0	0	0	0	0	0	0	1
05:30 PM		0	0	0	0	1	0	0	0	0	0	1	0	2
05:45 PM		0	0	0	0	1	0	0	0	0	0	2	0	3
Total		0	0	0	0	4	0	0	0	0	0	3	0	7
06:00 PM		0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total		5	2	3	0	13	4	0	2	0	3	9	0	41
Apprch %		50	20	30	0	76.5	23.5	0	100	0	25	75	0	
Total %		12.2	4.9	7.3	0	31.7	9.8	0	4.9	0	7.3	22	0	

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West				Int. Total	
	Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 03:00 PM																		
03:00 PM		0	0	0	0	0	2	2	4	0	1	0	1	1	1	0	2	7
03:15 PM		4	2	3	9	0	1	2	3	0	1	0	1	1	1	0	2	15
03:30 PM		1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	2	3
03:45 PM		0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume		5	2	3	10	0	4	4	8	0	2	0	2	3	3	0	6	26
% App. Total		50	20	30	0	50	50	0	100	0	50	50	0	50	50	0		
PHF		.313	.250	.250	.278	.000	.500	.500	.500	.000	.500	.000	.500	.750	.750	.000	.750	.433

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 8



Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1

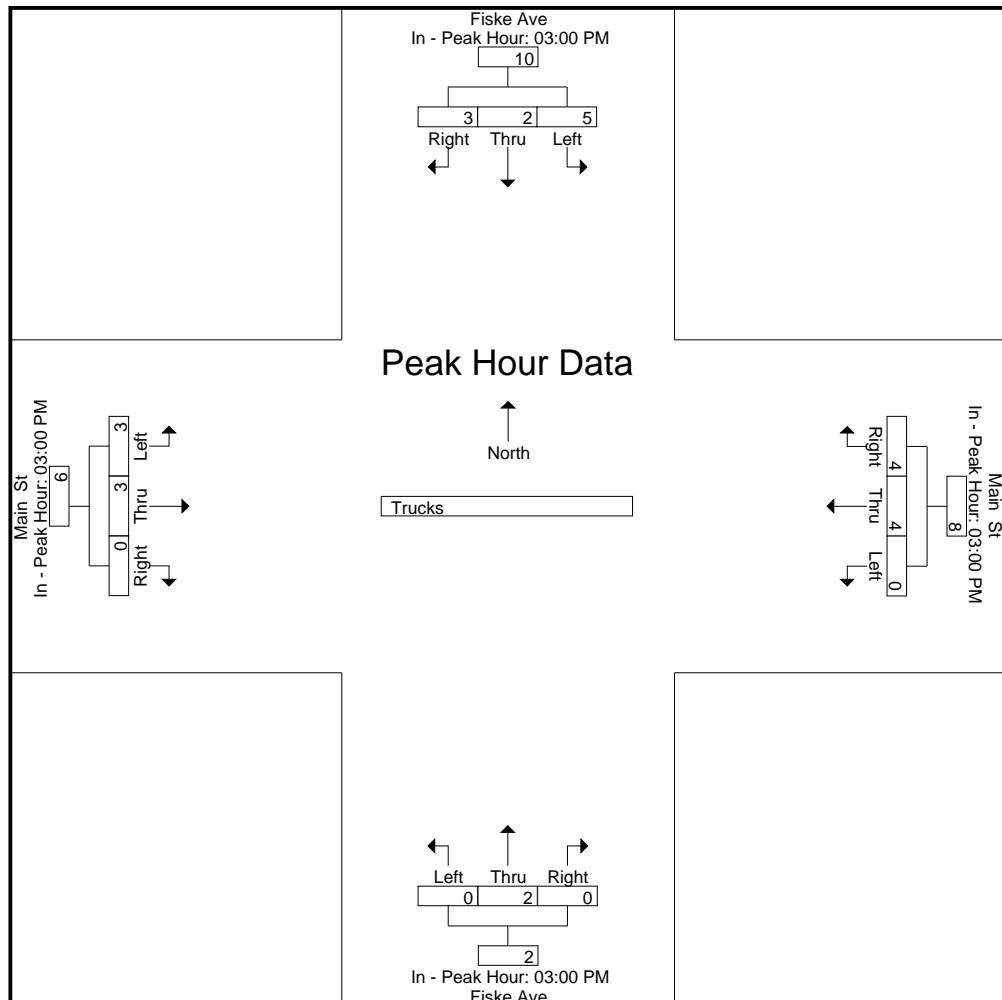
Peak Hour for Each Approach Begins at:

	03:00 PM				03:00 PM				03:00 PM				03:00 PM			
+0 mins.	0	0	0	0	0	2	2	4	0	1	0	1	1	1	0	2
+15 mins.	4	2	3	9	0	1	2	3	0	1	0	1	1	1	0	2
+30 mins.	1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	2
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	5	2	3	10	0	4	4	8	0	2	0	2	3	3	0	6
% App. Total	50	20	30		0	50	50		0	100	0	0	50	50	0	
PHF	.313	.250	.250	.278	.000	.500	.500	.500	.000	.500	.000	.500	.750	.750	.000	.750

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

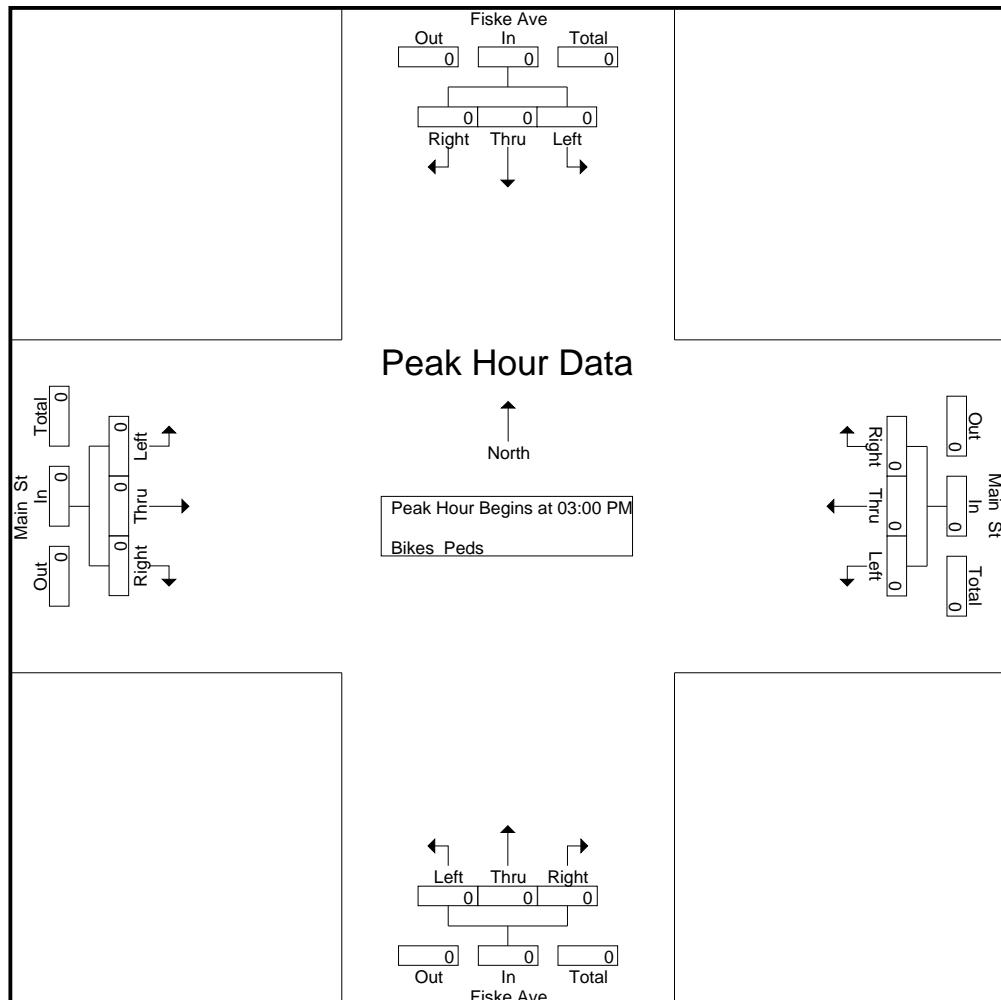
File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 10

Groups Printed- Bikes Peds

	Fiske Ave From North				Main St From East				Fiske Ave From South				Main St From West							
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Excl. Total	Incl. Total	Int. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	2	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	6	0	6
Apprch %	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	100	0	0

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 11



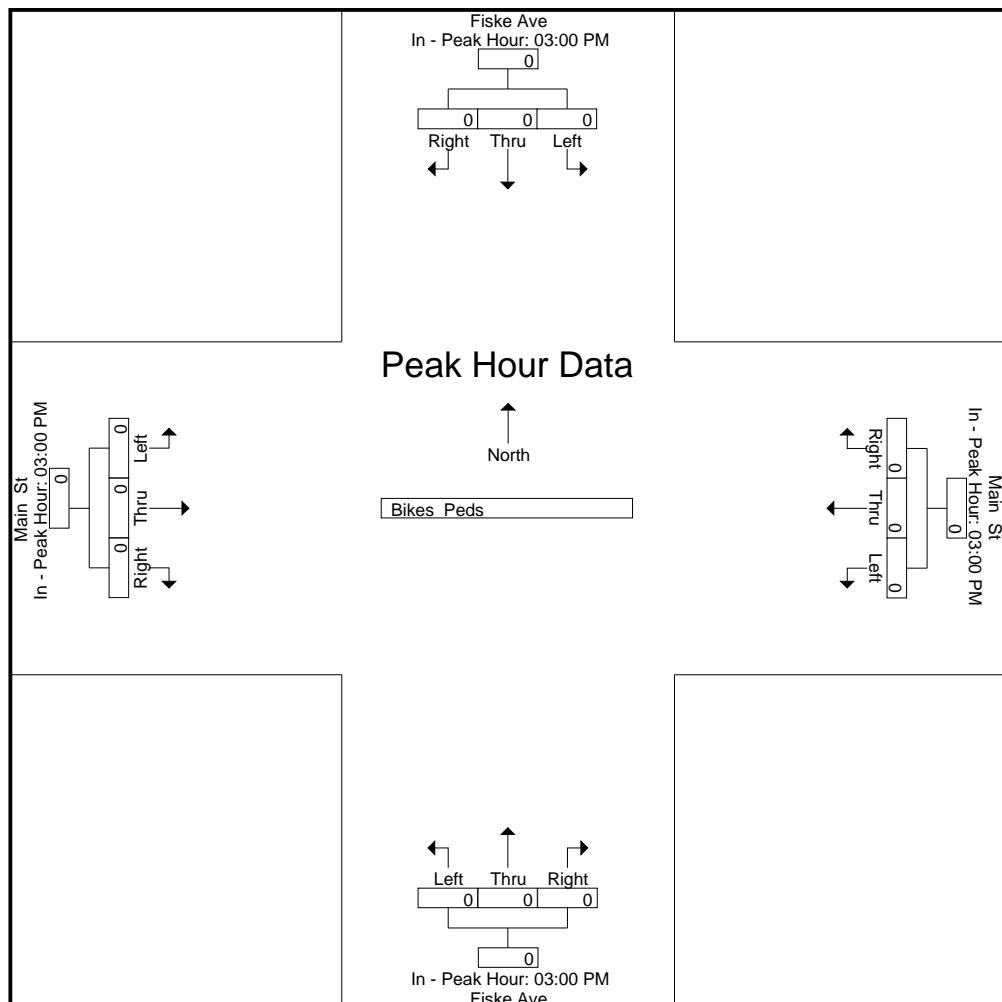
Peak Hour Analysis From 03:00 PM to 06:00 PM - Peak 1 of 1

Peak Hour Analysis From 03:00 PM to 06:00 PM

Accurate Counts
978-664-2565

N/S Street : Fiske Avenue
E/W Street : Main Street
City/State : Upton, MA
Weather : Cloudy

File Name : 95680001
Site Code : 95680001
Start Date : 1/10/2024
Page No : 12



SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department
 Statewide Traffic Data Collection
 2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations

7014, 7079, 7080, 7090, 7091, 7092, 7093, 7094, 7095, 7096, 7097, 7108 and 7178), Martha's Vineyard and Nantucket.

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

1066, 1067, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1113, 1114, 1116, 2196, 2197 and 2198.

VEHICLE TRAVEL SPEED DATA

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: WB

95680001

1/11/2023	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
Time														
12:00 AM	0	0	3	1	6	1	0	0	0	0	0	0	0	11
1:00	0	1	0	3	1	1	1	0	0	0	0	0	0	7
2:00	0	1	0	2	0	1	2	0	0	0	0	0	0	6
3:00	0	2	2	1	2	1	0	0	0	0	0	0	0	8
4:00	0	0	0	1	5	1	1	0	0	0	0	0	0	8
5:00	0	1	1	4	14	7	4	1	0	0	0	0	0	32
6:00	0	2	4	34	39	23	2	0	0	0	0	0	0	104
7:00	5	5	16	59	111	36	4	1	0	0	0	0	0	237
8:00	2	2	18	53	103	45	2	0	0	0	0	0	0	225
9:00	0	6	19	45	70	19	1	1	0	0	0	0	0	161
10:00	0	2	13	55	72	24	1	0	0	0	0	0	0	167
11:00	1	2	14	49	76	32	3	0	0	0	0	0	0	177
12:00 PM	0	1	14	47	73	30	2	0	0	0	0	0	0	167
1:00	0	8	8	47	83	32	1	0	0	0	0	0	0	179
2:00	0	2	11	64	101	25	4	0	0	0	0	0	0	207
3:00	1	4	23	88	134	49	2	0	0	0	0	0	0	301
4:00	0	4	18	91	122	43	2	0	0	0	0	0	0	280
5:00	1	2	13	99	107	18	0	0	0	0	0	0	0	240
6:00	0	1	10	42	74	20	0	0	0	0	0	0	0	147
7:00	0	1	7	29	57	13	0	0	0	0	0	0	0	107
8:00	1	0	4	20	39	12	2	0	0	0	0	0	0	78
9:00	0	0	1	13	30	15	1	0	0	0	0	0	0	60
10:00	0	0	1	10	14	2	1	0	0	0	0	0	0	28
11:00	0	0	2	3	15	11	0	0	0	0	0	0	0	31
Total	11	47	202	860	1348	461	36	3	0	0	0	0	0	2968
Percentile Speed				15th	50th	85th	95th							
Mean Speed (Average)				31.0										
10 MPH Pace Speed				25-34										
Number in Pace				2185										
Percent in Pace				73.6%										
Number > 30 MPH				1848										
Percent > 30 MPH				62.3%										

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: WB

95680001

1/12/2023	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
Time														
12:00 AM	0	2	1	6	6	1	1	0	0	0	0	0	0	17
1:00	0	2	0	6	2	0	1	0	0	0	0	0	0	11
2:00	0	0	1	0	1	1	0	0	0	0	0	0	0	3
3:00	0	0	0	0	5	2	0	0	0	0	0	0	0	7
4:00	0	1	0	3	6	3	1	0	0	0	0	0	0	14
5:00	0	0	2	7	16	10	0	0	0	0	0	0	0	35
6:00	0	1	7	33	46	22	1	0	0	0	0	0	0	110
7:00	1	1	23	59	91	22	4	0	0	0	0	0	0	201
8:00	2	7	24	69	88	34	4	0	0	0	0	0	0	228
9:00	0	6	13	42	63	27	3	0	0	0	0	0	0	154
10:00	0	4	4	51	59	23	4	0	0	0	0	0	0	145
11:00	0	1	12	50	79	32	3	0	0	0	0	0	0	177
12:00 PM	1	2	11	43	79	23	6	0	0	0	0	0	0	165
1:00	0	3	6	52	82	24	1	0	0	0	0	0	0	168
2:00	0	1	22	70	84	20	2	0	0	0	0	0	0	199
3:00	1	1	19	105	119	24	1	0	0	0	0	0	0	270
4:00	0	2	23	116	119	22	2	0	0	0	0	0	0	284
5:00	2	1	35	91	79	12	1	0	0	0	0	0	0	221
6:00	0	0	13	53	80	11	3	0	0	0	0	0	0	160
7:00	0	1	7	45	54	7	0	0	0	0	0	0	0	114
8:00	0	3	7	18	28	6	2	0	0	0	0	0	0	64
9:00	0	2	6	23	22	2	1	0	0	0	0	0	0	56
10:00	0	0	1	15	9	3	0	0	0	0	0	0	0	28
11:00	0	0	0	1	5	0	0	0	0	0	0	0	0	6
Total	7	41	237	958	1222	331	41	0	0	0	0	0	0	2837
Percentile Speed				15th	50th	85th	95th							
Mean Speed (Average)				30.5										
10 MPH Pace Speed				25-34										
Number in Pace				2160										
Percent in Pace				76.1%										
Number > 30 MPH				1594										
Percent > 30 MPH				56.2%										
Grand Total	18	88	439	1818	2570	792	77	3	0	0	0	0	0	5805
Percentile Speed				15th	50th	85th	95th							
Mean Speed (Average)				30.7										
10 MPH Pace Speed				25-34										
Number in Pace				4345										
Percent in Pace				74.8%										
Number > 30 MPH				3442										
Percent > 30 MPH				59.3%										

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: EB

95680001

1/11/2023	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
Time														
12:00 AM	0	0	1	4	1	0	1	0	0	0	0	0	0	7
1:00	0	0	0	0	1	1	0	0	0	0	0	0	0	2
2:00	0	0	0	1	1	0	0	0	0	0	0	0	0	2
3:00	0	0	1	4	4	0	1	0	0	0	0	0	0	10
4:00	0	0	1	8	6	1	0	0	0	0	0	0	0	16
5:00	2	0	3	16	21	8	1	0	0	0	0	0	0	51
6:00	0	2	10	49	54	8	0	0	0	0	0	0	0	123
7:00	2	4	38	131	102	26	1	1	0	0	0	0	0	305
8:00	0	4	37	96	74	22	3	0	0	0	0	0	0	236
9:00	0	4	27	64	76	7	2	0	0	0	0	0	0	180
10:00	2	2	35	74	52	13	1	0	0	0	0	0	0	179
11:00	0	12	22	69	67	18	0	0	0	0	0	0	0	188
12:00 PM	0	3	16	71	55	10	0	0	0	0	0	0	0	155
1:00	0	0	16	71	64	14	3	1	0	0	0	0	0	169
2:00	0	2	23	96	60	16	0	0	0	0	0	0	0	197
3:00	8	15	59	93	54	5	0	0	0	0	0	0	0	234
4:00	3	13	48	106	92	14	2	0	0	0	0	0	0	278
5:00	0	4	27	107	55	6	0	0	0	0	0	0	0	199
6:00	0	1	25	58	48	10	0	0	0	0	0	0	0	142
7:00	0	1	11	43	42	9	1	0	0	0	0	0	0	107
8:00	0	0	7	29	15	5	0	0	0	0	0	0	0	56
9:00	0	1	4	16	12	2	1	0	0	0	0	0	0	36
10:00	0	0	1	11	11	3	0	0	0	0	0	0	0	26
11:00	0	0	1	4	6	2	1	0	0	0	0	0	0	14
Total	17	68	413	1221	973	200	18	2	0	0	0	0	0	2912
Percentile Speed				15th	50th	85th	95th							
Mean Speed (Average)				29.0										
10 MPH Pace Speed				25-34										
Number in Pace				2183										
Percent in Pace				75.0%										
Number > 30 MPH				1193										
Percent > 30 MPH				41.0%										

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: EB

95680001

1/12/2023 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	2	3	1	0	0	0	0	0	0	0	6
1:00	0	0	0	1	1	1	0	0	0	0	0	0	0	3
2:00	0	0	0	5	3	1	0	0	0	0	0	0	0	9
3:00	0	0	0	3	2	2	1	0	0	0	0	0	0	8
4:00	0	0	2	1	3	5	0	0	0	0	0	0	0	11
5:00	0	0	5	21	15	9	0	0	0	0	0	0	0	50
6:00	0	1	15	40	47	14	0	0	0	0	0	0	0	117
7:00	0	7	53	134	84	24	0	0	0	0	0	0	0	302
8:00	0	2	41	103	77	10	3	0	0	0	0	0	0	236
9:00	0	1	26	84	59	15	0	0	0	0	0	0	0	185
10:00	0	0	14	64	56	16	2	0	0	0	0	0	0	152
11:00	0	3	29	61	57	8	2	0	0	0	0	0	0	160
12:00 PM	0	3	31	82	58	18	3	1	0	0	0	0	0	196
1:00	0	6	20	73	62	12	3	0	0	0	0	0	0	176
2:00	2	2	25	88	71	19	1	0	0	0	0	0	0	208
3:00	5	4	38	86	72	14	0	0	0	0	0	0	0	219
4:00	0	3	40	116	75	13	2	0	0	0	0	0	0	249
5:00	0	1	33	88	65	11	1	0	0	0	0	0	0	199
6:00	0	3	22	60	59	8	6	0	0	0	0	0	0	158
7:00	0	2	9	30	30	1	1	0	0	0	0	0	0	73
8:00	0	0	6	17	26	6	1	0	0	0	0	0	0	56
9:00	0	0	3	15	17	7	0	0	0	0	0	0	0	42
10:00	0	0	1	14	11	6	0	0	0	0	0	0	0	32
11:00	0	0	1	1	1	1	0	0	0	0	0	0	0	4
Total	7	38	414	1189	954	222	26	1	0	0	0	0	0	2851

Percentile Speed
15th 25
50th 30
85th 34
95th 37

Mean Speed (Average) 29.2
10 MPH Pace Speed 25-34
Number in Pace 2132
Percent in Pace 74.8%

Number > 30 MPH 1203
Percent > 30 MPH 42.2%

Grand Total	24	106	827	2410	1927	422	44	3	0	0	0	0	0	5763
				Percentile Speed	15th 25	50th 30	85th 34	95th 37						
				Mean Speed (Average)	29.1									
				10 MPH Pace Speed	25-34									
				Number in Pace	4315									
				Percent in Pace	74.9%									
				Number > 30 MPH	2396									
				Percent > 30 MPH	41.6%									

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: Combined

95680001

1/11/2023	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	4	5	7	1	1	0	0	0	0	0	0	18
1:00	0	1	0	3	2	2	1	0	0	0	0	0	0	9
2:00	0	1	0	3	1	1	2	0	0	0	0	0	0	8
3:00	0	2	3	5	6	1	1	0	0	0	0	0	0	18
4:00	0	0	1	9	11	2	1	0	0	0	0	0	0	24
5:00	2	1	4	20	35	15	5	1	0	0	0	0	0	83
6:00	0	4	14	83	93	31	2	0	0	0	0	0	0	227
7:00	7	9	54	190	213	62	5	2	0	0	0	0	0	542
8:00	2	6	55	149	177	67	5	0	0	0	0	0	0	461
9:00	0	10	46	109	146	26	3	1	0	0	0	0	0	341
10:00	2	4	48	129	124	37	2	0	0	0	0	0	0	346
11:00	1	14	36	118	143	50	3	0	0	0	0	0	0	365
12:00 PM	0	4	30	118	128	40	2	0	0	0	0	0	0	322
1:00	0	8	24	118	147	46	4	1	0	0	0	0	0	348
2:00	0	4	34	160	161	41	4	0	0	0	0	0	0	404
3:00	9	19	82	181	188	54	2	0	0	0	0	0	0	535
4:00	3	17	66	197	214	57	4	0	0	0	0	0	0	558
5:00	1	6	40	206	162	24	0	0	0	0	0	0	0	439
6:00	0	2	35	100	122	30	0	0	0	0	0	0	0	289
7:00	0	2	18	72	99	22	1	0	0	0	0	0	0	214
8:00	1	0	11	49	54	17	2	0	0	0	0	0	0	134
9:00	0	1	5	29	42	17	2	0	0	0	0	0	0	96
10:00	0	0	2	21	25	5	1	0	0	0	0	0	0	54
11:00	0	0	3	7	21	13	1	0	0	0	0	0	0	45
Total	28	115	615	2081	2321	661	54	5	0	0	0	0	0	5880
Percentile Speed				15th	50th	85th	95th							
Mean Speed (Average)				30.0										
10 MPH Pace Speed				25-34										
Number in Pace				4368										
Percent in Pace				74.3%										
Number > 30 MPH				3041										
Percent > 30 MPH				51.7%										

Accurate Counts
978-664-2565

Location : Main Street
Location : West of School Street
City/State: Upton, MA
Direction: Combined

95680001

1/12/2023	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	2	1	8	9	2	1	0	0	0	0	0	0	23
1:00	0	2	0	7	3	1	1	0	0	0	0	0	0	14
2:00	0	0	1	5	4	2	0	0	0	0	0	0	0	12
3:00	0	0	0	3	7	4	1	0	0	0	0	0	0	15
4:00	0	1	2	4	9	8	1	0	0	0	0	0	0	25
5:00	0	0	7	28	31	19	0	0	0	0	0	0	0	85
6:00	0	2	22	73	93	36	1	0	0	0	0	0	0	227
7:00	1	8	76	193	175	46	4	0	0	0	0	0	0	503
8:00	2	9	65	172	165	44	7	0	0	0	0	0	0	464
9:00	0	7	39	126	122	42	3	0	0	0	0	0	0	339
10:00	0	4	18	115	115	39	6	0	0	0	0	0	0	297
11:00	0	4	41	111	136	40	5	0	0	0	0	0	0	337
12:00 PM	1	5	42	125	137	41	9	1	0	0	0	0	0	361
1:00	0	9	26	125	144	36	4	0	0	0	0	0	0	344
2:00	2	3	47	158	155	39	3	0	0	0	0	0	0	407
3:00	6	5	57	191	191	38	1	0	0	0	0	0	0	489
4:00	0	5	63	232	194	35	4	0	0	0	0	0	0	533
5:00	2	2	68	179	144	23	2	0	0	0	0	0	0	420
6:00	0	3	35	113	139	19	9	0	0	0	0	0	0	318
7:00	0	3	16	75	84	8	1	0	0	0	0	0	0	187
8:00	0	3	13	35	54	12	3	0	0	0	0	0	0	120
9:00	0	2	9	38	39	9	1	0	0	0	0	0	0	98
10:00	0	0	2	29	20	9	0	0	0	0	0	0	0	60
11:00	0	0	1	2	6	1	0	0	0	0	0	0	0	10
Total	14	79	651	2147	2176	553	67	1	0	0	0	0	0	5688
	Percentile Speed		15th	50th	85th	95th								
	Mean Speed (Average)		29.9											
	10 MPH Pace Speed		25-34											
	Number in Pace		4292											
	Percent in Pace		75.5%											
	Number > 30 MPH		2797											
	Percent > 30 MPH		49.2%											
Grand Total	42	194	1266	4228	4497	1214	121	6	0	0	0	0	0	11568
	Percentile Speed		15th	50th	85th	95th								
	Mean Speed (Average)		29.9											
	10 MPH Pace Speed		25-34											
	Number in Pace		8660											
	Percent in Pace		74.9%											
	Number > 30 MPH		5838											
	Percent > 30 MPH		50.5%											

MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Upton COUNT DATE : 1/11/2023

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street (Route 140)

MINOR STREET(S) : School Street

Pleasant Street

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM) :	322	104	325	380		1,131

" K " FACTOR : 0.090 INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME : 12,567

TOTAL # OF CRASHES : 22 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (A) : 4.40

CRASH RATE CALCULATION : 0.96 RATE =
$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : Above MassDOT Statewide and District Average Crash Rates

Project Title & Date: 9568 - Proposed Multifamily Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Upton COUNT DATE : 1/11/2023

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street (Route 140)

MINOR STREET(S) : Mendon Street

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM) :	125		475	288		888

" K " FACTOR : 0.090 INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME : 9,867

TOTAL # OF CRASHES : 4 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (A) : 0.80

CRASH RATE CALCULATION : 0.22 RATE =
$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : Below MassDOT Statewide and District Average Crash Rates

Project Title & Date: 9568 - Proposed Multifamily Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Upton COUNT DATE : 1/10/2024

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street (Route 140)

MINOR STREET(S) : Fiske Avenue

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM) :	9	25	318	259		611

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

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

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

Comments : Below MassDOT Statewide and District Average Crash Rates

Project Title & Date: 9568 - Proposed Multifamily Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Upton COUNT DATE : 1/11/2023

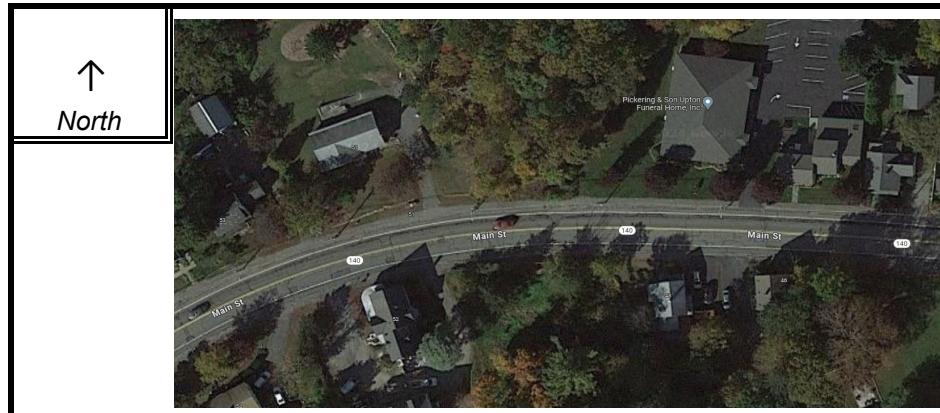
DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street (Route 140)

MINOR STREET(S) : Proposed Project Site Driveway

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM) :	0	0	325	258		583

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

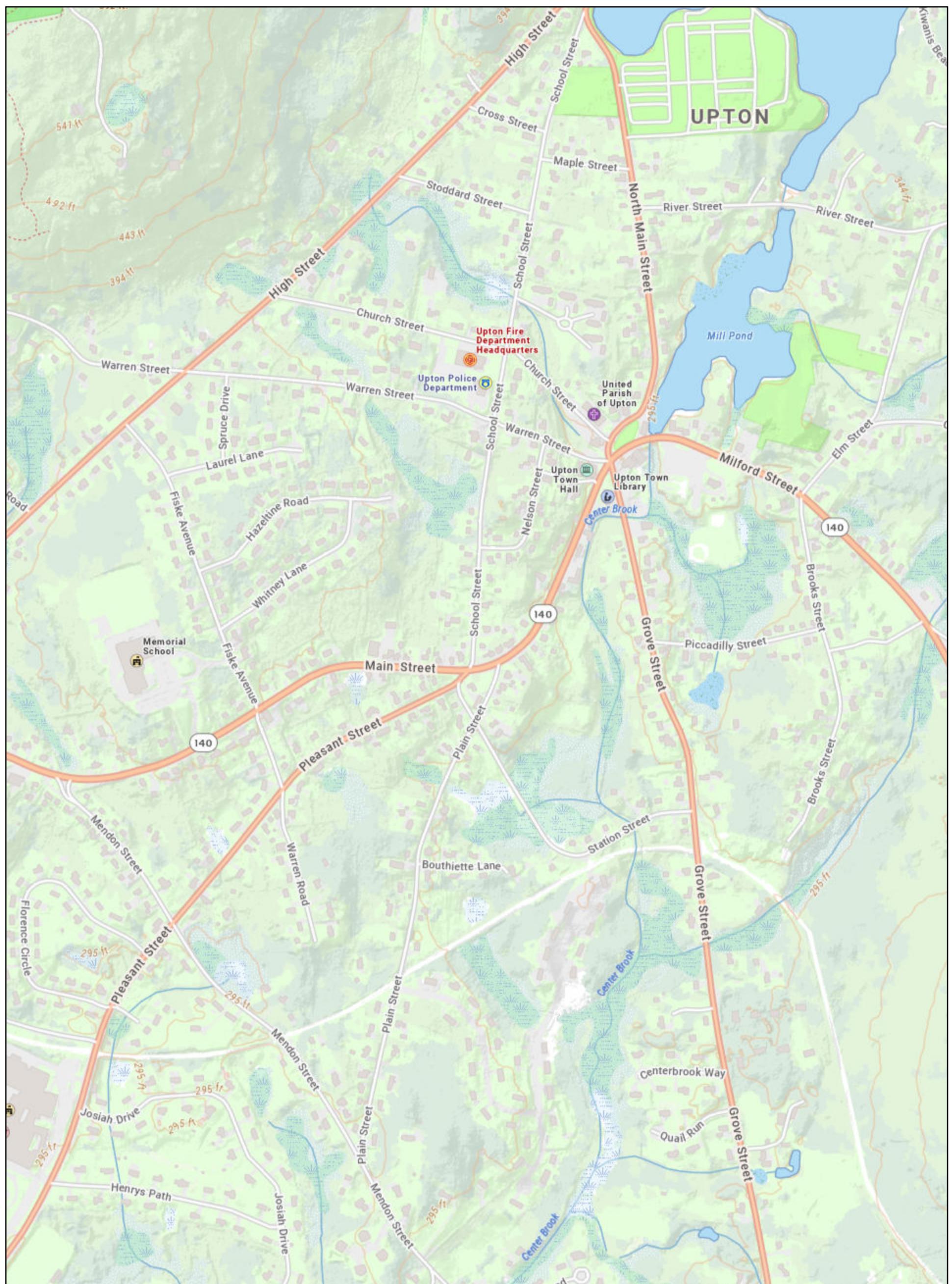
TOTAL # OF CRASHES : # OF YEARS : AVERAGE # OF CRASHES PER YEAR (A) :

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

Comments : Below MassDOT Statewide and District Average Crash Rates

Project Title & Date: 9568 - Proposed Multifamily Residential Development

MassDOT Top Crash Locations



4/12/2023, 10:49:20 AM

1:9,028

A number line representing distance. The top part shows labels 0, 0.05, 0.1, and 0.2 mi above tick marks. The bottom part shows labels 0, 0.1, 0.2, and 0.4 km below tick marks. The line is marked with tick marks at intervals of 0.05 km, starting from 0 and ending at 0.4 km.

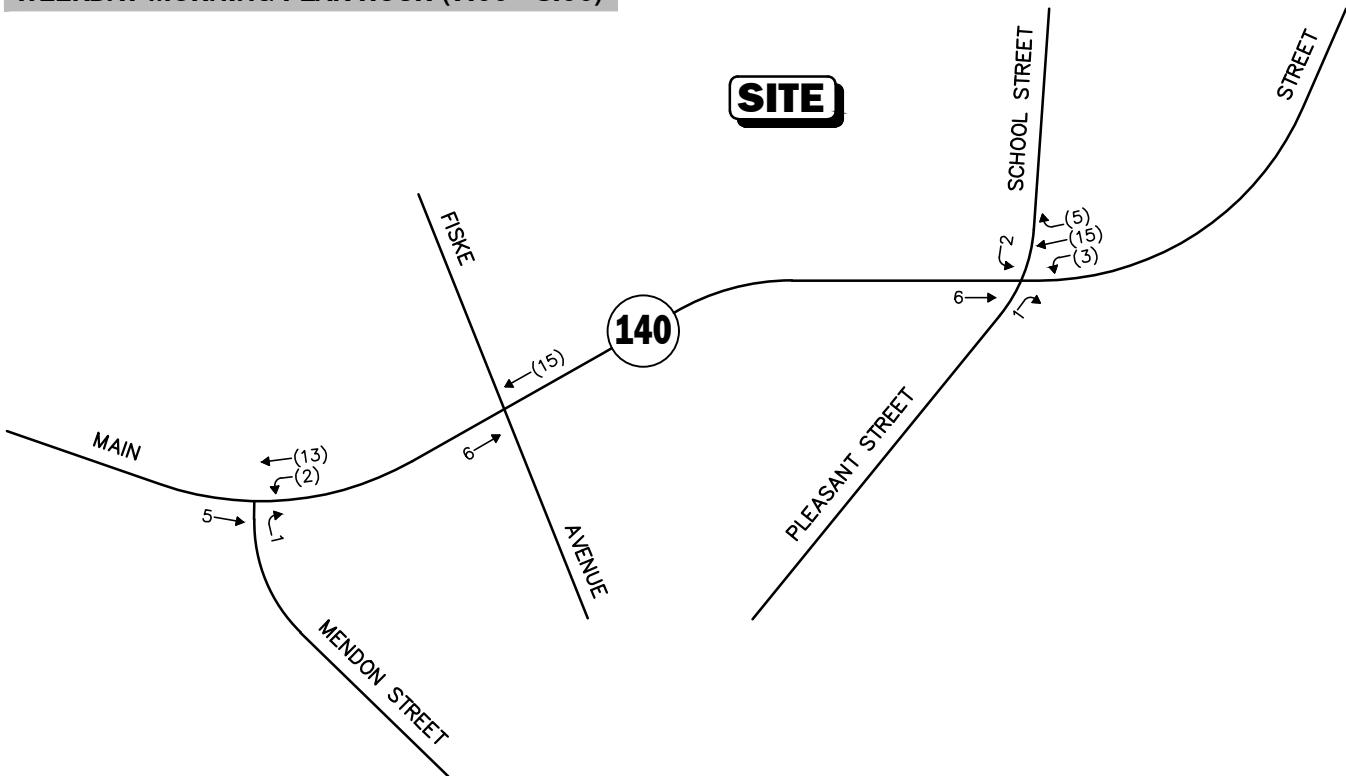
GENERAL BACKGROUND TRAFFIC GROWTH

General Background Traffic Growth - Daily Traffic Volumes

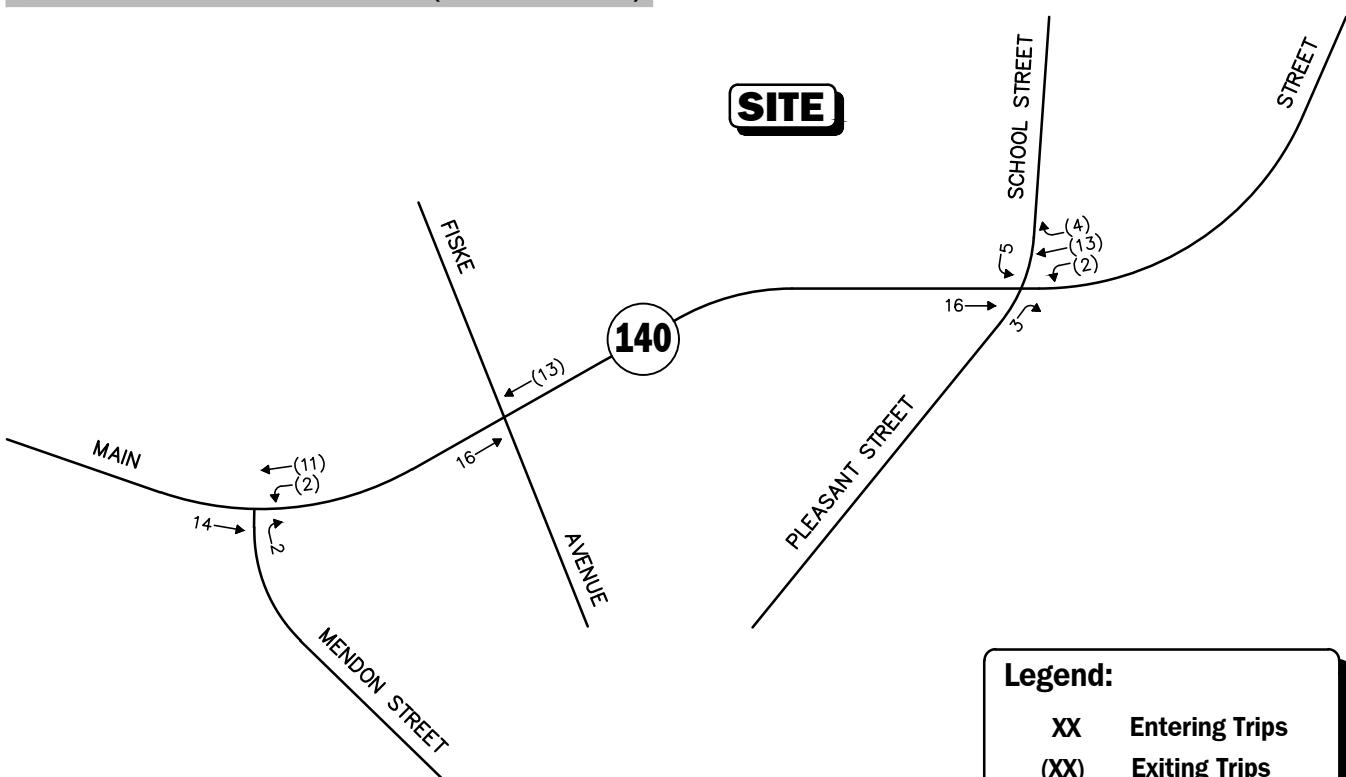
CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth	
Upton	Maple Avenue	west of Route 140 (Main Street)						6,040	6,179	6,562	6,409	6,428	6,402	1.21%	
Upton	Mendon Street	east of Pleasant Street										5,365	5,344	-0.39%	
Upton	Williams Street	west of West Main Street						3,773	3,860	4,099	4,169	4,182	4,165	2.02%	
Upton	Pleasant Street	east of Maple Street										5,015	4,995	-0.40%	
Upton	School Street	north of Route 140										2,620	2,628	2.617	-0.06%
Upton	Hartford Avenue	east of Route 140						11,379	11,641	12,363	12,573	12,611	12,531	1.97%	
Upton	Pleasant Street	south of Route 140						4,212	4,309	4,576	4,654	4,668	4,649	2.02%	
Upton	Main Street	south of Williams Street						10,179	10,291	10,425	10,540	10,688	10,731	1.06%	
Upton	Grove Street	south of Main Street						1,914	1,958	2,079	2,114	2,120	2,112	2.01%	
Upton	Main Street	west of Grove Street						6,567	6,639	6,725	6,799	6,894	6,922	1.06%	
Upton	Westboro Road	north of Hopkington Road						4,014	4,106	4,361	4,435	4,448	4,430	2.02%	
Upton	Milford Street (Route 140)	west of Elm Street	8,665	9,000	9,116	9,266	9,062	8,780	8,877	9,395	9,498	9,361	9,670	1.14%	
Upton	Main Street	south of Maple Avenue										7,921	8,032	0.90%	
Upton	High Street	west of School Street											13,862	13,807	-0.40%
Upton	North Main Street	south of School Street											2,688	2,677	-0.41%
Upton	Mendon Street	south of Route 140						2,333	2,387				2,544	2,534	0.96%
														0.92%	

BACKGROUND DEVELOPMENT NETWORKS

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Not To Scale

Legend:

XX Entering Trips
(XX) Exiting Trips

Figure A-1

Proposed Residential Development
Governor's Landing
Peak-Hour Traffic Volumes

TRIP-GENERATION CALCUALTIONS



Graph Look Up

Query

Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

221



LAND USE GROUP:

(200-299) Residential

LAND USE :

221 - Multifamily Housing (Mid-Rise)

LAND USE SUBCATEGORY:

Not Close to Rail Transit

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Weekday

TRIP TYPE:

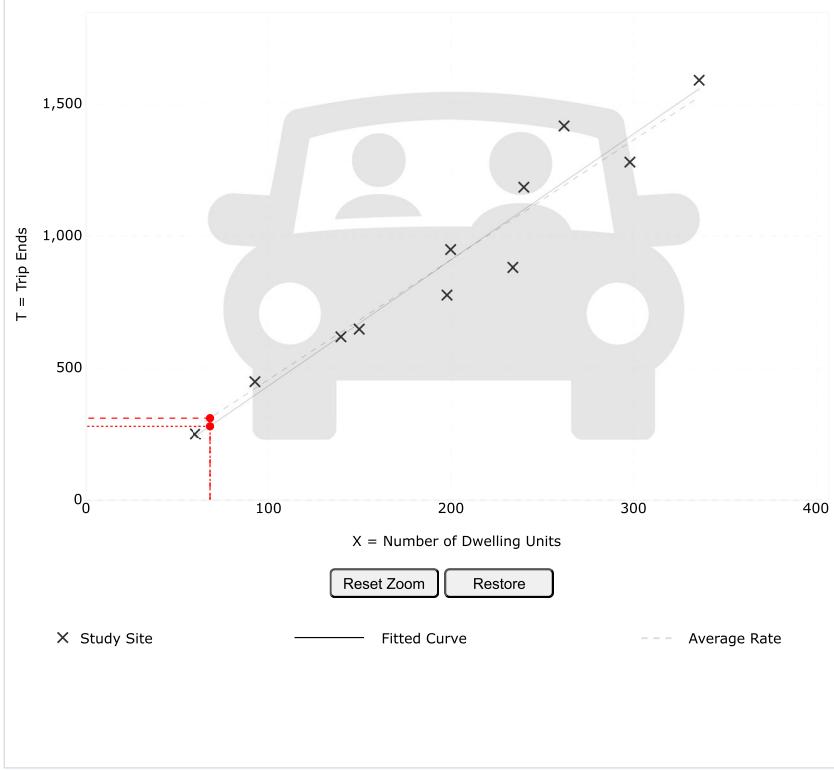
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use:

Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) [Click for Description and Data Plots](#)

Independent Variable:

Dwelling Units

Time Period:

Weekday

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

11

Avg. Num. of Dwelling Units:

201

Average Rate:

4.54

Range of Rates:

3.76 - 5.40

Standard Deviation:

0.51

Fitted Curve Equation:

$T = 4.77(X) - 46.46$

R²:

0.93

Directional Distribution:

50% entering, 50% exiting

Calculated Trip Ends:

Average Rate: 309 (Total), 154 (Entry), 155 (Exit)
Fitted Curve: 278 (Total), 139 (Entry), 139 (Exit)

 Add-ons to do more

 Try OTISS Pro



Graph Look Up

 Query

 Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

221



LAND USE GROUP:

(200-299) Residential

LAND USE :

221 - Multifamily Housing (Mid-Rise)

LAND USE SUBCATEGORY:

Not Close to Rail Transit

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

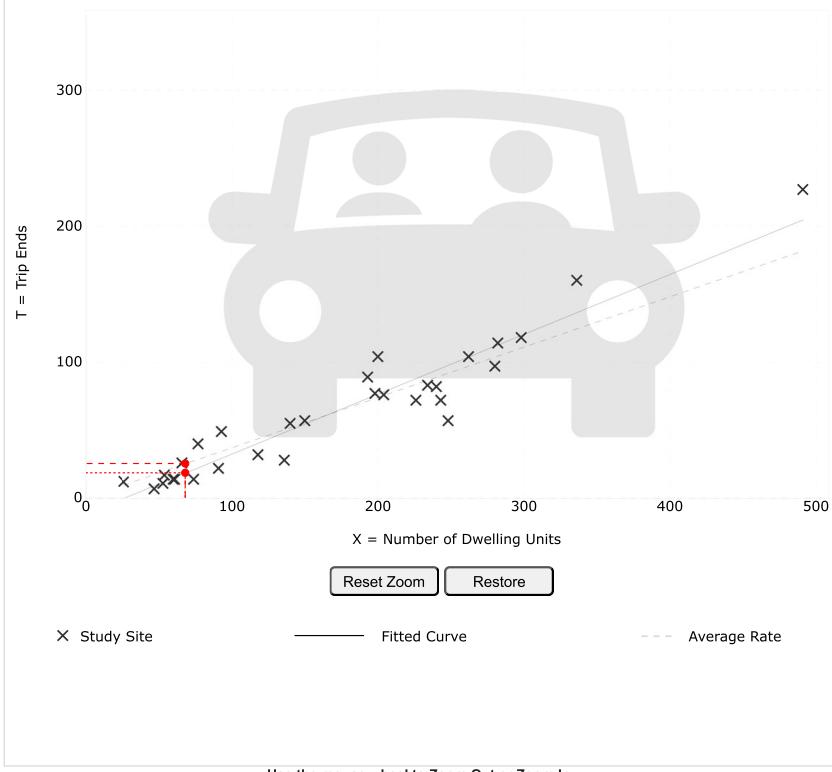
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use:

Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) [Click for Description and Data Plots](#)

Independent Variable:

Dwelling Units

Time Period:

Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

30

Avg. Num. of Dwelling Units:

173

Average Rate:

0.37

Range of Rates:

0.15 - 0.53

Standard Deviation:

0.09

Fitted Curve Equation:

$T = 0.44(X) - 11.61$

R²:

0.91

Directional Distribution:

23% entering, 77% exiting

Calculated Trip Ends:

Average Rate: 25 (Total), 6 (Entry), 19 (Exit)
Fitted Curve: 18 (Total), 4 (Entry), 14 (Exit)



Graph Look Up

Query 

DATA SOURCE:

SEARCH BY LAND USE CODE: 

LAND USE GROUP:

LAND USE:

LAND USE SUBCATEGORY:

SETTING/LOCATION:

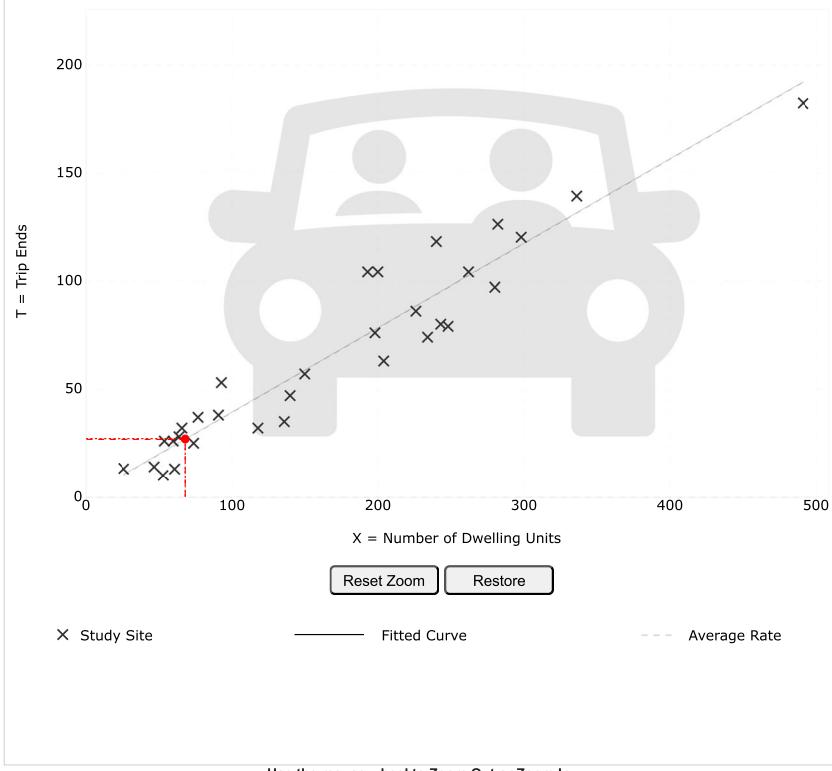
INDEPENDENT VARIABLE (IV):

TIME PERIOD:

TRIP TYPE:

ENTER IV VALUE TO CALCULATE TRIPS:

Data Plot and Equation



DATA STATISTICS

Land Use:

Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) [Click for Description and Data Plots](#)

Independent Variable:

Dwelling Units

Time Period:

Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

31

Avg. Num. of Dwelling Units:

169

Average Rate:

0.39

Range of Rates:

0.19 - 0.57

Standard Deviation:

0.08

Fitted Curve Equation:

$T = 0.39(X) + 0.34$

R²:

0.91

Directional Distribution:

61% entering, 39% exiting

Calculated Trip Ends:

Average Rate: 27 (Total), 16 (Entry), 11 (Exit)
Fitted Curve: 27 (Total), 16 (Entry), 11 (Exit)

TRIP-DISTRIBUTION DATA

Proposed Multifamily Residential Development

Upton, Massachusetts

Residence	Workplace	Number	Route 140 (East)		Route 140 (West)		Mendon Street (South)		School Street (North)		Pleasant Street (South)	
Upton town	Upton town	688	40%	275		0	20%	138		0	40%	275
Upton town	Boston city	363	25%	91	50%	182		0	25%	91		0
Upton town	Framingham town	281	25%	70	50%	141		0	25%	70		0
Upton town	Milford town	269	75%	202		0	25%	67		0		0
Upton town	Worcester city	236		0	100%	236		0		0		0
Upton town	Hopkinton town	188	25%	47	50%	94		0	25%	47		0
Upton town	Westborough town	164	25%	41	50%	82		0	50%	82		0
Upton town	Natick town	162	25%	41	50%	81		0	25%	41		0
Upton town	Marlborough city	152	25%	38	50%	76		0	25%	38		0
Upton town	Franklin Town city	116	100%	116		0		0		0		0
Upton town	Ashland town	111	25%	28	50%	56		0	25%	28		0
Upton town	Holliston town	69	25%	17	50%	35		0	25%	17		0
Upton town	Sudbury town	69	25%	17	50%	35		0	25%	17		0
Upton town	Grafton town	64		0	100%	64		0		0		0
Upton town	Hopedale town	57	75%	43		0	25%	14		0		0
Upton town	Burlington town	49	25%	12	50%	25		0	25%	12		0
Upton town	Foxborough town	49	25%	12	50%	25		0	25%	12		0
Upton town	Mendon town	45		0		0	100%	45		0		0
Upton town	Northbridge town	41		0		0		0		0	100%	41
Upton town	Waltham city	39	25%	10	50%	20		0	25%	10		0
Upton town	Leominster city	38		0	100%	38		0		0		0
Upton town	Auburn town	36		0	100%	36		0		0		0
Upton town	Littleton town	35	25%	9	50%	18		0	25%	9		0
Upton town	Shrewsbury town	35	25%	9	75%	26		0		0		0
Upton town	Newton city	33	25%	8	50%	17		0	25%	8		0
Upton town	Holden town	33		0	100%	33		0		0		0
Upton town	Southborough town	33	25%	8	50%	17		0	25%	8		0
Upton town	Billerica town	29	25%	7	50%	15		0	25%	7		0
Upton town	Northborough town	28	25%	7	75%	21		0		0		0
Upton town	Charlton town	25		0	50%	13		0		0	50%	13
Upton town	North Attleborough tow	24	100%	24		0		0		0		0
Upton town	Cambridge city	24	25%	6	50%	12		0	25%	6		0
Upton town	Bedford town	21	25%	5	50%	11		0	25%	5		0
Upton town	Gardner city	21		0	100%	21		0		0		0
Upton town	Wellesley town	20	25%	5	50%	10		0	25%	5		0
Upton town	Fitchburg city	20	50%	10	50%	10		0		0		0
Upton town	Haverhill city	19	25%	5	50%	10		0	25%	5		0
		3,686			1,163			1,453			264	519
					31.6%			39.4%			7.2%	14.1%
		<u>SAY</u>			31%			39%			7%	14%
												8.9%
												9%

CAPACITY ANALYSIS WORKSHEETS

Route 140 at School Street and Pleasant Street
Route 140 at Mendon Street
Route 140 at the Project Site Driveway
Route 140 at Fiske Avenue

Route 140 at School Street and Pleasant Street

Intersection																
Int Delay, s/veh	130.8															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Vol, veh/h	10	314	1	133	230	17	9	175	138	5	80	19				
Future Vol, veh/h	10	314	1	133	230	17	9	175	138	5	80	19				
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop				
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None				
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-				
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-				
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-				
Peak Hour Factor	75	75	75	63	63	63	87	87	87	82	82	82				
Heavy Vehicles, %	0	1	0	3	1	0	0	1	5	20	1	0				
Mvmt Flow	13	419	1	211	365	27	10	201	159	6	98	23				
Major/Minor	Major1		Major2		Minor1		Minor2									
Conflicting Flow All	392	0	0	420	0	0	1307	1260	420	1427	1247	379				
Stage 1	-	-	-	-	-	-	446	446	-	801	801	-				
Stage 2	-	-	-	-	-	-	861	814	-	626	446	-				
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.51	6.25	7.3	6.51	6.2				
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-				
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-				
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4.009	3.345	3.68	4.009	3.3				
Pot Cap-1 Maneuver	1178	-	-	1134	-	-	138	~ 171	627	103	174	672				
Stage 1	-	-	-	-	-	-	595	576	-	353	398	-				
Stage 2	-	-	-	-	-	-	353	393	-	443	576	-				
Platoon blocked, %	-	-	-	-	-	-										
Mov Cap-1 Maneuver	1178	-	-	1134	-	-	44	~ 128	627	-	131	672				
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	~ 128	-	-	131	-				
Stage 1	-	-	-	-	-	-	587	568	-	348	303	-				
Stage 2	-	-	-	-	-	-	176	299	-	211	568	-				
Approach	EB		WB		NB		SB									
HCM Control Delay, s	0.2		3.1		\$ 536.5											
HCM LOS	F															
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1								
Capacity (veh/h)	180	1178	-	-	1134	-	-	-								
HCM Lane V/C Ratio	2.056	0.011	-	-	0.186	-	-	-								
HCM Control Delay (s)	\$ 536.5	8.1	0	-	8.9	0	-	-								
HCM Lane LOS	F	A	A	-	A	A	-	-								
HCM 95th %tile Q(veh)	28.6	0	-	-	0.7	-	-	-								
Notes																
~: Volume exceeds capacity	\$: Delay exceeds 300s			+: Computation Not Defined	*: All major volume in platoon											

Intersection																
Int Delay, s/veh	35															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Vol, veh/h	18	271	6	157	284	9	4	88	105	5	155	22				
Future Vol, veh/h	18	271	6	157	284	9	4	88	105	5	155	22				
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop				
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None				
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-				
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-				
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-				
Peak Hour Factor	66	66	66	95	95	95	94	94	94	81	81	81				
Heavy Vehicles, %	0	1	0	1	1	0	0	0	2	0	0	0				
Mvmt Flow	27	411	9	165	299	9	4	94	112	6	191	27				
Major/Minor	Major1		Major2		Minor1		Minor2									
Conflicting Flow All	308	0	0	420	0	0	1213	1108	416	1207	1108	304				
Stage 1	-	-	-	-	-	-	470	470	-	634	634	-				
Stage 2	-	-	-	-	-	-	743	638	-	573	474	-				
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.22	7.1	6.5	6.2				
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-				
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-				
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.318	3.5	4	3.3				
Pot Cap-1 Maneuver	1264	-	-	1145	-	-	160	212	637	162	212	740				
Stage 1	-	-	-	-	-	-	578	563	-	471	476	-				
Stage 2	-	-	-	-	-	-	410	474	-	508	561	-				
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-				
Mov Cap-1 Maneuver	1264	-	-	1145	-	-	-	170	637	65	~170	740				
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	170	-	65	~170	-				
Stage 1	-	-	-	-	-	-	562	547	-	458	393	-				
Stage 2	-	-	-	-	-	-	167	392	-	338	545	-				
Approach	EB		WB		NB		SB									
HCM Control Delay, s	0.5			3					203.6							
HCM LOS							-		F							
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1								
Capacity (veh/h)	-	1264	-	-	1145	-	-	179								
HCM Lane V/C Ratio	-	0.022	-	-	0.144	-	-	1.255								
HCM Control Delay (s)	-	7.9	0	-	8.7	0	-	203.6								
HCM Lane LOS	-	A	A	-	A	A	-	F								
HCM 95th %tile Q(veh)	-	0.1	-	-	0.5	-	-	12.5								
Notes																
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon													

Intersection																
Int Delay, s/veh	35															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Vol, veh/h	18	271	6	157	284	9	4	88	105	5	155	22				
Future Vol, veh/h	18	271	6	157	284	9	4	88	105	5	155	22				
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop				
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None				
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-				
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-				
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-				
Peak Hour Factor	66	66	66	95	95	95	94	94	94	81	81	81				
Heavy Vehicles, %	0	1	0	1	1	0	0	0	2	0	0	0				
Mvmt Flow	27	411	9	165	299	9	4	94	112	6	191	27				
Major/Minor	Major1		Major2		Minor1		Minor2									
Conflicting Flow All	308	0	0	420	0	0	1213	1108	416	1207	1108	304				
Stage 1	-	-	-	-	-	-	470	470	-	634	634	-				
Stage 2	-	-	-	-	-	-	743	638	-	573	474	-				
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.22	7.1	6.5	6.2				
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-				
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-				
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.318	3.5	4	3.3				
Pot Cap-1 Maneuver	1264	-	-	1145	-	-	160	212	637	162	212	740				
Stage 1	-	-	-	-	-	-	578	563	-	471	476	-				
Stage 2	-	-	-	-	-	-	410	474	-	508	561	-				
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-				
Mov Cap-1 Maneuver	1264	-	-	1145	-	-	-	170	637	65	~170	740				
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	170	-	65	~170	-				
Stage 1	-	-	-	-	-	-	562	547	-	458	393	-				
Stage 2	-	-	-	-	-	-	167	392	-	338	545	-				
Approach	EB		WB		NB		SB									
HCM Control Delay, s	0.5			3					203.6							
HCM LOS							-		F							
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1								
Capacity (veh/h)	-	1264	-	-	1145	-	-	179								
HCM Lane V/C Ratio	-	0.022	-	-	0.144	-	-	1.255								
HCM Control Delay (s)	-	7.9	0	-	8.7	0	-	203.6								
HCM Lane LOS	-	A	A	-	A	A	-	F								
HCM 95th %tile Q(veh)	-	0.1	-	-	0.5	-	-	12.5								
Notes																
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon													

Intersection																
Int Delay, s/veh	1.3															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Vol, veh/h	11	343	1	146	262	23	10	188	149	7	86	20				
Future Vol, veh/h	11	343	1	146	262	23	10	188	149	7	86	20				
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop				
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None				
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-				
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-				
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-				
Peak Hour Factor	75	75	75	63	63	63	87	87	87	82	82	82				
Heavy Vehicles, %	0	1	0	3	1	0	0	1	5	20	1	0				
Mvmt Flow	15	457	1	232	416	37	11	216	171	9	105	24				
Major/Minor	Major1		Major2		Minor1		Minor2									
Conflicting Flow All	453	0	0	458	0	0	1451	1405	458	1580	1387	435				
Stage 1	-	-	-	-	-	-	488	488	-	899	899	-				
Stage 2	-	-	-	-	-	-	963	917	-	681	488	-				
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.51	6.25	7.3	6.51	6.2				
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-				
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-				
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4.009	3.345	3.68	4.009	3.3				
Pot Cap-1 Maneuver	1118	-	-	1098	-	-	110	~140	597	80	144	625				
Stage 1	-	-	-	-	-	-	565	552	-	310	359	-				
Stage 2	-	-	-	-	-	-	310	352	-	412	552	-				
Platoon blocked, %	-	-	-	-	-	-										
Mov Cap-1 Maneuver	1118	-	-	1098	-	-	~98	597	-	~101	625					
Mov Cap-2 Maneuver	-	-	-	-	-	-	~98	-	-	~101	-					
Stage 1	-	-	-	-	-	-	555	542	-	304	257	-				
Stage 2	-	-	-	-	-	-	126	252	-	173	542	-				
Approach	EB		WB		NB		SB									
HCM Control Delay, s	0.3		3.1													
HCM LOS	-															
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1								
Capacity (veh/h)	-	1118	-	-	1098	-	-	-								
HCM Lane V/C Ratio	-	0.013	-	-	0.211	-	-	-								
HCM Control Delay (s)	-	8.3	0	-	9.2	0	-	-								
HCM Lane LOS	-	A	A	-	A	A	-	-								
HCM 95th %tile Q(veh)	-	0	-	-	0.8	-	-	-								
Notes																
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon													

Intersection												
Int Delay, s/veh	79.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	307	6	170	317	14	4	94	116	10	166	24
Future Vol, veh/h	19	307	6	170	317	14	4	94	116	10	166	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	95	95	95	94	94	94	81	81	81
Heavy Vehicles, %	0	1	0	1	1	0	0	0	2	0	0	0
Mvmt Flow	29	465	9	179	334	15	4	100	123	12	205	30
Major/Minor												
Major1		Major2			Minor1			Minor2				
Conflicting Flow All	349	0	0	474	0	0	1345	1235	470	1339	1232	342
Stage 1	-	-	-	-	-	-	528	528	-	700	700	-
Stage 2	-	-	-	-	-	-	817	707	-	639	532	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1221	-	-	1093	-	-	130	178	594	131	~ 179	705
Stage 1	-	-	-	-	-	-	538	531	-	433	444	-
Stage 2	-	-	-	-	-	-	373	441	-	468	529	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1221	-	-	1093	-	-	-	137	594	36	~ 138	705
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	137	-	36	~ 138	-
Stage 1	-	-	-	-	-	-	521	514	-	419	354	-
Stage 2	-	-	-	-	-	-	120	351	-	289	512	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s	0.5		3						\$ 475.8			
HCM LOS									F			
Minor Lane/Major Mvmt												
Capacity (veh/h)	-	1221	-	-	1093	-	-	-	132	-	-	-
HCM Lane V/C Ratio	-	0.024	-	-	0.164	-	-	-	1.871	-	-	-
HCM Control Delay (s)	-	8	0	-	8.9	0	-	\$ 475.8	-	-	-	-
HCM Lane LOS	-	A	A	-	A	A	-	-	F	-	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0.6	-	-	-	19.2	-	-	-
Notes												
~: Volume exceeds capacity			\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon			

Intersection															
Int Delay, s/veh	1.3														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Vol, veh/h	13	348	2	146	263	23	10	188	149	7	86	21			
Future Vol, veh/h	13	348	2	146	263	23	10	188	149	7	86	21			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop			
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None			
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-			
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	75	75	75	63	63	63	87	87	87	82	82	82			
Heavy Vehicles, %	0	1	0	3	1	0	0	1	5	20	1	0			
Mvmt Flow	17	464	3	232	417	37	11	216	171	9	105	26			
Major/Minor															
Major1		Major2			Minor1			Minor2							
Conflicting Flow All	454	0	0	467	0	0	1465	1418	466	1593	1401	436			
Stage 1	-	-	-	-	-	-	500	500	-	900	900	-			
Stage 2	-	-	-	-	-	-	965	918	-	693	501	-			
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.51	6.25	7.3	6.51	6.2			
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-	6.3	5.51	-			
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4.009	3.345	3.68	4.009	3.3			
Pot Cap-1 Maneuver	1117	-	-	1089	-	-	107	~138	590	78	141	625			
Stage 1	-	-	-	-	-	-	557	545	-	310	359	-			
Stage 2	-	-	-	-	-	-	309	352	-	406	544	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1117	-	-	1089	-	-	~96	590	-	~99	625	-			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~96	-	-	~99	-			
Stage 1	-	-	-	-	-	-	545	534	-	303	256	-			
Stage 2	-	-	-	-	-	-	125	251	-	168	533	-			
Approach															
EB			WB			NB			SB						
HCM Control Delay, s	0.3		3.1												
HCM LOS	-														
Minor Lane/Major Mvmt		NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1						
Capacity (veh/h)	-	1117	-	-	1089	-	-	-	-						
HCM Lane V/C Ratio	-	0.016	-	-	0.213	-	-	-	-						
HCM Control Delay (s)	-	8.3	0	-	9.2	0	-	-	-						
HCM Lane LOS	-	A	A	-	A	A	-	-	-						
HCM 95th %tile Q(veh)	-	0	-	-	0.8	-	-	-	-						
Notes															
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon												

Intersection												
Int Delay, s/veh	86.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	310	7	170	322	14	6	94	116	10	166	26
Future Vol, veh/h	21	310	7	170	322	14	6	94	116	10	166	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	95	95	95	94	94	94	81	81	81
Heavy Vehicles, %	0	1	0	1	1	0	0	0	2	0	0	0
Mvmt Flow	32	470	11	179	339	15	6	100	123	12	205	32
Major/Minor												
Major1		Major2			Minor1			Minor2				
Conflicting Flow All	354	0	0	481	0	0	1363	1252	476	1356	1250	347
Stage 1	-	-	-	-	-	-	540	540	-	705	705	-
Stage 2	-	-	-	-	-	-	823	712	-	651	545	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1216	-	-	1087	-	-	126	174	589	128	~174	701
Stage 1	-	-	-	-	-	-	530	524	-	430	442	-
Stage 2	-	-	-	-	-	-	371	439	-	461	522	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1216	-	-	1087	-	-	-	133	589	33	~133	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	133	-	33	~133	-
Stage 1	-	-	-	-	-	-	511	505	-	415	351	-
Stage 2	-	-	-	-	-	-	117	349	-	282	503	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s	0.5		3						\$ 518.6			
HCM LOS									F			
Minor Lane/Major Mvmt												
NBLn1	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1216	-	-	1087	-	-	127				
HCM Lane V/C Ratio	-	0.026	-	-	0.165	-	-	1.964				
HCM Control Delay (s)	-	8	0	-	9	0	-	\$ 518.6				
HCM Lane LOS	-	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	-	0.1	-	-	0.6	-	-	20				
Notes												
~: Volume exceeds capacity			\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon			

Route 140 at Mendon Street

Intersection						
Int Delay, s/veh	4.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↔	↔		
Traffic Vol, veh/h	336	139	26	262	101	24
Future Vol, veh/h	336	139	26	262	101	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	79	79	73	73
Heavy Vehicles, %	1	4	0	2	0	0
Mvmt Flow	420	174	33	332	138	33
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	594	0	905	507
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	992	-	309	570
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	992	-	296	570
Mov Cap-2 Maneuver	-	-	-	-	296	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	655	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.8	27.6			
HCM LOS			D			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	326	-	-	992	-	
HCM Lane V/C Ratio	0.525	-	-	0.033	-	
HCM Control Delay (s)	27.6	-	-	8.8	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	2.9	-	-	0.1	-	

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↔	↔		
Traffic Vol, veh/h	269	111	40	289	82	19
Future Vol, veh/h	269	111	40	289	82	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	88	88
Heavy Vehicles, %	0	1	0	1	0	0
Mvmt Flow	320	132	48	344	93	22
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	452	0	826	386
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1119	-	345	666
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1119	-	327	666
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	618	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1	19.5			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	362	-	-	1119	-	
HCM Lane V/C Ratio	0.317	-	-	0.043	-	
HCM Control Delay (s)	19.5	-	-	8.4	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-	

Intersection

Int Delay, s/veh 5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
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Lane Configurations						
Traffic Vol, veh/h	365	149	30	294	108	27
Future Vol, veh/h	365	149	30	294	108	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	79	79	73	73
Heavy Vehicles, %	1	4	0	2	0	0
Mvmt Flow	456	186	38	372	148	37

Major/Minor	Major1	Major2	Minor1
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Conflicting Flow All	0	0	642	0	997	549
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	448	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	952	-	273	539
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	952	-	259	539
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	NB
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HCM Control Delay, s	0	0.8	37.2
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HCM LOS	E		
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Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	952	-
HCM Lane V/C Ratio	0.64	-	-	0.04	-
HCM Control Delay (s)	37.2	-	-	8.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	4.1	-	-	0.1	-

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↔	↔		
Traffic Vol, veh/h	302	119	45	321	88	22
Future Vol, veh/h	302	119	45	321	88	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	88	88
Heavy Vehicles, %	0	1	0	1	0	0
Mvmt Flow	360	142	54	382	100	25

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	502	0	921
Stage 1	-	-	-	-	431
Stage 2	-	-	-	-	490
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1073	-	303
Stage 1	-	-	-	-	660
Stage 2	-	-	-	-	620
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1073	-	284
Mov Cap-2 Maneuver	-	-	-	-	284
Stage 1	-	-	-	-	660
Stage 2	-	-	-	-	580

Approach	EB	WB	NB
HCM Control Delay, s	0	1	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1073	-
HCM Lane V/C Ratio	0.392	-	-	0.05	-
HCM Control Delay (s)	23.4	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-

Intersection

Int Delay, s/veh 5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
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Lane Configurations						
Traffic Vol, veh/h	367	149	31	299	108	27
Future Vol, veh/h	367	149	31	299	108	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	79	79	73	73
Heavy Vehicles, %	1	4	0	2	0	0
Mvmt Flow	459	186	39	378	148	37

Major/Minor	Major1	Major2	Minor1
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Conflicting Flow All	0	0	645	0	1008	552
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	456	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	950	-	269	537
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	950	-	255	537
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	610	-

Approach	EB	WB	NB
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HCM Control Delay, s	0	0.8	38.3
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HCM LOS	E
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Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	285	-	-	950	-
HCM Lane V/C Ratio	0.649	-	-	0.041	-
HCM Control Delay (s)	38.3	-	-	9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↔	↔		
Traffic Vol, veh/h	308	119	46	325	88	23
Future Vol, veh/h	308	119	46	325	88	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	88	88
Heavy Vehicles, %	0	1	0	1	0	0
Mvmt Flow	367	142	55	387	100	26
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	509	0	935	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	497	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1066	-	297	623
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1066	-	277	623
Mov Cap-2 Maneuver	-	-	-	-	277	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	574	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1.1	24.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	313	-	-	1066	-	
HCM Lane V/C Ratio	0.403	-	-	0.051	-	
HCM Control Delay (s)	24.1	-	-	8.6	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-	

Route 140 at the Project Site Driveway

Intersection

Int Delay, s/veh 0.2

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations					
Traffic Vol, veh/h	2	355	292	2	8 6
Future Vol, veh/h	2	355	292	2	8 6
Conflicting Peds, #/hr	0	0	0	0	0 0
Sign Control	Free	Free	Free	Free	Stop Stop
RT Channelized	-	None	-	None	- None
Storage Length	-	-	-	-	0 -
Veh in Median Storage, #	-	0	0	-	0 -
Grade, %	-	0	0	-	0 -
Peak Hour Factor	92	75	65	92	92 92
Heavy Vehicles, %	2	1	1	2	2 2
Mvmt Flow	2	473	449	2	9 7

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	451	0	-	0	927	450
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	477	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1109	-	-	-	298	609
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	624	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1109	-	-	-	297	609
Mov Cap-2 Maneuver	-	-	-	-	297	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	624	-

Approach EB WB SB

HCM Control Delay, s 0 0 14.8

HCM LOS B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1109	-	-	-	381
HCM Lane V/C Ratio	0.002	-	-	-	0.04
HCM Control Delay (s)	8.3	0	-	-	14.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 0.2

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations							
Traffic Vol, veh/h	7	332	345	9	6	5	
Future Vol, veh/h	7	332	345	9	6	5	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	66	94	92	92	92	
Heavy Vehicles, %	2	1	1	2	2	2	
Mvmt Flow	8	503	367	10	7	5	

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	377	0	-	0	891	372
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	519	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1181	-	-	-	313	674
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1181	-	-	-	310	674
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	597	-

Approach EB WB SB

HCM Control Delay, s 0.1 0 14

HCM LOS B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1181	-	-	-	411
HCM Lane V/C Ratio	0.006	-	-	-	0.029
HCM Control Delay (s)	8.1	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Route 140 at Fiske Avenue

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	315	1	0	254	4	2	5	2	8	12	5
Future Vol, veh/h	2	315	1	0	254	4	2	5	2	8	12	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	78	78	78	75	75	75	50	50	50
Heavy Vehicles, %	0	2	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	2	362	1	0	326	5	3	7	3	16	24	10
Major/Minor												
Major1		Major2			Minor1			Minor2				
Conflicting Flow All	331	0	0	363	0	0	713	698	363	701	696	329
Stage 1	-	-	-	-	-	-	367	367	-	329	329	-
Stage 2	-	-	-	-	-	-	346	331	-	372	367	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1240	-	-	1207	-	-	349	367	686	356	368	717
Stage 1	-	-	-	-	-	-	657	626	-	688	650	-
Stage 2	-	-	-	-	-	-	674	649	-	653	626	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1240	-	-	1207	-	-	326	366	686	349	367	717
Mov Cap-2 Maneuver	-	-	-	-	-	-	326	366	-	349	367	-
Stage 1	-	-	-	-	-	-	656	625	-	687	650	-
Stage 2	-	-	-	-	-	-	640	649	-	642	625	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s	0			0			14.4			15.3		
HCM LOS							B			C		
Minor Lane/Major Mvmt												
Capacity (veh/h)	396	1240	-	-	1207	-	-	-	399			
HCM Lane V/C Ratio	0.03	0.002	-	-	-	-	-	-	0.125			
HCM Control Delay (s)	14.4	7.9	0	-	0	-	-	-	15.3			
HCM Lane LOS	B	A	A	-	A	-	-	-	C			
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-	0.4			

Intersection															
Int Delay, s/veh	2														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Vol, veh/h	15	274	6	5	286	19	2	11	1	20	15	7			
Future Vol, veh/h	15	274	6	5	286	19	2	11	1	20	15	7			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop			
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None			
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-			
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	86	86	86	80	80	80	81	81	81	67	67	67			
Heavy Vehicles, %	14	2	0	0	1	11	0	10	0	26	14	43			
Mvmt Flow	17	319	7	6	358	24	2	14	1	30	22	10			
Major/Minor	Major1		Major2		Minor1		Minor2								
Conflicting Flow All	382	0	0	326	0	0	755	751	323	746	742	370			
Stage 1	-	-	-	-	-	-	357	357	-	382	382	-			
Stage 2	-	-	-	-	-	-	398	394	-	364	360	-			
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.6	6.2	7.36	6.64	6.63			
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-			
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4.09	3.3	3.734	4.126	3.687			
Pot Cap-1 Maneuver	1114	-	-	1245	-	-	328	330	723	301	330	593			
Stage 1	-	-	-	-	-	-	665	614	-	595	592	-			
Stage 2	-	-	-	-	-	-	632	592	-	608	606	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1114	-	-	1245	-	-	299	322	723	285	322	593			
Mov Cap-2 Maneuver	-	-	-	-	-	-	299	322	-	285	322	-			
Stage 1	-	-	-	-	-	-	652	602	-	584	588	-			
Stage 2	-	-	-	-	-	-	594	588	-	582	594	-			
Approach	EB			WB			NB			SB					
HCM Control Delay, s	0.4			0.1			16.5			18.6					
HCM LOS							C			C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1							
Capacity (veh/h)	331	1114	-	-	1245	-	-	327							
HCM Lane V/C Ratio	0.052	0.016	-	-	0.005	-	-	0.192							
HCM Control Delay (s)	16.5	8.3	0	-	7.9	0	-	18.6							
HCM Lane LOS	C	A	A	-	A	A	-	C							
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7							

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	344	1	0	288	4	2	5	2	9	13	5
Future Vol, veh/h	2	344	1	0	288	4	2	5	2	9	13	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	78	78	78	75	75	75	50	50	50
Heavy Vehicles, %	0	2	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	2	395	1	0	369	5	3	7	3	18	26	10
Major/Minor												
Major1		Major2			Minor1		Minor2					
Conflicting Flow All	374	0	0	396	0	0	790	774	396	777	772	372
Stage 1	-	-	-	-	-	-	400	400	-	372	372	-
Stage 2	-	-	-	-	-	-	390	374	-	405	400	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1196	-	-	1174	-	-	310	332	658	317	333	678
Stage 1	-	-	-	-	-	-	630	605	-	653	622	-
Stage 2	-	-	-	-	-	-	638	621	-	626	605	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1196	-	-	1174	-	-	287	331	658	310	332	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	287	331	-	310	332	-
Stage 1	-	-	-	-	-	-	629	604	-	652	622	-
Stage 2	-	-	-	-	-	-	602	621	-	615	604	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s	0			0			15.4			16.9		
HCM LOS							C			C		
Minor Lane/Major Mvmt												
Capacity (veh/h)	358	1196	-	-	1174	-	-	-	357			
HCM Lane V/C Ratio	0.034	0.002	-	-	-	-	-	-	0.151			
HCM Control Delay (s)	15.4	8	0	-	0	-	-	-	16.9			
HCM Lane LOS	C	A	A	-	A	-	-	-	C			
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-	0.5			

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	310	6	5	320	20	2	12	1	21	16	8
Future Vol, veh/h	16	310	6	5	320	20	2	12	1	21	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	80	80	80	81	81	81	67	67	67
Heavy Vehicles, %	14	2	0	0	1	11	0	10	0	26	14	43
Mvmt Flow	19	360	7	6	400	25	2	15	1	31	24	12

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	425	0	0	367	0	0	845	839	364	835	830	413
Stage 1	-	-	-	-	-	-	402	402	-	425	425	-
Stage 2	-	-	-	-	-	-	443	437	-	410	405	-
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.6	6.2	7.36	6.64	6.63
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4.09	3.3	3.734	4.126	3.687
Pot Cap-1 Maneuver	1073	-	-	1203	-	-	285	293	685	261	293	560
Stage 1	-	-	-	-	-	-	629	587	-	563	566	-
Stage 2	-	-	-	-	-	-	598	566	-	574	578	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1073	-	-	1203	-	-	255	285	685	245	285	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	285	-	245	285	-
Stage 1	-	-	-	-	-	-	615	574	-	551	562	-
Stage 2	-	-	-	-	-	-	556	562	-	546	565	-

Approach	EB	WB			NB			SB			
HCM Control Delay, s	0.4	0.1			18.2			21.3			
HCM LOS					C			C			
<hr/>											
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	292	1073	-	-	1203	-	-	288			
HCM Lane V/C Ratio	0.063	0.017	-	-	0.005	-	-	0.233			
HCM Control Delay (s)	18.2	8.4	0	-	8	0	-	21.3			
HCM Lane LOS	C	A	A	-	A	A	-	C			
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.9			

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	346	1	0	294	4	2	5	2	9	13	5
Future Vol, veh/h	2	346	1	0	294	4	2	5	2	9	13	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	78	78	78	75	75	75	50	50	50
Heavy Vehicles, %	0	2	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	2	398	1	0	377	5	3	7	3	18	26	10
Major/Minor												
Major1		Major2			Minor1		Minor2					
Conflicting Flow All	382	0	0	399	0	0	801	785	399	788	783	380
Stage 1	-	-	-	-	-	-	403	403	-	380	380	-
Stage 2	-	-	-	-	-	-	398	382	-	408	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1188	-	-	1171	-	-	305	327	655	311	328	671
Stage 1	-	-	-	-	-	-	628	603	-	646	617	-
Stage 2	-	-	-	-	-	-	632	616	-	624	603	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1188	-	-	1171	-	-	282	326	655	304	327	671
Mov Cap-2 Maneuver	-	-	-	-	-	-	282	326	-	304	327	-
Stage 1	-	-	-	-	-	-	627	602	-	645	617	-
Stage 2	-	-	-	-	-	-	596	616	-	613	602	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s	0			0			15.6			17.1		
HCM LOS							C			C		
Minor Lane/Major Mvmt												
Capacity (veh/h)	353	1188	-	-	1171	-	-	-	352			
HCM Lane V/C Ratio	0.034	0.002	-	-	-	-	-	-	0.153			
HCM Control Delay (s)	15.6	8	0	-	0	-	-	-	17.1			
HCM Lane LOS	C	A	A	-	A	-	-	-	C			
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-	0.5			

Intersection															
Int Delay, s/veh	2.2														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Vol, veh/h	16	317	6	5	325	20	2	12	1	21	16	8			
Future Vol, veh/h	16	317	6	5	325	20	2	12	1	21	16	8			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop			
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None			
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-			
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	86	86	86	80	80	80	81	81	81	67	67	67			
Heavy Vehicles, %	14	2	0	0	1	11	0	10	0	26	14	43			
Mvmt Flow	19	369	7	6	406	25	2	15	1	31	24	12			
Major/Minor															
Major1		Major2			Minor1			Minor2							
Conflicting Flow All	431	0	0	376	0	0	860	854	373	850	845	419			
Stage 1	-	-	-	-	-	-	411	411	-	431	431	-			
Stage 2	-	-	-	-	-	-	449	443	-	419	414	-			
Critical Hdwy	4.24	-	-	4.1	-	-	7.1	6.6	6.2	7.36	6.64	6.63			
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.36	5.64	-			
Follow-up Hdwy	2.326	-	-	2.2	-	-	3.5	4.09	3.3	3.734	4.126	3.687			
Pot Cap-1 Maneuver	1067	-	-	1194	-	-	278	287	678	255	287	555			
Stage 1	-	-	-	-	-	-	622	581	-	558	563	-			
Stage 2	-	-	-	-	-	-	593	562	-	567	573	-			
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-			
Mov Cap-1 Maneuver	1067	-	-	1194	-	-	249	278	678	239	278	555			
Mov Cap-2 Maneuver	-	-	-	-	-	-	249	278	-	239	278	-			
Stage 1	-	-	-	-	-	-	608	568	-	545	559	-			
Stage 2	-	-	-	-	-	-	552	558	-	539	560	-			
Approach															
EB			WB			NB			SB						
HCM Control Delay, s	0.4		0.1			18.5			21.7						
HCM LOS							C			C					
Minor Lane/Major Mvmt															
NBLn1		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1							
Capacity (veh/h)	285	1067	-	-	1194	-	-	282							
HCM Lane V/C Ratio	0.065	0.017	-	-	0.005	-	-	0.238							
HCM Control Delay (s)	18.5	8.4	0	-	8	0	-	21.7							
HCM Lane LOS	C	A	A	-	A	A	-	C							
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.9							