

# **Transportation Impact Assessment**

Proposed Mixed-Use Redevelopment  
460-472 Main Street  
Wakefield, Massachusetts

*Prepared for:*

United Properties, Inc.  
Malden, Massachusetts

June 2023

*Prepared by:*

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# **EXECUTIVE SUMMARY**

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## **DESCRIPTION OF PROJECT**

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) to identify traffic impacts associated with a proposed mixed-use redevelopment to be located at 460-472 Main Street in Wakefield, Massachusetts (the “Project”). The purpose of this TIA is to review existing and future traffic conditions in the vicinity of the site, determine the traffic impact of the proposed Project at key intersections expected to experience increased traffic levels from the Project, and review the need for improvements to mitigate the Project’s traffic impact.

## **PROPOSED PROJECT**

The site is bounded by commercial properties to the north, south, and east, and Main Street to the west. Currently, the site contains a commercial building. The site has one curb cut onto Main Street. The Project entails reusing and/or razing the existing building and constructing a refurbished and/or new building which will consist of 4,400 square feet (sf) of retail space and 16 multifamily units. The site will provide 22 parking spaces.

## **EXISTING CONDITIONS**

A comprehensive field inventory was conducted to collect existing roadway geometrics, traffic volumes, operating characteristics, speed limits, and sight distances, as well as land use information. Traffic volumes were collected in May 2023 at the intersections expected to receive the traffic impact from the Project. These are listed below:

- Main Street at Water Street and West Water Street
- Main Street at Armory Street
- Main Street at Richardson Street and the Galvin Middle School driveway

## **FUTURE CONDITIONS**

Traffic volumes within the study area were projected to 2030, which reflects a seven-year planning horizon consistent with State traffic study guidelines. These conditions incorporate traffic growth due to general background traffic increases as well as development projects currently being proposed/permitted or under construction and expected to generate traffic in the future. This condition is referred to as the No-Build condition.

## **PROJECT-GENERATED TRAFFIC**

The Project is expected to generate 348 vehicle trips on an average weekday (two-way, 24-hour volume), with 16 vehicle trips (8 entering and 8 exiting) expected during the weekday morning peak hour and 37 vehicle trips (20 entering and 17 exiting) expected during the weekday evening peak hour.

Project-related traffic-volume increases external to the study area relative to 2030 No-Build conditions are anticipated to range from 4 to 17 vehicles or 0.3 to 1.6 percent during the peak periods.

## **TRAFFIC OPERATIONS ANALYSIS**

In future conditions, operations are generally preserved with minor increases in delays and vehicle queue lengths on the various approaches.

## **RECOMMENDATIONS**

Access to the Project site will be provided via one driveway onto Main Street. As this curb cut exists for the current building, the Project will not increase the number of curb cuts from Main Street. The following recommendations are offered with respect to the design and operation of the Project site driveway:

- The driveway should be placed under STOP-sign (*Manual on Uniform Traffic Control Devices* (MUTCD)<sup>1</sup> R1-1) control, with a painted STOP-bar included.
- All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD.
- Signs and landscaping adjacent to the Project site driveway should be designed and maintained so as not to restrict lines of sight.
- It is recommended that parking be prohibited within a distance of 10 feet from either side of the site driveway to assist in visibility for vehicles entering and exiting the site.

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<sup>1</sup>*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

## **CONCLUSIONS**

As documented in this study, Project-related traffic increases will not result in significant increases on overall traffic volumes or traffic delays within the study area. The site driveway will provide efficient access to and from the development. In general, Project-related traffic can be adequately accommodated within the existing infrastructure with minimal impact on the traffic operations within the study area.

# **INTRODUCTION**

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Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to identify the traffic impacts associated with the proposed mixed-use redevelopment to be located at 460-472 Main Street in Wakefield, Massachusetts. This report identifies and analyzes existing and future traffic conditions both with and without the Project and reviews access requirements, potential offsite improvements, and safety considerations.

## **STUDY METHODOLOGY**

This study was prepared in accordance with the State guidelines for TIAs and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometry, observations of traffic flow, and collection of peak-period traffic 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 these analyses consistent with State guidelines for the preparation of TIAs. The traffic analysis conducted in stage two identifies projected future roadway capacity, traffic safety, and site access issues.

The third stage of the study presents and evaluates measures to address traffic and safety issues, if any are necessary, based on the results from stage two of the study.



## **EXISTING CONDITIONS**

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A comprehensive field inventory of existing conditions within the study area was conducted in May 2023. The field investigation consisted of an inventory of existing roadway geometrics; traffic volumes; and operating characteristics; as well as posted speed limits, sight distance, and land use information within the study area. The study area for the Project contains the major roadway which provides access to the Project, as well as the intersections which are expected to accommodate the majority of Project-related traffic. The study area is listed below and graphically depicted on Figure 1.

- Main Street at Water Street and West Water Street
- Main Street at Armory Street
- Main Street at Richardson Street and the Galvin Middle School driveway

The following describes the study area roadway which provides access/egress to the Project.

### **GEOMETRY**

#### **Roadway**

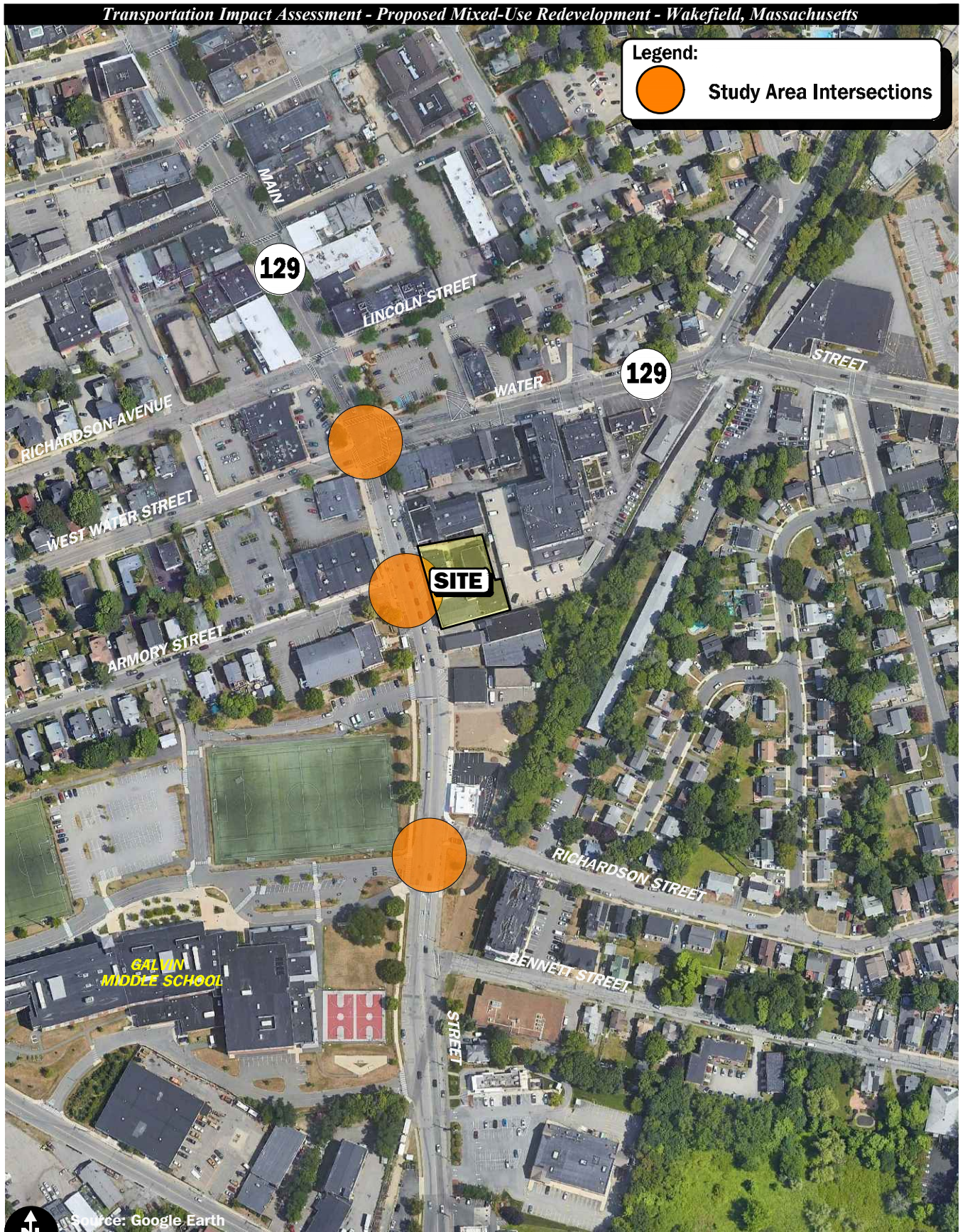
##### **Main Street**

Main Street is classified as an urban principal arterial roadway under Town jurisdiction. Main Street runs in a general north-to-south alignment throughout the study area. Main Street provides one general-purpose travel lane in each direction separated by a double-yellow centerline with exclusive turn lanes provided at some intersections. The land uses along Main Street throughout the study area generally consist of commercial and residential uses.

#### **Intersections**

Figure 2 summarizes existing lane use, travel lane widths, and sidewalk and crosswalk locations at the study area intersections.

**Legend:**  
 **Study Area Intersections**



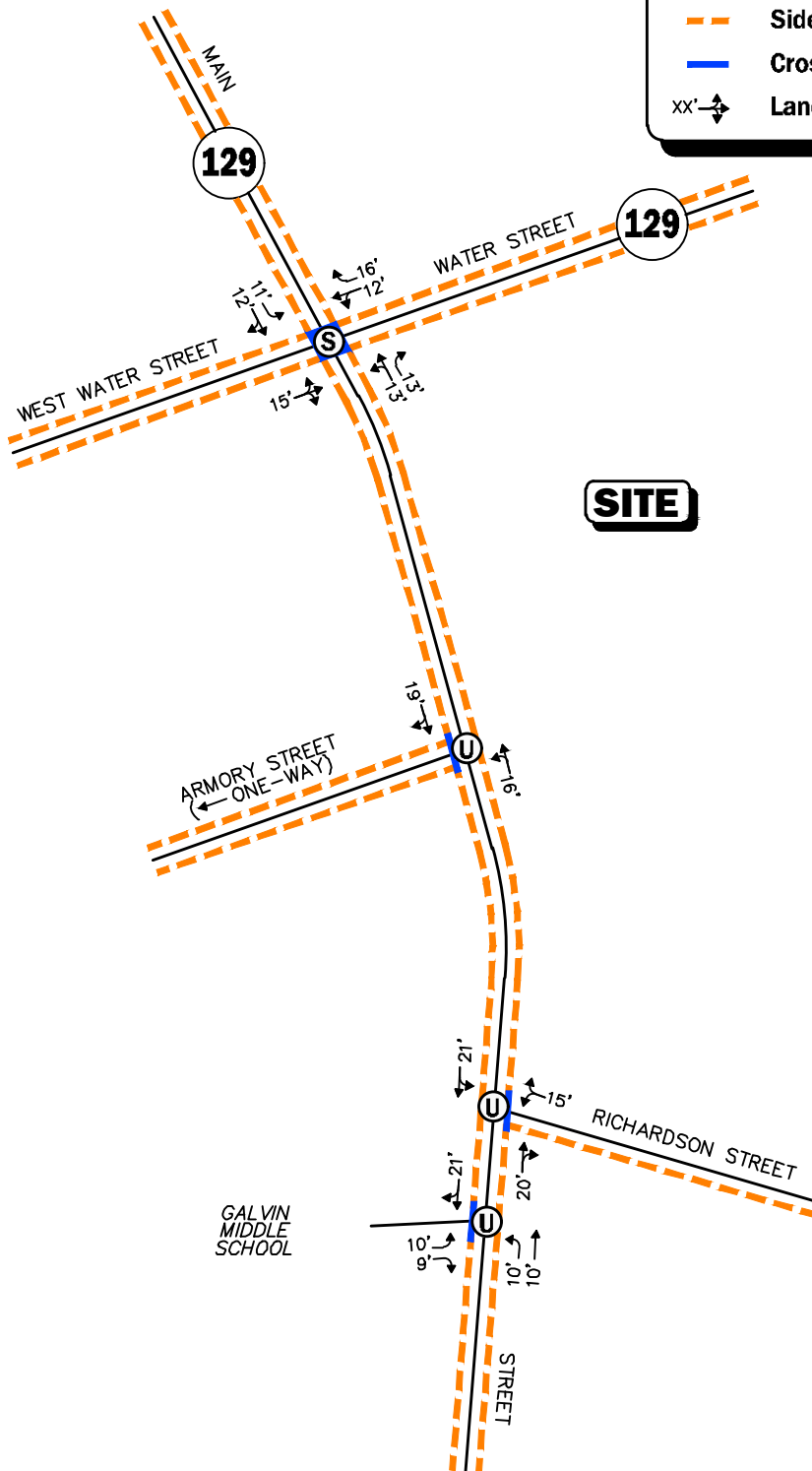
**Figure 1**

**Site Location and Study Area Map**



**Legend:**

- Ⓢ Signalized Intersection
- Ⓤ Unsignalized Intersection
- Sidewalk
- Crosswalk
- xx' Lane Use and Travel Lane Width



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**Figure 2**

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



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**EXISTING TRAFFIC VOLUMES**

In order to establish base traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) were completed in May 2023. The TMCs were conducted during the weekday morning (7:00 to 9:00 AM) and weekday evening (4:00 to 6:00 PM) peak periods. Bicycles and pedestrians were also counted.

**Traffic-Volume Adjustments**

In order to develop 2023 Existing traffic-volume conditions, Massachusetts Department of Transportation (MassDOT) weekday seasonal factors for Urban Groups 3 (principal arterial-other, the functional classification of the majority of the study area roadways) were reviewed.<sup>2</sup> Based on a review of this data, it was determined that traffic volumes for the month of May are *above* average-month conditions. As such, the traffic volumes were not adjusted in order to be representative of average-month conditions.

MassDOT no longer requires pandemic-related adjustment of traffic counts performed after March 2022 except in locations where the predominant land use consists of offices or similar uses.<sup>3</sup> Given that the predominant land use within the study area is residential, no further adjustment (beyond the seasonal adjustment) is necessary.

As can be seen in Table 1, Main Street is estimated to carry approximately 12,756 vehicles per day (vpd) with 1,054 vehicles per hour (vph) during the weekday morning peak hour and 1,148 vph during the weekday evening peak hour. During the weekday morning peak hour, 54 percent of the traffic is traveling northbound and during the weekday evening peak hour, 55 percent of the traffic is traveling southbound. The existing weekday morning and evening peak-hour traffic volumes for the study area intersections are graphically depicted on Figure 3 and Figure 4, respectively.

**Table 1  
2023 EXISTING ROADWAY TRAFFIC-VOLUME SUMMARY**

Location	Weekday	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Daily Volume (vpd) <sup>a</sup>	Volume (vph) <sup>b</sup>	Percent of Daily Traffic <sup>c</sup>	Predominant Flow	Volume (vph)	Percent of Daily Traffic	Predominant Flow
Main Street, near site driveway	12,756	1,054	8.3	55.4% SB	1,148	9.0	53.6% NB

<sup>a</sup>Two-way daily traffic expressed in vehicles per day, estimated.

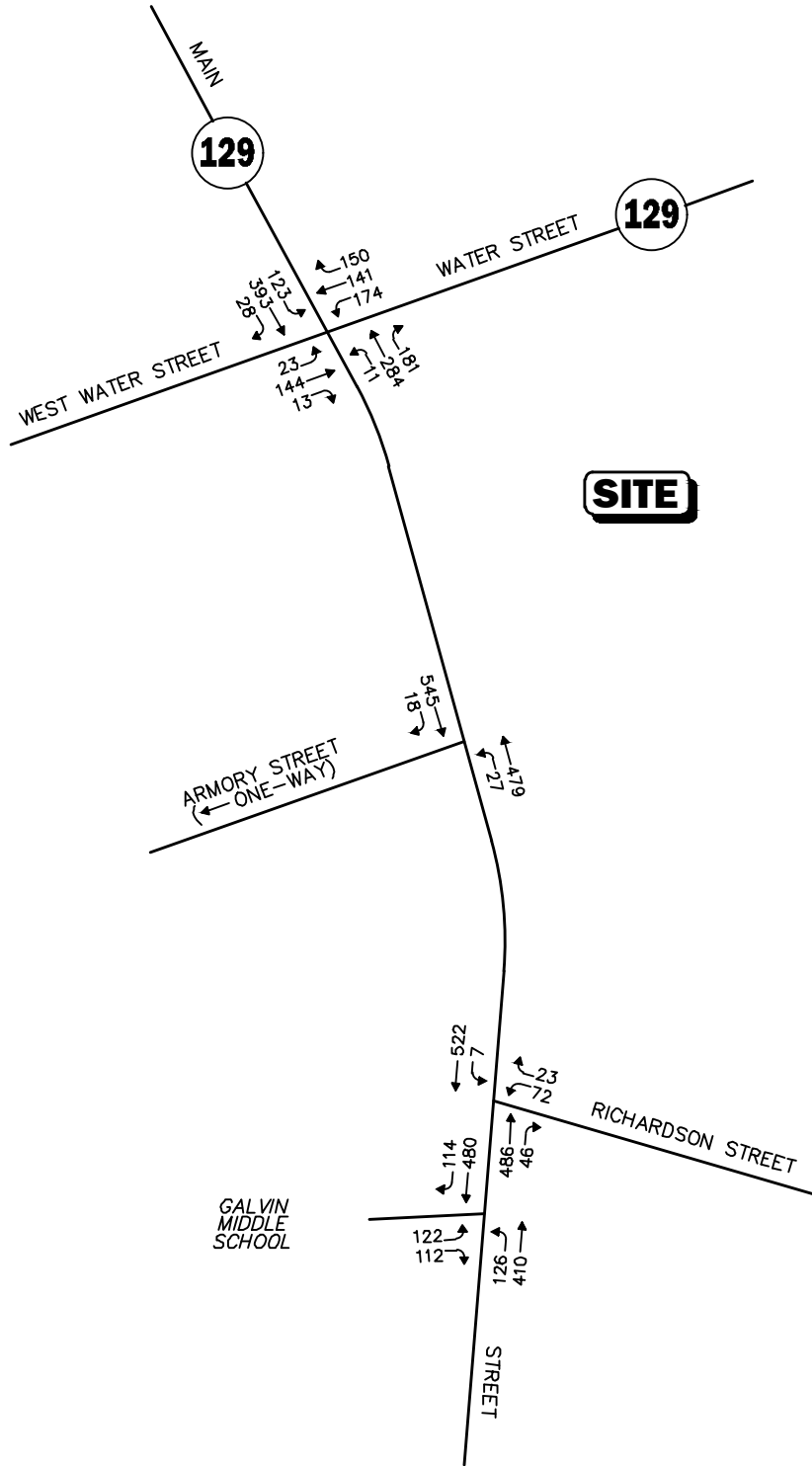
<sup>b</sup>Two-way peak-hour volume expressed in vehicles per hour.

<sup>c</sup>The percent of daily traffic that occurs during the peak hour.

NB = northbound, SB = southbound.

<sup>2</sup>MassDOT statewide Traffic Data Collection; 2019 Weekday Seasonal Factors, Groups U3.

<sup>3</sup>25% Design Submission Guidelines; MassDOT Highway Division, Traffic and Safety Engineering; Revised May 31, 2022.



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

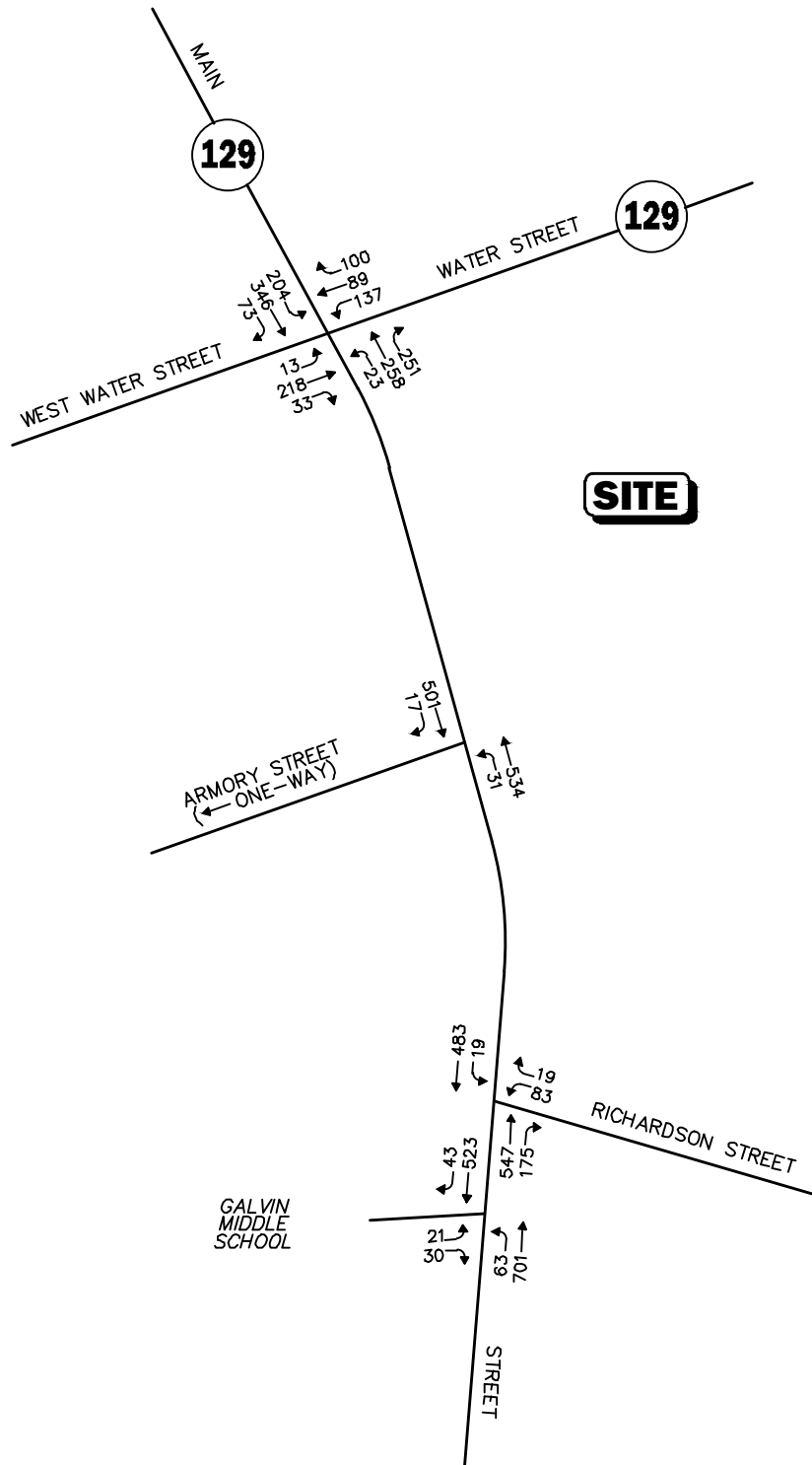
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**Figure 3**



**2023 Existing  
Weekday Morning  
Peak-Hour Traffic Volumes**

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

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Figure 4



2023 Existing  
Weekday Evening  
Peak-Hour Traffic Volumes

## **PEDESTRIAN AND BICYCLE FACILITIES**

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in May 2023. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study area roadways and at the study area intersections, as well as the location of bicycle facilities. Sidewalks are provided along both sides of Main Street, on both sides of West Water Street, on both sides of Water Street, on both sides of Armory Street, and on the south side of Richard Street. Crosswalks are provided across all legs of the intersection of Main Street at West Water Street and Water Street, across the Armory Street approach of the intersection of Main Street at Armory Street, and the Richardson Street and the Galvin Middle School driveway approaches of the intersection of Main Street at Richardson Street and the Galvin Middle School driveway.

## **PUBLIC TRANSPORTATION**

Public transportation services are provided within the study area by the Massachusetts Bay Transportation Authority (MBTA). The MBTA provides commuter rail service to North Station in Boston on the Haverhill Line by way of Wakefield Station, which is located at 225 North Avenue, approximately 0.4 miles (an 8-minute walk) to the west of the Project site. In addition, the MBTA provides a fixed-route service with a bus stop at the intersection of Main Street at Water Street. Table 2 summarizes the characteristics of these services. Schedule and fare information for the fixed-route service is provided in the Appendix.

**Table 2**  
**PUBLIC TRANSPORTATION SERVICES**

Service	Stop Closest to Site	Distance from Site	Weekday	
			Hours of Operation	Headway (minutes)
Haverhill Line	Wakefield MBTA Station	~0.4 miles west	5:24 AM – 11:22 PM	45
Route 137: Reading Depot – Malden Center Station	Main Street at Water Street	~300 feet north	5:07 AM – 10:42 PM	30-40

## **MOTOR VEHICLE CRASH DATA**

Motor vehicle crash information for the study area intersections was provided by the MassDOT Safety Management/Traffic Operations Unit for the most recent five-year period available (2016 through 2020) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized in Table 3 by intersection, type, weather condition, lighting condition, pavement condition, and severity.

As can be seen in Table 3, the intersection of Main Street at Water Street and West Water Street experienced 17 accidents over the five-year review period, averaging 3.4 accidents per year. The majority of the accidents were angled or sideswipe collisions (13 out of 17), occurred on dry

pavement (16 out of 17), during daylight (13 out of 17), in clear weather (15 out of 17), and caused property damage only (15 out of 17). The intersection of Main Street at Armory Street experienced 5 accidents over the five-year review period, averaging 1 accident per year. The majority of the accidents were angled or rear-end collisions (5 out of 5), occurred on dry pavement (4 out of 5), during daylight (4 out of 5), in clear weather (5 out of 5), and caused property damage only (3 out of 5). The intersection of Main Street at Richardson Street and the Galvin Middle School driveway experienced 8 accidents over the five-year review period, averaging 1.6 accidents per year. The majority of the accidents were rear-end collisions (5 out of 8), occurred on dry pavement (6 out of 8), during daylight (6 out of 8), in clear weather (5 out of 8), and caused property damage only (5 out of 8). No fatalities were reported over the five-year period reviewed. The crash rates for the intersections were observed to be lower than the MassDOT District 4 crash rates for unsignalized and signalized intersections.



**Table 3**  
**MOTOR VEHICLE CRASH DATA SUMMARY**

Scenario	Main Street at Water Street and West Water Street	Main Street at Armory Street	Main Street at Richardson Street and the Galvin Middle School Driveway
<i>Year:</i>			
2016	4	1	1
2017	4	1	2
2018	4	3	3
2019	4	0	1
<u>2020</u>	<u>1</u>	<u>0</u>	<u>1</u>
Total	17	5	8
Average <sup>a</sup>	3.4	1.0	1.6
Crash Rate <sup>b</sup>	0.48	0.21	0.28
Significant <sup>c</sup>	No	No	No
<i>Type:</i>			
Angle	7	2	2
Rear-End	3	3	5
Head-On	0	0	0
Sideswipe	6	0	0
Fixed Object	1	0	1
Pedestrian	0	0	0
Bicyclist	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	17	5	8
<i>Weather Conditions:</i>			
Clear	15	5	5
Cloudy/Rain	2	0	2
Snow/Ice	0	0	1
Fog	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	17	5	8
<i>Lighting Conditions:</i>			
Daylight	13	4	6
Dawn/Dusk	1	0	0
Dark (lit)	3	1	2
Dark (unlit)	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	17	5	8
<i>Pavement Conditions :</i>			
Dry	16	4	6
Wet	1	1	1
Snow/Ice	0	0	1
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	17	5	8
<i>Severity:</i>			
Property Damage Only	15	3	5
Personal Injury	2	1	2
Fatality	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	17	5	8

<sup>a</sup>Average number of crashes over a five-year period.

<sup>b</sup>Crash rate per million entering vehicles (mev).

<sup>c</sup>Significant if crash rate > 0.73 for signalized intersections or > 0.57 for unsignalized intersections (MassDOT District 4 rates).

Source: MassDOT Crash Data, 2016 through 2020.

## **PARKING REGULATIONS**

Parking regulations on Main Street between Water Street and Richardson Street were surveyed in May 2023. Based on this survey, the west side of Main Street has parking regulations restricting parking on the street to 2 hours only from 8:00 AM to 6:00 PM Monday through Saturday between Eastern Bank (445 Main Street) and Mullen Field (525 Main Street) with no regulations for other locations. The east side of Main Street has parking regulations restricting parking accessibility to 2 hours only from 8:00 AM to 6:00 PM Monday through Saturday with one reserved accessible parking space and a “No Parking” zone for a distance of 75 feet from Water Street.

## **FUTURE CONDITIONS**

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To determine the impact of site-generated traffic volumes on the roadway network under future conditions, existing traffic volumes in the study area were projected to the year 2030. Traffic volumes on the roadway network at that time, in the absence of the Project (that is, the No-Build condition), would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific development by others expected to be completed by 2030. Inclusion of these factors resulted in the development of 2030 No-Build traffic volumes. Anticipated site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop the 2030 Build traffic-volume conditions.

### **FUTURE TRAFFIC GROWTH**

Traffic growth on area roadways is a function of the expected land development impacting the study area. Several methods are used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all existing 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.

In addition, we identified the location and type of planned development affecting the study area, estimated the traffic to be generated by that development, and assigned it to the area roadway network. This produces a more realistic estimate of growth for local traffic. However, the drawback of this procedure is that the potential growth in population and development external to the study area would not be accounted for in the traffic projections.

To provide a conservative analysis framework, both procedures were used in this TIA.

### **General Background Growth**

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data and other area traffic studies, it was determined that the traffic volumes are increasing in the area by approximately 0.66 percent per year on average. Therefore, a 1.0 percent per year compounded annual background traffic growth rate was used to account for future traffic growth including presently unforeseen development within the study area.

### **Specific Development by Others**

The Town of Wakefield was contacted in order to determine if there are any planned or approved development projects that are expected to influence future traffic volumes within the study area. Based on these discussions, the following projects were identified for possible inclusion in this assessment:

- ***Proposed Residential Development (40B) – 48 Crescent Street.*** This project entails construction of a 45-unit multifamily residential building to be located at 44-48 Crescent Street in Wakefield, Massachusetts. Traffic volumes from the *Transportation Memorandum*<sup>4</sup> submitted by VAI dated May 2021 were added to the future condition networks.
- ***Proposed Mixed-Use Development – 371 Main Street.*** This project entails restoration of an existing building and the construction of a three-story building to contain a restaurant and 20 multifamily residential units to be located at 369 and 371 Main Street in Wakefield, Massachusetts. Traffic volumes from the *Transportation Impact Assessment*<sup>5</sup> submitted by VAI dated November 2022 were added to the future condition networks.
- ***Proposed Residential Development with Ground-Floor Retail – 99 Water Street.*** The proposed project would replace an existing one-story, two-unit residential building with a proposed three-story building that would accommodate four two-bedroom apartments, as well as 999 sf of ground-level commercial space. The 1.0 percent general background growth rate was assumed to account for the new trips generated by this project.
- ***Proposed Mixed-Use Development – 184 Water Street.*** The project entails construction of a new two-story building containing seven two-bedroom apartments and 999 sf of ground-floor retail space. The 1.0 percent general background growth rate was assumed to account for the new trips generated by this project.

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 of 1.0 percent.

### **Planned Roadway Improvements**

The Town of Wakefield and MassDOT were contacted in order to determine if there are any planned roadway improvement projects expected to be completed within the study area in the seven-year planning horizon. Based on these discussions a number of roadway improvement projects under the Wakefield Complete Streets Program are planned for the area. These projects are listed below:

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<sup>4</sup>Responses to Traffic Advisory Committee Comments, 44-48 Crescent Street, Wakefield, Massachusetts; VAI; May 14, 2021.

<sup>5</sup>Transportation Impact Assessment – *Proposed Mixed-Use Development*, 369 & 371 Main Street, Wakefield, Massachusetts; VAI; November 2022.

### **Wakefield Envision: Downtown Revitalization Plan**

Residents, merchants, and local organizations have engaged in the *Envision Wakefield: Downtown Revitalization* initiative, conceptualizing a refreshed and improved downtown streetscape. As part of this project, the following is proposed:

- Installation of raised medians and painted medians between Water Street and Richardson Street on Main Street (painted median in front of the site driveway);
- A sidewalk will be installed on the north side of Richardson Street east of Main Street; and
- A bicycle pathway will be installed along Main Street including modification of the on-street parking from angled parking to parallel parking.

All of these projects would improve pedestrian and bicycle conditions for those user groups in the areas mentioned. The Town Engineer is in the process of revising and phasing the project with MassDOT. According to the Town Engineer, it is expected that the project will start construction in 2024 or 2025.

### **Wakefield-Lynnfield Rail Trail**

The *Wakefield-Lynnfield Rail Trail* project was granted partial funding to construct safe street crossings for the paved portion of the *Wakefield-Lynnfield Rail Trail* between Salem Street and Galvin Middle School. This project included installation of a new paved pathway, wheelchair ramps, and crosswalks. This project is still under the design phase and the Town Engineer is working with Department of Conservation and Recreation (DCR) on the final design. While not having a direct impact on the Project site, the construction period for these improvements would have a temporary impact on traffic flow specifically along Richardson Street and Main Street.

No other road improvements were identified in this area beyond general maintenance.

### **No-Build Traffic Volumes**

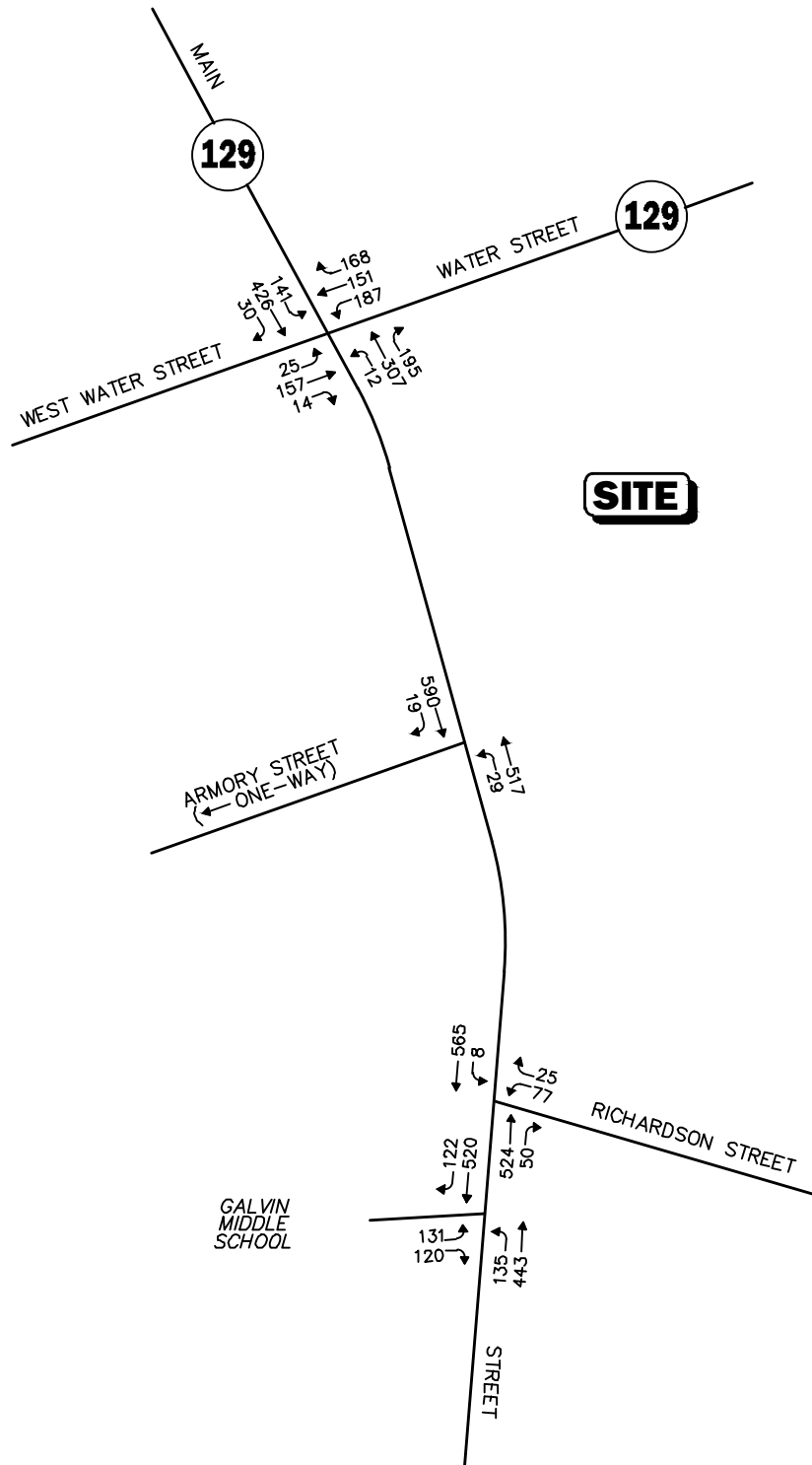
The 2030 No-Build peak-hour traffic-volume networks were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2023 Existing peak-hour traffic volumes and incorporating traffic projections from the development projects listed above. The resulting 2030 No-Build weekday morning and evening peak-hour traffic-volume networks are shown on Figure 5 and Figure 6, respectively.

### **PROJECT-GENERATED TRAFFIC**

The Project entails reusing and/or razing the existing building and constructing a refurbished and/or new building which will consist of 4,400 square feet (sf) of retail space and 16 multifamily units. In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published by the Institute of Transportation Engineers (ITE)<sup>6</sup> for Land Use Code (LUC) 822 *Strip Retail Plaza (<40k)* and LUC 220 *Multifamily Housing (Low-Rise)* were used.

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<sup>6</sup>*Trip Generation*, 11<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2021.



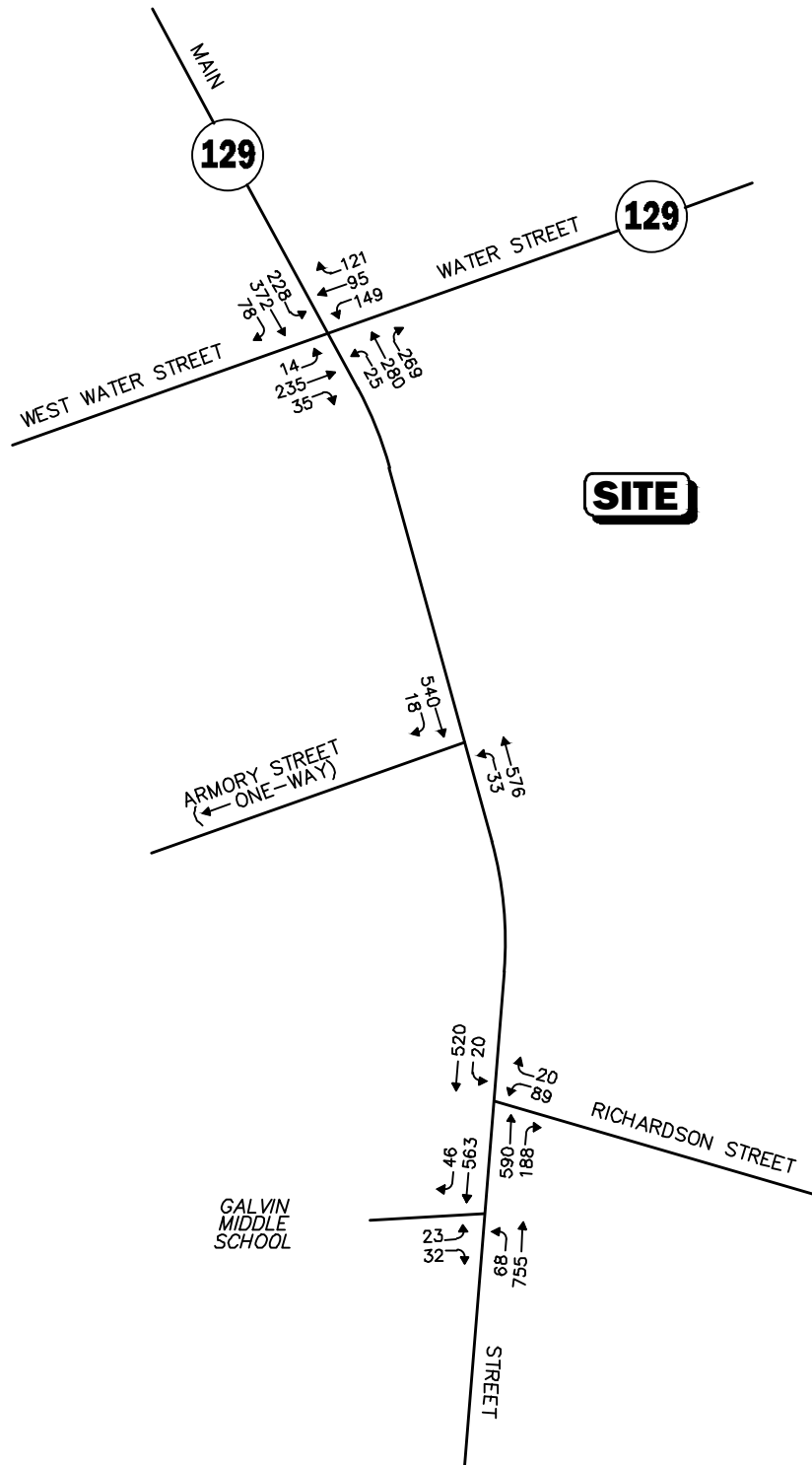
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 5

2030 No-Build  
Weekday Morning  
Peak-Hour Traffic Volumes





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

Not To Scale

Figure 6

2030 No-Build  
Weekday Evening  
Peak-Hour Traffic Volumes



**Table 4**  
**PROPOSED SITE TRIP-GENERATION SUMMARY**

Time Period/ Directional Distribution	Retail and Service Establishments (4,400 sf) <sup>a</sup> (A)	Multi-Family Residential Building (16 Units) <sup>b</sup> (B)	Total Vehicle Trips (C = A+B)
Weekday Daily	240	108	348
<i>Weekday Morning Peak Hour:</i>			
Entering	6	2	8
<u>Exiting</u>	<u>4</u>	<u>4</u>	<u>8</u>
Total	10	6	16
<i>Weekday Evening Peak Hour:</i>			
Entering	15	5	20
<u>Exiting</u>	<u>14</u>	<u>3</u>	<u>17</u>
Total	29	8	37

<sup>a</sup>Based on ITE LUC 822, *Strip Retail Plaza (< 40k)*; 4,400 sf.

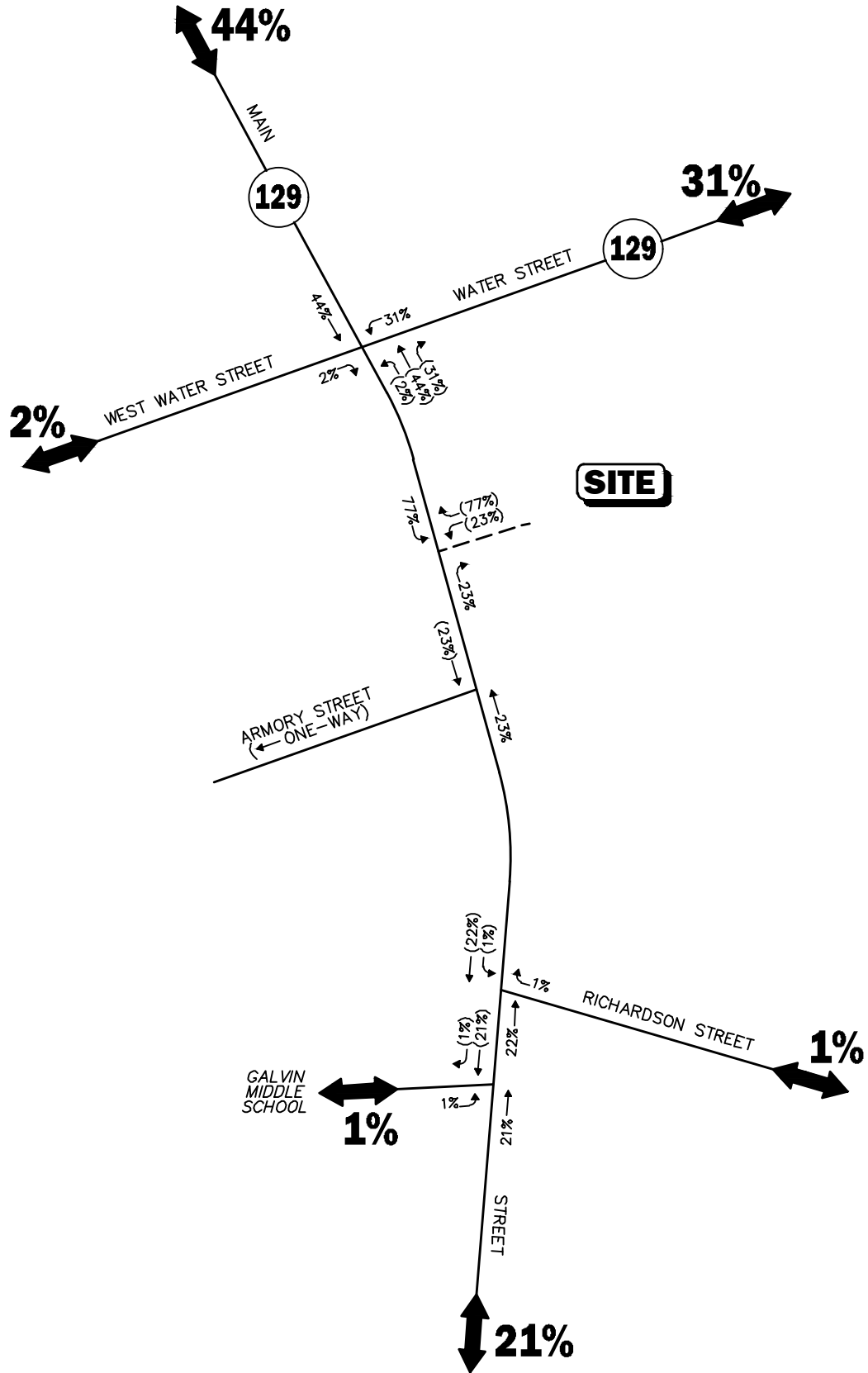
<sup>b</sup>Based on ITE LUC 220, *Multifamily Housing (Low-Rise)*; 16 units.

As can be seen in Table 4, the Project is expected to generate 348 vehicle trips on an average weekday (two-way, 24-hour volume), with 16 vehicle trips (8 entering and 8 exiting) expected during the weekday morning peak hour and 37 vehicle trips (20 entering and 17 exiting) expected during the weekday evening peak hour.

### **TRIP DISTRIBUTION AND ASSIGNMENT**

The directional distribution of the site-generated trips to and from the Project was determined based on a combination of a review of existing travel patterns at the study area intersections and census data. The trip distribution for the Project is summarized in Table 5 and graphically depicted on Figure 7. The weekday morning and evening peak-hour traffic volumes expected to be generated by the Project were assigned on the study area roadway network as shown on Figure 8 and Figure 9, respectively.



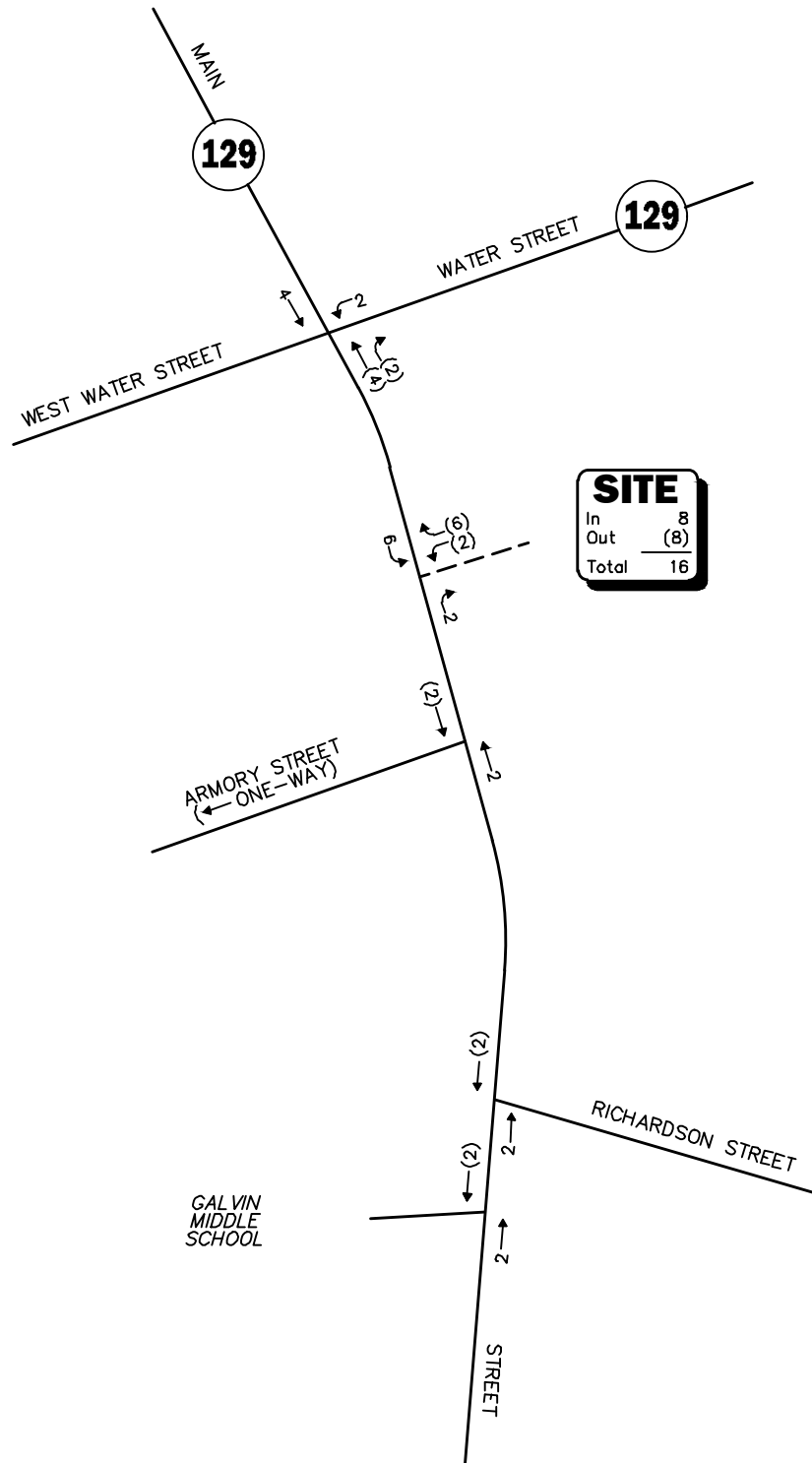


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Trip Distribution Map

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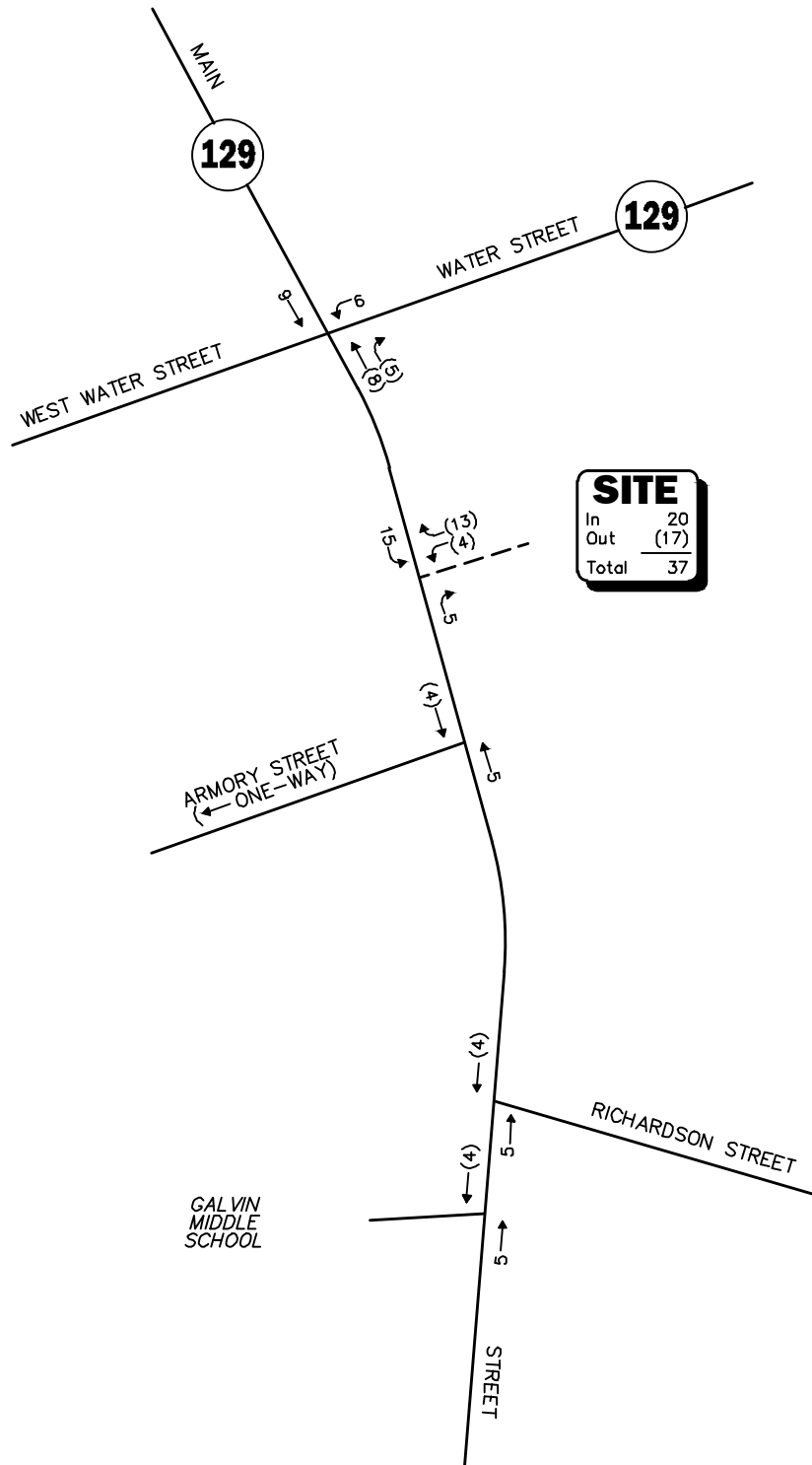


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Figure 8

Site-Generated  
Weekday Morning  
Peak-Hour Traffic Volumes



Not To Scale

Figure 9



Site-Generated  
Weekday Evening  
Peak-Hour Traffic Volumes

**Table 5**  
**TRIP-DISTRIBUTION SUMMARY**

Roadway	Direction (To/From)	Percent (To/From)
Main Street	North	44
Main Street	South	21
West Water Street	East	2
Water Street	West	31
Galvin Middle School	East	1
Richardson Street	West	1
TOTAL		100

**FUTURE TRAFFIC VOLUMES – BUILD CONDITION**

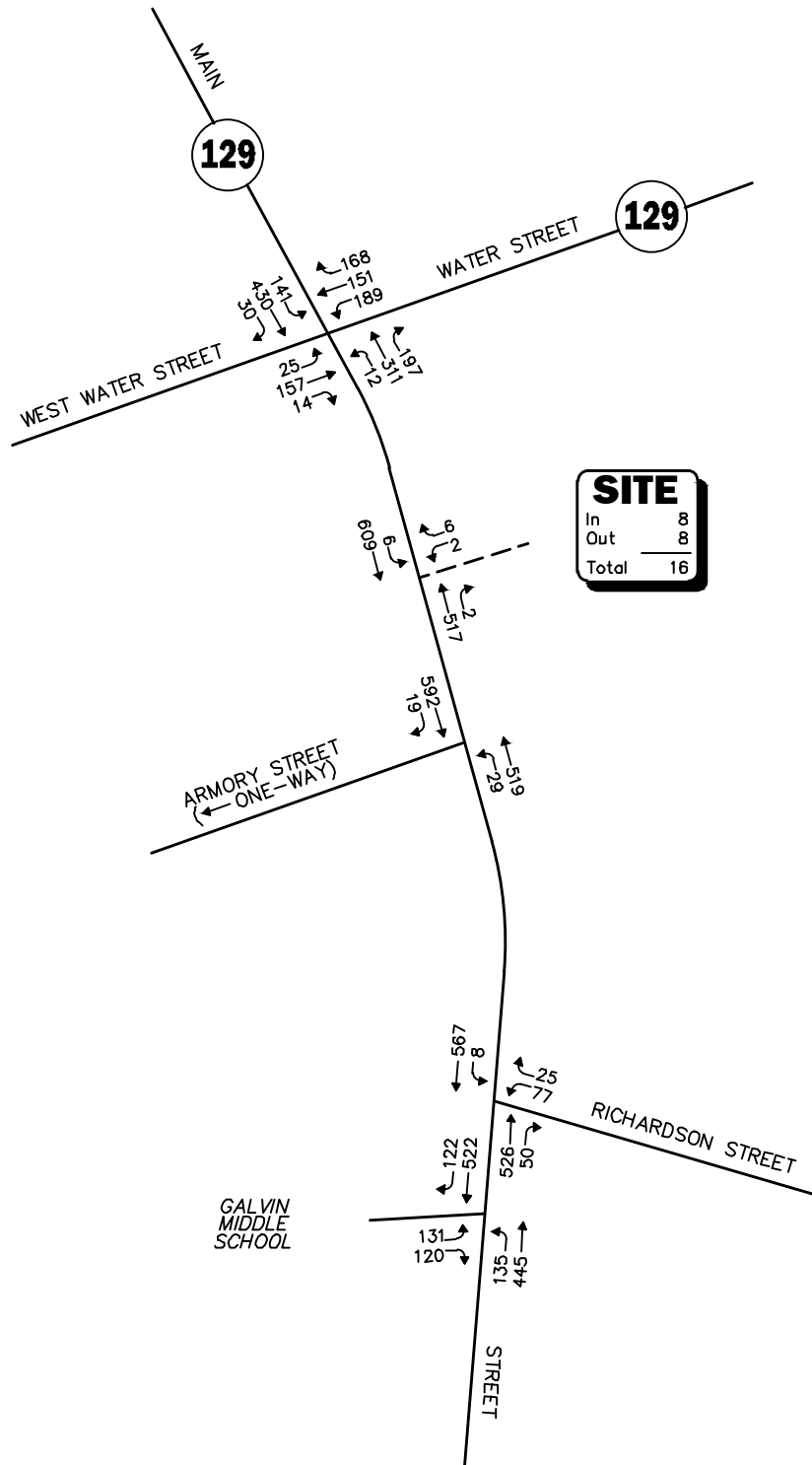
The 2030 Build condition networks consist of the 2030 No-Build traffic volumes with the anticipated Project-generated traffic added to them. The 2030 Build weekday morning and evening peak-hour traffic-volume networks are graphically depicted on Figure 10 and Figure 11, respectively.

A summary of peak-hour projected traffic-volume increases external to the study area that is the subject of this assessment is shown in Table 6. These volumes are based on the expected increases from the Project.

**Table 6**  
**PEAK-HOUR TRAFFIC-VOLUME INCREASES**

Location/Peak Hour	2030 No-Build	2030 Build	Traffic-Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Main Street, north of Water Street:</i>				
Weekday Morning	1,097	1,105	8	0.7
Weekday Evening	1,093	1,110	17	1.6
<i>Water Street, east of Main Street:</i>				
Weekday Morning	999	1,003	4	0.4
Weekday Evening	1,097	1,108	11	1.0
<i>Main Street, south of Richardson Street:</i>				
Weekday Morning	1,218	1,222	4	0.3
Weekday Evening	1,418	1,427	9	0.6

As shown in Table 6, Project-related traffic-volume increases external to the study area relative to 2030 No-Build conditions are anticipated to range from 4 to 17 vehicles or 0.3 to 1.6 percent during the peak periods.



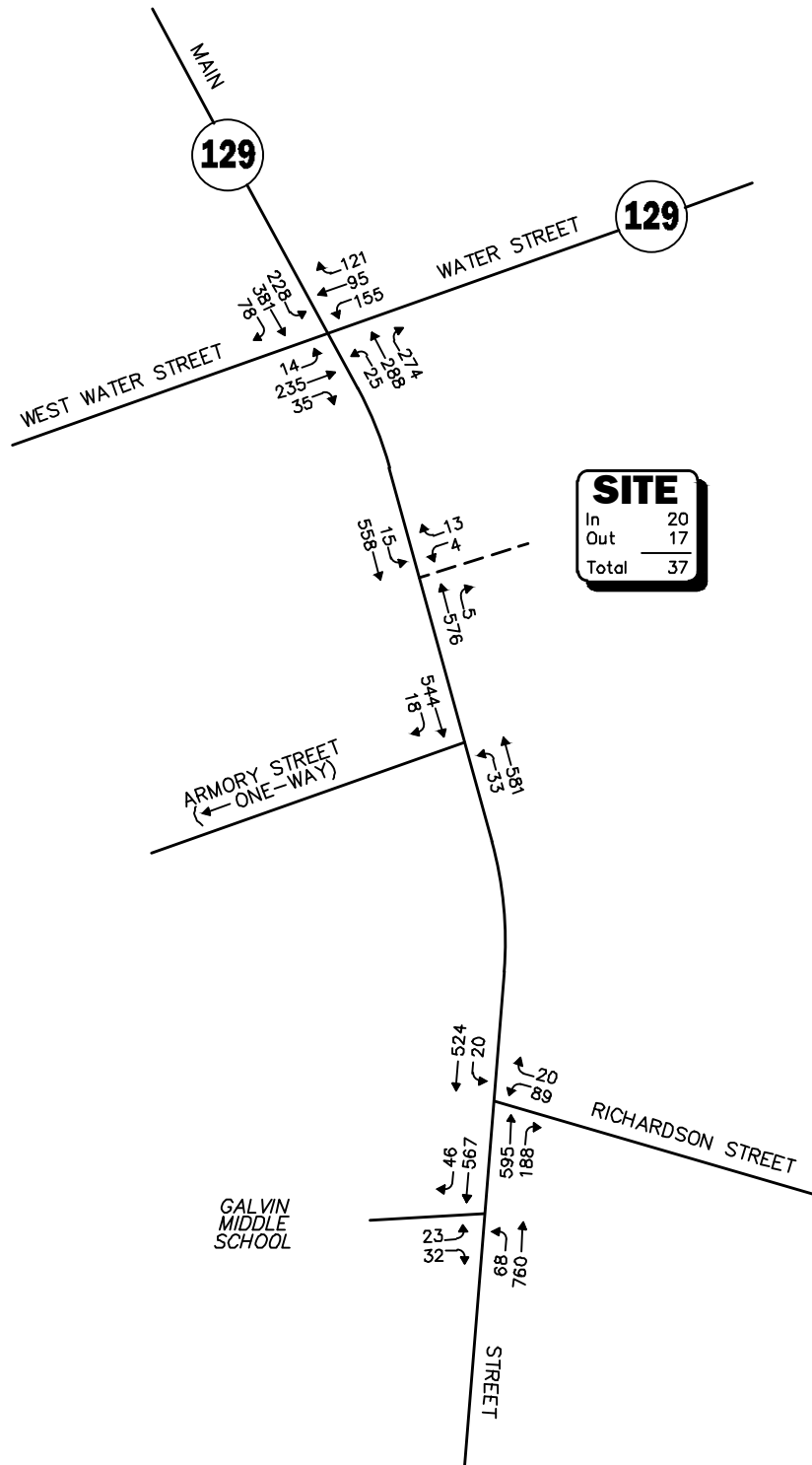
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 10



2030 Build  
Weekday Morning  
Peak-Hour Traffic Volumes



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

Not To Scale

Figure 11



2030 Build  
Weekday Evening  
Peak-Hour Traffic Volumes

## SIGHT DISTANCE EVALUATION

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Sight distance measurements were performed at the site driveway intersection with Main Street in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)<sup>7</sup> recommendations. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance recommended to be provided 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 is the sight distance recommended to be provided by a driver entering or crossing an intersecting roadway to perceive an on-coming 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 recommended 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.

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

**Table 7**  
**SIGHT DISTANCE MEASUREMENTS<sup>a</sup>**

Intersection/Sight Distance Measurement	Recommended Distances (Feet)	Field Measured Distances (Feet)
	Posted Speed Limit of 20 mph on Main Street	
<b>Main Street at Site Driveway</b>		
<i>Stopping Sight Distance:</i>		
Main Street approaching from the north	115	500+
Main Street approaching from the south	115	500+
<i>Intersection Sight Distance:<sup>b</sup></i>		
Left turn from site driveway (looking north)	225	500+
Left turn from site driveway (looking south)	225	500+ <sup>c</sup>

<sup>a</sup>Recommended values obtained from *A Policy on Geometric Design of Highways and Streets*, 7<sup>th</sup> Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018.

<sup>b</sup>Values 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.

<sup>c</sup>Distance if parked cars near the site driveway were removed.

As can be seen in Table 7, the sight distance at the intersection of the site driveway with Main Street was found to exceed the recommended values for SSD and ISD based on a speed of 20 mph.



# **TRAFFIC OPERATIONS ANALYSIS**

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Measuring existing and future traffic volumes quantify traffic flow within the study area. To assess quality of flow, roadway capacity, and vehicle queue analyses were conducted under Existing, No-Build, and Build traffic-volume conditions. Capacity analyses provide an indication of how well the roadway 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.

## **METHODOLOGY**

### **Levels of Service**

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.<sup>8</sup> The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with level-of-service (LOS) A representing the best-operating conditions and LOS F representing congested or constrained operating conditions.

Since the level of service of a traffic facility is a function of the traffic 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 year.

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<sup>8</sup>The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual 6<sup>th</sup> Edition*; Transportation Research Board; Washington, DC; 2016.

## Signalized Intersections

The six levels of service for signalized intersections may be described as follows:

- *LOS A* describes operations with very low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than *LOS A*.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop, and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with oversaturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections were calculated using the Percentile Delay Method implemented as a part of the Synchro™ 11 software as required by MassDOT. The Percentile Delay Method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on “percentile” delay. Level-of-service designations are based on the criterion of percentile delay per vehicle and are a measure of: i) driver discomfort; ii) motorist frustration; and iii) fuel consumption; and include a uniform delay based on percentile volumes using a Poisson arrival pattern, an initial queue move-up time, and a queue interaction delay that accounts for delays resulting from queues extending from adjacent intersections. Table 8 summarizes the relationship between level-of-service and percentile delay and uses the same numerical delay thresholds as the *Highway Capacity Manual*<sup>9</sup> method. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, individual intersection approaches, or to entire intersections.

**Table 8**  
**LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS**

Level of Service	Percentile Delay Per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

<sup>9</sup>*Highway Capacity Manual 6<sup>th</sup> Edition*; Transportation Research Board; Washington, DC; 2016.

## Unsignalized Intersections

The six levels of service for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the *Highway Capacity Manual 6<sup>th</sup> Edition*. Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the *Highway Capacity Manual 6<sup>th</sup> Edition*. Table 9 summarizes the relationship between level of service and average control delay for two-way STOP-controlled and all-way STOP-controlled intersections.

**Table 9**  
**LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS<sup>a</sup>**

Level-of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
$v/c \leq 1.0$	$v/c > 1.0$	
A	F	$\leq 10.0$
B	F	10.1 to 15.0
C	F	15.1 to 25.0
D	F	25.1 to 35.0
E	F	35.1 to 50.0
F	F	$> 50.0$

<sup>a</sup>Source: *Highway Capacity Manual 6<sup>th</sup> Edition*; Transportation Research Board; Washington, DC; 2016; page 20-6.

## **ANALYSIS RESULTS**

Level-of-service analyses were conducted for 2023 Existing, 2030 No-Build, and 2030 Build conditions for the study area intersections. The results of the intersection capacity analysis within the study area are described below, with a tabular summary provided in Table 10 and Table 11.

### **Signalized Intersection**

#### **Main Street at West Water Street and Water Street**

Under 2023 Existing and 2030 No-Build conditions, this intersection operates at an overall LOS D during the weekday morning and evening peak hours. No changes to level of service occur under 2030 Build conditions due to the addition of Project traffic. The vehicle queue lengths increase by less than 1 vehicle with the addition of Project traffic.

**Table 10**  
**SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

Signalized Intersection/ Peak Hour/Movement	2023 Existing				2030 No-Build				2030 Build			
	V/C <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup> Avg/95 <sup>th</sup>	V/C	Delay	LOS	Queue Avg/95 <sup>th</sup>	V/C	Delay	LOS	Queue Avg/95 <sup>th</sup>
<b>Main Street at West Water Street and Water Street</b>												
<i>Weekday Morning:</i>												
West Water Street EB LT/TH/RT	0.28	24.5	C	5/8	0.33	27.0	C	6/9	0.33	27.5	C	6/9
Water Street WB LT/TH	0.64	31.2	C	10/20	0.76	39.3	D	11/23	0.78	41.4	D	12/24
Water Street WB RT	0.14	22.1	C	1/4	0.17	24.2	C	2/5	0.17	24.6	C	2/5
Main Street NB LT/TH	0.78	52.0	D	11/12	0.80	51.5	D	12/13	0.79	50.2	D	12/13
Main Street NB RT	0.37	39.5	D	3/5	0.40	38.3	D	4/5	0.40	37.8	D	4/6
Main Street SB LT	0.54	31.7	C	3/4	0.59	31.9	C	3/4	0.59	31.3	C	3/4
Main Street SB TH/RT	0.73	38.6	D	13/15	0.74	37.2	D	14/15	0.74	36.5	D	14/16
<b>Overall</b>	--	<b>36.4</b>	<b>D</b>	--	--	<b>37.6</b>	<b>D</b>	--	--	<b>37.6</b>	<b>D</b>	--
<i>Weekday Evening:</i>												
West Water Street EB LT/TH/RT	0.37	26.5	C	7/12	0.42	29.1	C	8/13	0.42	29.5	C	9/13
Water Street WB LT/TH	0.59	30.3	C	7/15	0.71	37.6	D	9/18	0.74	40.3	D	9/18
Water Street WB RT	0.08	22.2	C	1/2	0.10	24.0	C	1/3	0.11	24.4	C	1/3
Main Street NB LT/TH	0.75	53.1	D	9/12	0.78	53.9	D	10/13	0.79	53.6	D	10/13
Main Street NB RT	0.45	42.8	D	4/7	0.48	42.1	D	4/7	0.49	41.9	D	5/8
Main Street SB LT	0.64	33.6	C	5/6	0.70	34.4	C	5/7	0.70	34.2	C	5/7
Main Street SB TH/RT	0.65	34.7	C	12/14	0.67	33.4	C	12/14	0.67	33.4	C	12/15
<b>Overall</b>	--	<b>36.0</b>	<b>D</b>	--	--	<b>37.2</b>	<b>D</b>	--	--	<b>37.6</b>	<b>D</b>	--

<sup>a</sup>Volume-to-capacity ratio.

<sup>b</sup>Control (signal) delay per vehicle in seconds.

<sup>c</sup>Level of service.

<sup>d</sup>Queue length in vehicles.

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

## **Unsignalized Intersections**

### **Main Street at Richardson Street and the Galvin Middle School Driveway**

Under 2023 Existing conditions, the critical movements at this intersection operate at LOS B and F during the weekday morning peak hour and operate at LOS B, E, and F during the weekday evening peak hour. Under 2030 No-Build conditions, the critical movements at this intersection operate at LOS B and F during the weekday morning and weekday evening peak hours. No changes to level of service occur under 2030 Build conditions due to the addition of Project traffic. Critical movement delay increases by less than 2 seconds and the queue length remains unchanged under 2030 Build conditions compared to 2030 No-Build conditions.

It should be noted that a Wakefield Police Officer is typically present at this intersection during peak hours assisting pedestrians crossing Main Street and also assisting vehicles turning left into and out of the Galvin Middle School driveway. This reduces delay for these movements as compared with the results noted above.

### **Main Street at the Project Driveway**

Under 2030 Build conditions, the critical movements at this intersection operate at LOS C or better during the weekday morning and evening peak hours. The vehicle queue lengths at intersection approaches are no more than 1 vehicle during the weekday morning and evening peak hours.

**Table 11**  
**UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

Unsignalized Intersection/ Critical Movement/Peak Hour	2023 Existing				2030 No-Build				2030 Build			
	Demand <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup>	Demand	Delay	LOS	Queue	Demand	Delay	LOS	Queue
<b>Main Street at Richardson Street and the Galvin Middle School Driveway</b>												
<i>Weekday Morning:</i>												
Galvin Middle School Driveway EB LT/TH	122	>50.0	F	18	131	>50.0	F	22	131	>50.0	F	22
Galvin Middle School Driveway EB RT	112	14.8	B	2	120	16.1	B	2	120	16.1	B	2
Richardson Street WB LT/TH/RT	95	>50.0	F	11	102	>50.0	F	14	102	>50.0	F	14
<i>Weekday Evening:</i>												
Galvin Middle School Driveway EB LT/TH	21	48.3	E	1	23	>50.0	F	1	23	>50.0	F	1
Galvin Middle School Driveway EB RT	30	11.9	B	1	32	12.3	B	1	32	12.4	B	1
Richardson Street WB LT/TH/RT	102	>50.0	F	7	109	>50.0	F	9	109	>50.0	F	9
<b>Main Street at the Project Driveway</b>												
<i>Weekday Morning:</i>												
Project Driveway WB LT/RT	--	--	--	--	--	--	--	--	8	15.0	C	1
<i>Weekday Evening:</i>												
Project Driveway WB LT/RT	--	--	--	--	--	--	--	--	17	16.0	C	1

<sup>a</sup>Demand in vehicles per hour.

<sup>b</sup>Delay in seconds per vehicle.

<sup>c</sup>Level of service.

<sup>d</sup>95th percentile queue length (veh).

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

## RECOMMENDATIONS AND CONCLUSIONS

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VAI has prepared this TIA in order to evaluate potential traffic impacts associated with the proposed mixed-use redevelopment to be located at 460-472 Main Street in Wakefield, Massachusetts. This study was prepared in accordance with MassDOT Guidelines for *Transportation Impact Assessments (TIA)*; and was conducted pursuant to the standards of the traffic engineering and transportation planning professions for the preparation of such reports. Based on the results of this study, the following can be concluded:

- The study area intersection crash rates were observed to be lower than the MassDOT District 4 crash rates for unsignalized and signalized intersections.
- The Project is expected to generate 348 vehicle trips on an average weekday (two-way, 24-hour volume), with 16 vehicle trips (8 entering and 8 exiting) expected during the weekday morning peak hour and 37 vehicle trips (20 entering and 17 exiting) expected during the weekday evening peak hour.
- The sight distance at the intersection of the site driveway with Main Street was found to exceed the recommended values for SSD and ISD based on a speed of 20 mph.
- The analysis has indicated that the Project will generally result in minimal impact on motorist delays and vehicle queue lengths at the study intersection.



## **RECOMMENDATIONS**

A transportation improvement program has been developed that is designed to provide safe and efficient access to the Project and address any deficiencies identified at the study area locations. The following improvements have been recommended as a part of this evaluation:

### **Project Access**

Access to the Project site will be provided via one driveway onto Main Street. As the site currently has one curb cut onto Main Street, the Project will not increase the number of curb cuts onto Main Street. The following recommendations are offered with respect to the design and operation of the Project site driveway:

- The driveway should be placed under STOP-sign control, with a painted STOP-bar included.
- All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD.
- Signs and landscaping adjacent to the Project site driveway should be designed and maintained so as not to restrict lines of sight.
- It is recommended that parking be prohibited within a distance of 10 feet from either side of the site driveway to assist in visibility for vehicles entering and exiting the site.

## **CONCLUSIONS**

As documented in this study, Project-related traffic increases will not result in significant increases on overall traffic volumes or traffic delays within the study area. The site driveway will provide efficient access to and from the development. In general, Project-related traffic can be adequately accommodated within the existing infrastructure with minimal impact on the traffic operations within the study area.

## APPENDIX

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TRAFFIC COUNT DATA  
SEASONAL ADJUSTMENT DATA  
PUBLIC TRANSPORTATION SCHEDULES  
MASSDOT CRASH RATE WORKSHEETS  
GROWTH RATE DATA  
TRIP GENERATION DATA  
JOURNEY TO WORK  
CAPACITY ANALYSIS

TRAFFIC COUNT DATA

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# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	41	65	2	45	23	33	3	38	22	0	22	2	296
07:15 AM	55	94	8	44	36	31	1	53	43	2	29	2	398
07:30 AM	22	124	4	49	33	26	1	67	51	10	34	2	423
07:45 AM	22	89	8	40	36	45	3	97	45	7	45	4	441
<b>Total</b>	<b>140</b>	<b>372</b>	<b>22</b>	<b>178</b>	<b>128</b>	<b>135</b>	<b>8</b>	<b>255</b>	<b>161</b>	<b>19</b>	<b>130</b>	<b>10</b>	<b>1558</b>
08:00 AM	24	86	8	41	36	48	6	67	42	4	36	5	403
08:15 AM	28	73	9	41	48	42	3	59	37	4	30	6	380
08:30 AM	27	85	7	31	48	49	3	69	53	2	23	7	404
08:45 AM	26	61	11	42	43	28	8	73	50	2	21	6	371
<b>Total</b>	<b>105</b>	<b>305</b>	<b>35</b>	<b>155</b>	<b>175</b>	<b>167</b>	<b>20</b>	<b>268</b>	<b>182</b>	<b>12</b>	<b>110</b>	<b>24</b>	<b>1558</b>
<b>Grand Total</b>	<b>245</b>	<b>677</b>	<b>57</b>	<b>333</b>	<b>303</b>	<b>302</b>	<b>28</b>	<b>523</b>	<b>343</b>	<b>31</b>	<b>240</b>	<b>34</b>	<b>3116</b>
Apprch %	25	69.2	5.8	35.5	32.3	32.2	3.1	58.5	38.4	10.2	78.7	11.1	
Total %	7.9	21.7	1.8	10.7	9.7	9.7	0.9	16.8	11	1	7.7	1.1	
Cars	235	655	55	326	296	286	28	508	335	31	232	33	3020
% Cars	95.9	96.8	96.5	97.9	97.7	94.7	100	97.1	97.7	100	96.7	97.1	96.9
Trucks	10	22	2	7	7	16	0	15	8	0	8	1	96
% Trucks	4.1	3.2	3.5	2.1	2.3	5.3	0	2.9	2.3	0	3.3	2.9	3.1

Start Time	Main St From North				Water St From East				Main St From South				W Water St 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 07:15 AM																	
07:15 AM	<b>55</b>	94	<b>8</b>	<b>157</b>	44	<b>36</b>	31	111	1	53	43	97	2	29	2	33	398
07:30 AM	22	<b>124</b>	4	150	<b>49</b>	33	26	108	1	67	<b>51</b>	119	<b>10</b>	34	2	46	423
07:45 AM	22	89	8	119	40	36	45	121	3	<b>97</b>	45	<b>145</b>	7	<b>45</b>	4	<b>56</b>	<b>441</b>
08:00 AM	24	86	8	118	41	36	<b>48</b>	<b>125</b>	<b>6</b>	67	42	115	4	36	<b>5</b>	45	403
<b>Total Volume</b>	123	393	28	544	174	141	150	465	11	284	181	476	23	144	13	180	1665
<b>% App. Total</b>	22.6	72.2	5.1		37.4	30.3	32.3		2.3	59.7	38		12.8	80	7.2		
PHF	.559	.792	.875	.866	.888	.979	.781	.930	.458	.732	.887	.821	.575	.800	.650	.804	.944
Cars	119	382	28	529	170	140	143	453	11	278	179	468	23	140	12	175	1625
% Cars	96.7	97.2	100	97.2	97.7	99.3	95.3	97.4	100	97.9	98.9	98.3	100	97.2	92.3	97.2	97.6
Trucks	4	11	0	15	4	1	7	12	0	6	2	8	0	4	1	5	40
% Trucks	3.3	2.8	0	2.8	2.3	0.7	4.7	2.6	0	2.1	1.1	1.7	0	2.8	7.7	2.8	2.4

# Accurate Counts

978-664-2565

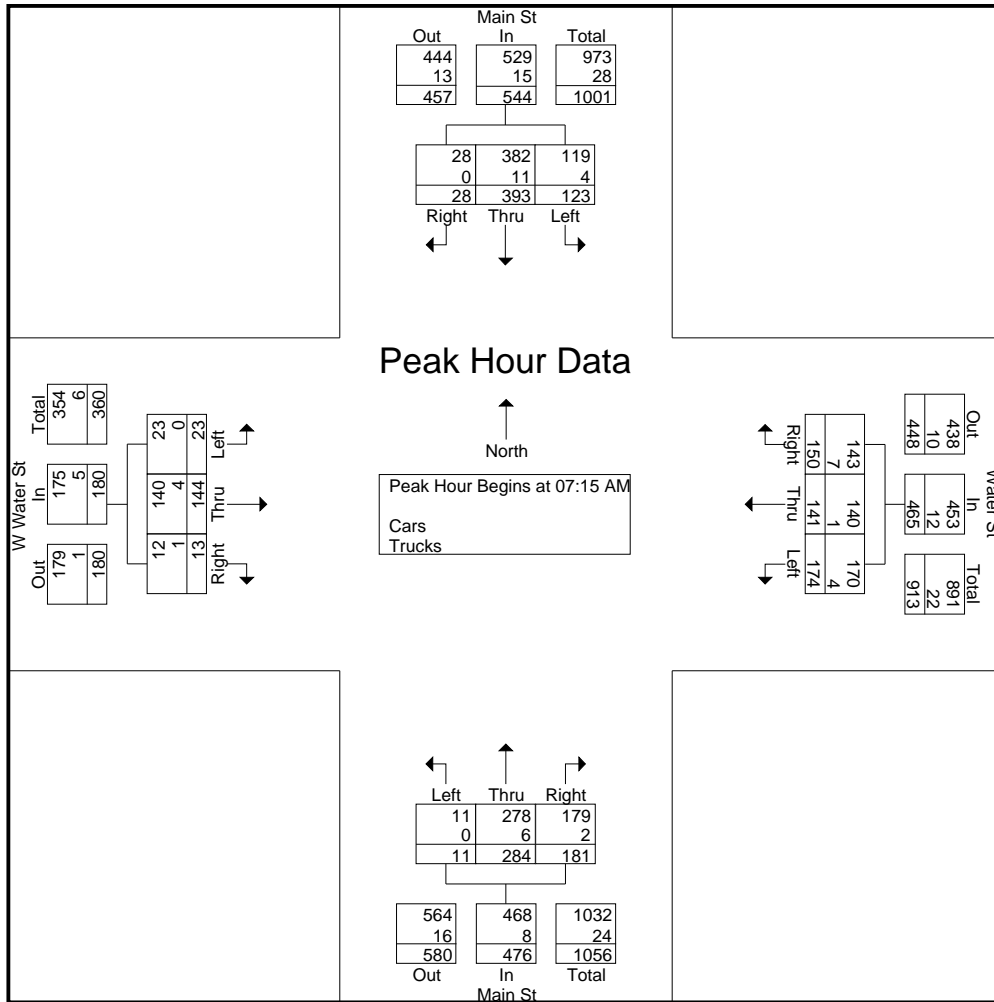
File Name : 96800001

Site Code : 96800001

Start Date : 5/11/2023

Page No : 2

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear



**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				07:45 AM				07:45 AM				07:30 AM			
+0 mins.	<b>55</b>	94	<b>8</b>	<b>157</b>	40	36	45	121	3	<b>97</b>	45	<b>145</b>	<b>10</b>	34	2	46
+15 mins.	22	<b>124</b>	4	150	<b>41</b>	36	48	125	<b>6</b>	67	42	115	7	<b>45</b>	4	<b>56</b>
+30 mins.	22	89	8	119	41	<b>48</b>	42	<b>131</b>	3	59	37	99	4	36	5	45
+45 mins.	24	86	8	118	31	48	<b>49</b>	128	3	69	<b>53</b>	125	4	30	<b>6</b>	40
Total Volume	123	393	28	544	153	168	184	505	15	292	177	484	25	145	17	187
% App. Total	22.6	72.2	5.1		30.3	33.3	36.4		3.1	60.3	36.6		13.4	77.5	9.1	
PHF	.559	.792	.875	.866	.933	.875	.939	.964	.625	.753	.835	.834	.625	.806	.708	.835
Cars	119	382	28	529	152	164	175	491	15	283	175	473	25	141	16	182
% Cars	96.7	97.2	100	97.2	99.3	97.6	95.1	97.2	100	96.9	98.9	97.7	100	97.2	94.1	97.3
Trucks	4	11	0	15	1	4	9	14	0	9	2	11	0	4	1	5
% Trucks	3.3	2.8	0	2.8	0.7	2.4	4.9	2.8	0	3.1	1.1	2.3	0	2.8	5.9	2.7

# Accurate Counts

978-664-2565

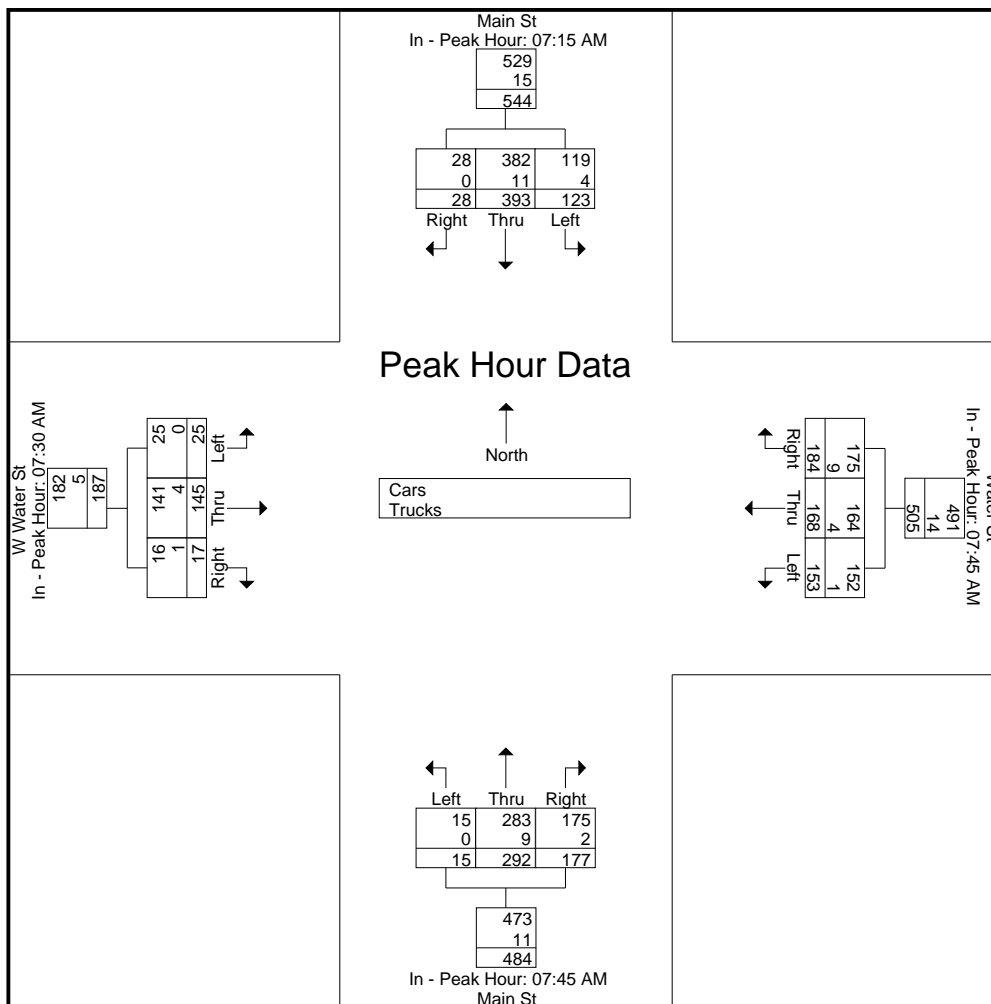
File Name : 96800001

Site Code : 96800001

Start Date : 5/11/2023

Page No : 3

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear



# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 4

## Groups Printed- Cars

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	39	63	1	43	23	31	3	38	21	0	22	2	286
07:15 AM	54	92	8	42	36	30	1	52	43	2	28	2	390
07:30 AM	21	120	4	48	33	24	1	64	50	10	33	2	410
07:45 AM	20	87	8	40	35	43	3	96	45	7	43	4	431
<b>Total</b>	134	362	21	173	127	128	8	250	159	19	126	10	1517
08:00 AM	24	83	8	40	36	46	6	66	41	4	36	4	394
08:15 AM	27	70	9	41	48	39	3	55	37	4	29	6	368
08:30 AM	26	83	7	31	45	47	3	66	52	2	22	7	391
08:45 AM	24	57	10	41	40	26	8	71	46	2	19	6	350
<b>Total</b>	101	293	34	153	169	158	20	258	176	12	106	23	1503
<b>Grand Total</b>	235	655	55	326	296	286	28	508	335	31	232	33	3020
Apprch %	24.9	69.3	5.8	35.9	32.6	31.5	3.2	58.3	38.5	10.5	78.4	11.1	
Total %	7.8	21.7	1.8	10.8	9.8	9.5	0.9	16.8	11.1	1	7.7	1.1	

Start Time	Main St From North				Water St From East				Main St From South				W Water St 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 07:15 AM																	
07:15 AM	<b>54</b>	92	<b>8</b>	<b>154</b>	42	<b>36</b>	30	108	1	52	43	96	2	28	2	32	390
07:30 AM	21	<b>120</b>	4	145	<b>48</b>	33	24	105	1	64	<b>50</b>	115	<b>10</b>	33	2	45	410
07:45 AM	20	87	8	115	40	35	43	118	3	<b>96</b>	45	<b>144</b>	7	<b>43</b>	<b>4</b>	<b>54</b>	<b>431</b>
08:00 AM	24	83	8	115	40	36	<b>46</b>	<b>122</b>	<b>6</b>	66	41	113	4	36	4	44	394
Total Volume	119	382	28	529	170	140	143	453	11	278	179	468	23	140	12	175	1625
% App. Total	22.5	72.2	5.3		37.5	30.9	31.6		2.4	59.4	38.2		13.1	80	6.9		
PHF	.551	.796	.875	.859	.885	.972	.777	.928	.458	.724	.895	.813	.575	.814	.750	.810	.943

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 7

### Groups Printed- Trucks

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	2	2	1	2	0	2	0	0	1	0	0	0	10
07:15 AM	1	2	0	2	0	1	0	1	0	0	1	0	8
07:30 AM	1	4	0	1	0	2	0	3	1	0	1	0	13
07:45 AM	2	2	0	0	1	2	0	1	0	0	2	0	10
<b>Total</b>	<b>6</b>	<b>10</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>41</b>
08:00 AM	0	3	0	1	0	2	0	1	1	0	0	1	9
08:15 AM	1	3	0	0	0	3	0	4	0	0	1	0	12
08:30 AM	1	2	0	0	3	2	0	3	1	0	1	0	13
08:45 AM	2	4	1	1	3	2	0	2	4	0	2	0	21
<b>Total</b>	<b>4</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>9</b>	<b>0</b>	<b>10</b>	<b>6</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>55</b>
<b>Grand Total</b>	<b>10</b>	<b>22</b>	<b>2</b>	<b>7</b>	<b>7</b>	<b>16</b>	<b>0</b>	<b>15</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>96</b>
Apprch %	29.4	64.7	5.9	23.3	23.3	53.3	0	65.2	34.8	0	88.9	11.1	
Total %	10.4	22.9	2.1	7.3	7.3	16.7	0	15.6	8.3	0	8.3	1	

Start Time	Main St From North				Water St From East				Main St From South				W Water St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
<b>Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1</b>																	
<b>Peak Hour for Entire Intersection Begins at 08:00 AM</b>																	
08:00 AM	0	3	0	3	1	0	2	3	0	1	1	2	0	0	1	1	9
08:15 AM	1	3	0	4	0	0	3	3	0	4	0	4	0	1	0	1	12
08:30 AM	1	2	0	3	0	3	2	5	0	3	1	4	0	1	0	1	13
08:45 AM	2	4	1	7	1	3	2	6	0	2	4	6	0	2	0	2	21
<b>Total Volume</b>	<b>4</b>	<b>12</b>	<b>1</b>	<b>17</b>	<b>2</b>	<b>6</b>	<b>9</b>	<b>17</b>	<b>0</b>	<b>10</b>	<b>6</b>	<b>16</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>55</b>
% App. Total	23.5	70.6	5.9		11.8	35.3	52.9		0	62.5	37.5		0	80	20		
PHF	.500	.750	.250	.607	.500	.500	.750	.708	.000	.625	.375	.667	.000	.500	.250	.625	.655



# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 10

### Groups Printed- Bikes Peds

Start Time	Main St From North				Water St From East				Main St From South				W Water St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	2	1	1	0	1	0	1	0	1	0	0	0	4	8	3	11
07:15 AM	0	0	0	5	0	1	0	0	0	0	0	4	0	2	0	5	14	3	17
07:30 AM	0	0	0	3	0	0	0	1	0	0	0	5	0	5	0	5	14	5	19
07:45 AM	0	0	0	2	0	0	0	3	0	0	0	3	0	0	0	4	12	0	12
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>18</b>	<b>48</b>	<b>11</b>	<b>59</b>
08:00 AM	0	0	0	1	0	0	0	2	0	1	0	2	0	0	0	0	5	1	6
08:15 AM	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	5	0	5
08:30 AM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	1	3
08:45 AM	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	3	7	0	7
<b>Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>19</b>	<b>2</b>	<b>21</b>
<b>Grand Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>18</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>22</b>	<b>67</b>	<b>13</b>	<b>80</b>
Apprch %	0	100	0		33.3	66.7	0		0	100	0		0	100	0				
Total %	0	7.7	0		7.7	15.4	0		0	15.4	0		0	53.8	0		83.8	16.2	

Start Time	Main St From North				Water St From East				Main St From South				W Water St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
<b>Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1</b>																	
<b>Peak Hour for Entire Intersection Begins at 07:00 AM</b>																	
07:00 AM	0	0	0	0	1	1	0	2	0	1	0	1	0	0	0	0	3
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>11</b>
<b>% App. Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33.3</b>	<b>66.7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>
PHF	.000	.000	.000	.000	.250	.500	.000	.375	.000	.250	.000	.250	.000	.350	.000	.350	.550

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	61	88	17	39	18	23	6	74	58	6	49	9	448
04:15 PM	58	75	20	38	21	30	5	57	61	3	47	5	420
04:30 PM	44	92	16	25	23	17	5	64	51	1	64	10	412
04:45 PM	49	81	19	35	27	31	6	59	56	2	62	11	438
<b>Total</b>	<b>212</b>	<b>336</b>	<b>72</b>	<b>137</b>	<b>89</b>	<b>101</b>	<b>22</b>	<b>254</b>	<b>226</b>	<b>12</b>	<b>222</b>	<b>35</b>	<b>1718</b>
05:00 PM	54	97	16	27	23	20	5	74	62	4	60	7	449
05:15 PM	49	92	19	40	20	27	6	63	64	1	55	6	442
05:30 PM	52	76	19	35	19	22	6	62	69	6	41	9	416
05:45 PM	52	102	23	25	19	17	6	69	47	8	50	7	425
<b>Total</b>	<b>207</b>	<b>367</b>	<b>77</b>	<b>127</b>	<b>81</b>	<b>86</b>	<b>23</b>	<b>268</b>	<b>242</b>	<b>19</b>	<b>206</b>	<b>29</b>	<b>1732</b>
<b>Grand Total</b>	<b>419</b>	<b>703</b>	<b>149</b>	<b>264</b>	<b>170</b>	<b>187</b>	<b>45</b>	<b>522</b>	<b>468</b>	<b>31</b>	<b>428</b>	<b>64</b>	<b>3450</b>
Apprch %	33	55.3	11.7	42.5	27.4	30.1	4.3	50.4	45.2	5.9	81.8	12.2	
Total %	12.1	20.4	4.3	7.7	4.9	5.4	1.3	15.1	13.6	0.9	12.4	1.9	
Cars	414	698	148	261	168	185	45	514	461	31	422	63	3410
% Cars	98.8	99.3	99.3	98.9	98.8	98.9	100	98.5	98.5	100	98.6	98.4	98.8
Trucks	5	5	1	3	2	2	0	8	7	0	6	1	40
% Trucks	1.2	0.7	0.7	1.1	1.2	1.1	0	1.5	1.5	0	1.4	1.6	1.2

Start Time	Main St From North				Water St From East				Main St From South				W Water St 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 04:45 PM																	
04:45 PM	49	81	19	149	35	27	31	93	6	59	56	121	2	62	11	75	438
05:00 PM	54	97	16	167	27	23	20	70	5	74	62	141	4	60	7	71	449
05:15 PM	49	92	19	160	40	20	27	87	6	63	64	133	1	55	6	62	442
05:30 PM	52	76	19	147	35	19	22	76	6	62	69	137	6	41	9	56	416
<b>Total Volume</b>	<b>204</b>	<b>346</b>	<b>73</b>	<b>623</b>	<b>137</b>	<b>89</b>	<b>100</b>	<b>326</b>	<b>23</b>	<b>258</b>	<b>251</b>	<b>532</b>	<b>13</b>	<b>218</b>	<b>33</b>	<b>264</b>	<b>1745</b>
% App. Total	32.7	55.5	11.7		42	27.3	30.7		4.3	48.5	47.2		4.9	82.6	12.5		
PHF	.944	.892	.961	.933	.856	.824	.806	.876	.958	.872	.909	.943	.542	.879	.750	.880	.972
Cars	203	342	72	617	136	87	98	321	23	253	249	525	13	214	32	259	1722
% Cars	99.5	98.8	98.6	99.0	99.3	97.8	98.0	98.5	100	98.1	99.2	98.7	100	98.2	97.0	98.1	98.7
Trucks	1	4	1	6	1	2	2	5	0	5	2	7	0	4	1	5	23
% Trucks	0.5	1.2	1.4	1.0	0.7	2.2	2.0	1.5	0	1.9	0.8	1.3	0	1.8	3.0	1.9	1.3

# Accurate Counts

978-664-2565

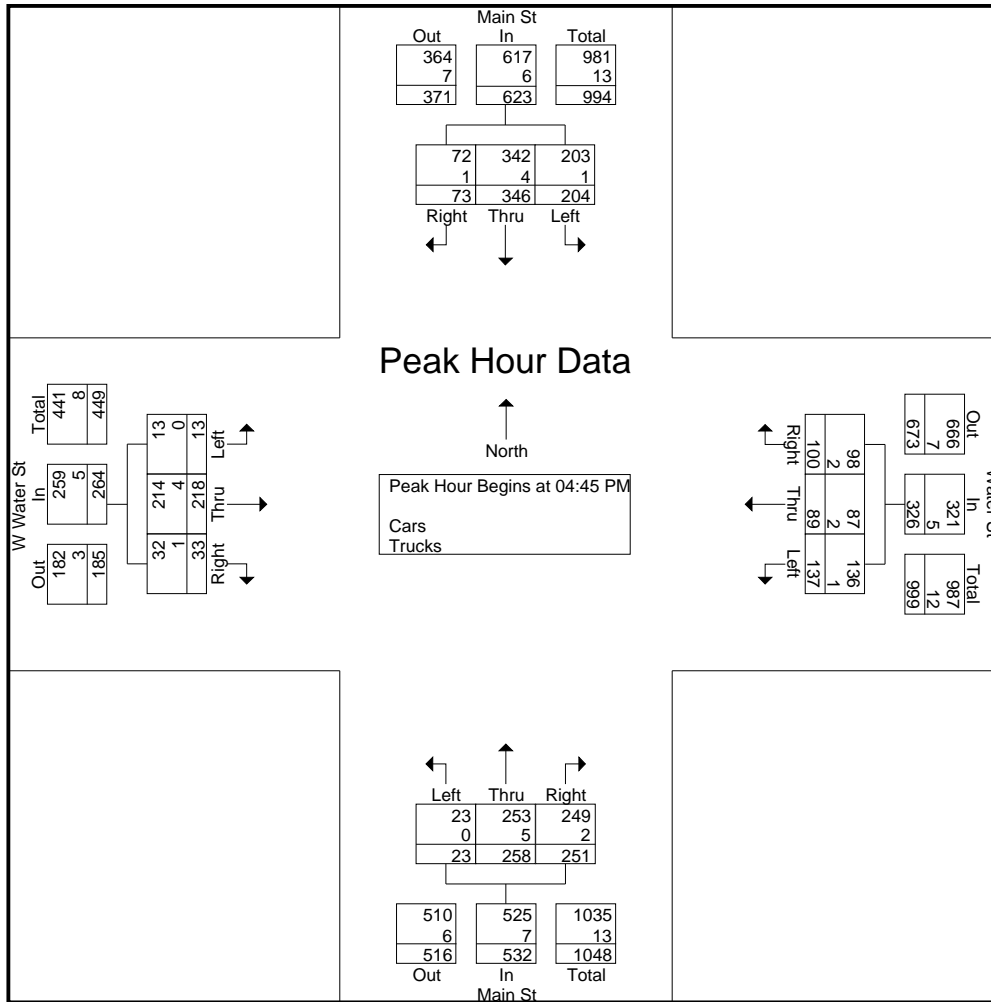
File Name : 96800001

Site Code : 96800001

Start Date : 5/11/2023

Page No : 2

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear



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				05:00 PM				04:30 PM			
+0 mins.	<b>54</b>	97	16	167	<b>39</b>	18	23	80	5	<b>74</b>	62	<b>141</b>	1	<b>64</b>	10	<b>75</b>
+15 mins.	49	92	19	160	38	21	30	89	<b>6</b>	63	64	133	2	62	<b>11</b>	75
+30 mins.	52	76	19	147	25	23	17	65	6	62	<b>69</b>	137	<b>4</b>	60	7	71
+45 mins.	52	<b>102</b>	<b>23</b>	<b>177</b>	35	<b>27</b>	<b>31</b>	<b>93</b>	6	69	47	122	1	55	6	62
Total Volume	207	367	77	651	137	89	101	327	23	268	242	533	8	241	34	283
% App. Total	31.8	56.4	11.8		41.9	27.2	30.9		4.3	50.3	45.4		2.8	85.2	12	
PHF	.958	.900	.837	.919	.878	.824	.815	.879	.958	.905	.877	.945	.500	.941	.773	.943
Cars	206	363	76	645	134	88	100	322	23	263	241	527	8	237	33	278
% Cars	99.5	98.9	98.7	99.1	97.8	98.9	99	98.5	100	98.1	99.6	98.9	100	98.3	97.1	98.2
Trucks	1	4	1	6	3	1	1	5	0	5	1	6	0	4	1	5
% Trucks	0.5	1.1	1.3	0.9	2.2	1.1	1	1.5	0	1.9	0.4	1.1	0	1.7	2.9	1.8

# Accurate Counts

978-664-2565

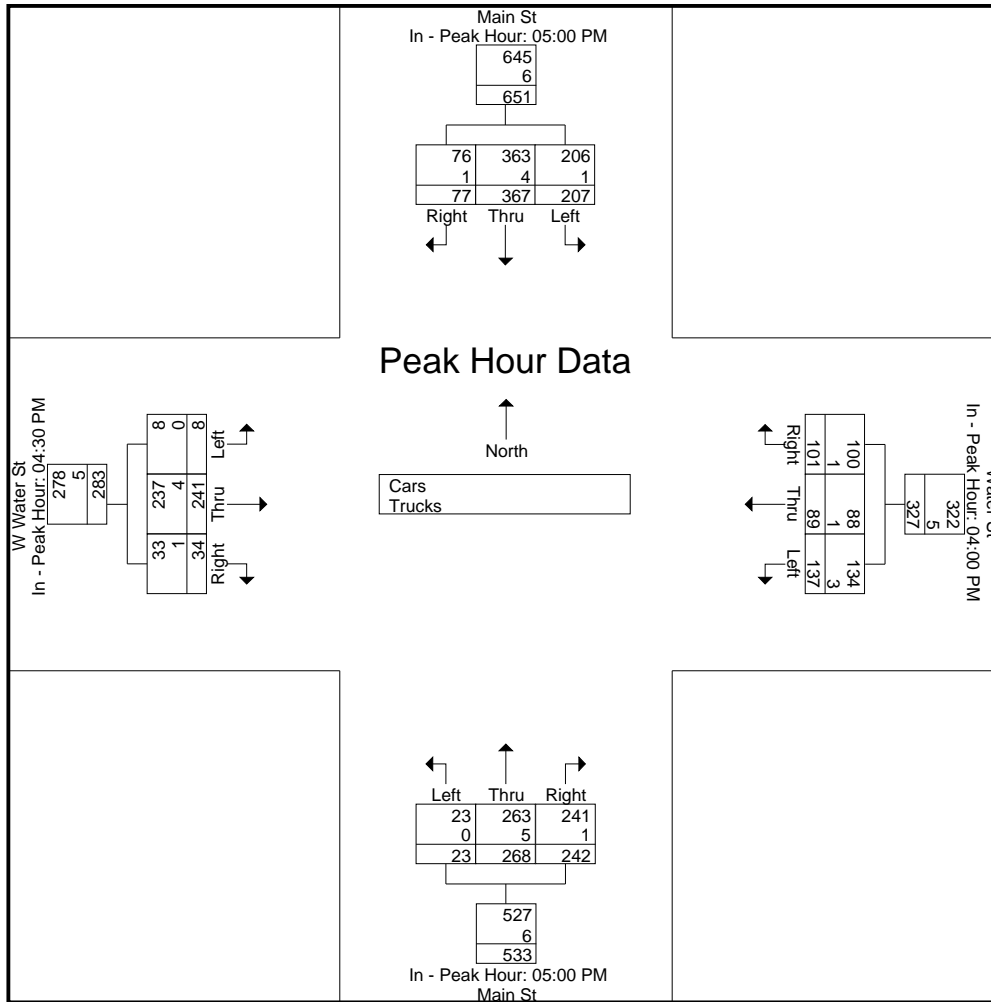
File Name : 96800001

Site Code : 96800001

Start Date : 5/11/2023

Page No : 3

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear



# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 4

## Groups Printed- Cars

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	60	87	17	38	18	23	6	74	55	6	48	9	441
04:15 PM	55	75	20	37	21	30	5	55	60	3	46	5	412
04:30 PM	44	92	16	25	23	17	5	64	50	1	64	10	411
04:45 PM	49	81	19	34	26	30	6	58	55	2	62	11	433
<b>Total</b>	<b>208</b>	<b>335</b>	<b>72</b>	<b>134</b>	<b>88</b>	<b>100</b>	<b>22</b>	<b>251</b>	<b>220</b>	<b>12</b>	<b>220</b>	<b>35</b>	<b>1697</b>
05:00 PM	53	95	16	27	22	20	5	73	61	4	59	6	441
05:15 PM	49	91	18	40	20	26	6	61	64	1	52	6	434
05:30 PM	52	75	19	35	19	22	6	61	69	6	41	9	414
05:45 PM	52	102	23	25	19	17	6	68	47	8	50	7	424
<b>Total</b>	<b>206</b>	<b>363</b>	<b>76</b>	<b>127</b>	<b>80</b>	<b>85</b>	<b>23</b>	<b>263</b>	<b>241</b>	<b>19</b>	<b>202</b>	<b>28</b>	<b>1713</b>
<b>Grand Total</b>	<b>414</b>	<b>698</b>	<b>148</b>	<b>261</b>	<b>168</b>	<b>185</b>	<b>45</b>	<b>514</b>	<b>461</b>	<b>31</b>	<b>422</b>	<b>63</b>	<b>3410</b>
Apprch %	32.9	55.4	11.7	42.5	27.4	30.1	4.4	50.4	45.2	6	81.8	12.2	
Total %	12.1	20.5	4.3	7.7	4.9	5.4	1.3	15.1	13.5	0.9	12.4	1.8	

Start Time	Main St From North				Water St From East				Main St From South				W Water St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
<b>Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1</b>																	
<b>Peak Hour for Entire Intersection Begins at 04:45 PM</b>																	
04:45 PM	49	81	19	149	34	26	30	90	6	58	55	119	2	62	11	75	433
05:00 PM	53	95	16	164	27	22	20	69	5	73	61	139	4	59	6	69	441
05:15 PM	49	91	18	158	40	20	26	86	6	61	64	131	1	52	6	59	434
05:30 PM	52	75	19	146	35	19	22	76	6	61	69	136	6	41	9	56	414
<b>Total Volume</b>	<b>203</b>	<b>342</b>	<b>72</b>	<b>617</b>	<b>136</b>	<b>87</b>	<b>98</b>	<b>321</b>	<b>23</b>	<b>253</b>	<b>249</b>	<b>525</b>	<b>13</b>	<b>214</b>	<b>32</b>	<b>259</b>	<b>1722</b>
<b>% App. Total</b>	<b>32.9</b>	<b>55.4</b>	<b>11.7</b>		<b>42.4</b>	<b>27.1</b>	<b>30.5</b>		<b>4.4</b>	<b>48.2</b>	<b>47.4</b>		<b>5</b>	<b>82.6</b>	<b>12.4</b>		
PHF	.958	.900	.947	.941	.850	.837	.817	.892	.958	.866	.902	.944	.542	.863	.727	.863	.976

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 7

### Groups Printed- Trucks

Start Time	Main St From North			Water St From East			Main St From South			W Water St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	1	1	0	1	0	0	0	0	3	0	1	0	7
04:15 PM	3	0	0	1	0	0	0	2	1	0	1	0	8
04:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
04:45 PM	0	0	0	1	1	1	0	1	1	0	0	0	5
<b>Total</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>21</b>
05:00 PM	1	2	0	0	1	0	0	1	1	0	1	1	8
05:15 PM	0	1	1	0	0	1	0	2	0	0	3	0	8
05:30 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
<b>Total</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>19</b>
<b>Grand Total</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>7</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>40</b>
Apprch %	45.5	45.5	9.1	42.9	28.6	28.6	0	53.3	46.7	0	85.7	14.3	
Total %	12.5	12.5	2.5	7.5	5	5	0	20	17.5	0	15	2.5	

Start Time	Main St From North				Water St From East				Main St From South				W Water St 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 04:45 PM																	
04:45 PM	0	0	0	0	1	1	1	3	0	1	1	2	0	0	0	0	5
05:00 PM	1	2	0	3	0	1	0	1	0	1	1	2	0	1	1	2	8
05:15 PM	0	1	1	2	0	0	1	1	0	2	0	2	0	3	0	3	8
05:30 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
<b>Total Volume</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>23</b>
% App. Total	16.7	66.7	16.7		20	40	40		0	71.4	28.6		0	80	20		
PHF	.250	.500	.250	.500	.250	.500	.500	.417	.000	.625	.500	.875	.000	.333	.250	.417	.719

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Water St / W Water St  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800001  
 Site Code : 96800001  
 Start Date : 5/11/2023  
 Page No : 10

## Groups Printed- Bikes Peds

Start Time	Main St From North				Water St From East				Main St From South				W Water St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	4	0	3	0	0	0	5	0	0	0	4	0	2	0	2	14	6	20
04:15 PM	0	0	0	3	0	0	0	5	0	1	0	4	0	0	0	3	15	1	16
04:30 PM	0	2	0	1	0	0	0	2	0	0	0	5	0	0	0	2	10	2	12
04:45 PM	0	0	0	0	0	1	0	3	0	0	0	5	0	0	0	8	16	1	17
<b>Total</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>55</b>	<b>10</b>	<b>65</b>
05:00 PM	0	0	0	1	0	0	0	4	0	0	0	2	0	0	0	5	12	0	12
05:15 PM	0	3	0	0	0	0	0	5	0	0	0	4	0	0	0	5	14	3	17
05:30 PM	0	1	0	5	0	0	0	6	0	0	0	6	0	1	0	7	24	2	26
05:45 PM	1	0	0	3	0	0	0	1	0	1	0	8	0	2	0	9	21	4	25
<b>Total</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>26</b>	<b>71</b>	<b>9</b>	<b>80</b>
<b>Grand Total</b>	<b>1</b>	<b>10</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>38</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>41</b>	<b>126</b>	<b>19</b>	<b>145</b>
Apprch %	9.1	90.9	0		0	100	0		0	100	0		0	100	0				
Total %	5.3	52.6	0		0	5.3	0		0	10.5	0		0	26.3	0		86.9	13.1	

Start Time	Main St From North				Water St From East				Main St From South				W Water St 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	0	4	0	4	0	0	0	0	0	0	0	0	0	2	0	2	6
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
<b>Total Volume</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>10</b>
<b>% App. Total</b>	<b>0</b>	<b>100</b>	<b>0</b>		<b>0</b>	<b>100</b>	<b>0</b>		<b>0</b>	<b>100</b>	<b>0</b>		<b>0</b>	<b>100</b>	<b>0</b>		
PHF	.000	.375	.000	.375	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.417

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	2	94	6	18	5	9	9	55	8	5	2	11	224
07:15 AM	1	84	28	6	5	3	29	82	7	25	4	32	306
07:30 AM	2	93	51	16	6	10	59	91	6	47	11	43	435
07:45 AM	0	125	16	15	5	4	32	116	3	22	9	34	381
<b>Total</b>	<b>5</b>	<b>396</b>	<b>101</b>	<b>55</b>	<b>21</b>	<b>26</b>	<b>129</b>	<b>344</b>	<b>24</b>	<b>99</b>	<b>26</b>	<b>120</b>	<b>1346</b>
08:00 AM	4	123	2	18	1	6	6	100	5	3	1	3	272
08:15 AM	1	108	3	6	1	1	1	102	8	4	0	2	237
08:30 AM	1	106	1	14	0	6	4	141	5	0	1	2	281
08:45 AM	1	104	2	18	1	2	5	135	8	0	0	3	279
<b>Total</b>	<b>7</b>	<b>441</b>	<b>8</b>	<b>56</b>	<b>3</b>	<b>15</b>	<b>16</b>	<b>478</b>	<b>26</b>	<b>7</b>	<b>2</b>	<b>10</b>	<b>1069</b>
<b>Grand Total</b>	<b>12</b>	<b>837</b>	<b>109</b>	<b>111</b>	<b>24</b>	<b>41</b>	<b>145</b>	<b>822</b>	<b>50</b>	<b>106</b>	<b>28</b>	<b>130</b>	<b>2415</b>
Apprch %	1.3	87.4	11.4	63.1	13.6	23.3	14.3	80.8	4.9	40.2	10.6	49.2	
Total %	0.5	34.7	4.5	4.6	1	1.7	6	34	2.1	4.4	1.2	5.4	
Cars	11	810	109	108	24	39	145	798	47	106	28	130	2355
% Cars	91.7	96.8	100	97.3	100	95.1	100	97.1	94	100	100	100	97.5
Trucks	1	27	0	3	0	2	0	24	3	0	0	0	60
% Trucks	8.3	3.2	0	2.7	0	4.9	0	2.9	6	0	0	0	2.5

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 07:15 AM																	
07:15 AM	1	84	28	113	6	5	3	14	29	82	7	118	25	4	32	61	306
07:30 AM	2	93	51	146	16	6	10	32	59	91	6	156	47	11	43	101	435
07:45 AM	0	125	16	141	15	5	4	24	32	116	3	151	22	9	34	65	381
08:00 AM	4	123	2	129	18	1	6	25	6	100	5	111	3	1	3	7	272
<b>Total Volume</b>	<b>7</b>	<b>425</b>	<b>97</b>	<b>529</b>	<b>55</b>	<b>17</b>	<b>23</b>	<b>95</b>	<b>126</b>	<b>389</b>	<b>21</b>	<b>536</b>	<b>97</b>	<b>25</b>	<b>112</b>	<b>234</b>	<b>1394</b>
% App. Total	1.3	80.3	18.3		57.9	17.9	24.2		23.5	72.6	3.9		41.5	10.7	47.9		
PHF	.438	.850	.475	.906	.764	.708	.575	.742	.534	.838	.750	.859	.516	.568	.651	.579	.801
Cars	7	411	97	515	52	17	22	91	126	380	20	526	97	25	112	234	1366
% Cars	100	96.7	100	97.4	94.5	100	95.7	95.8	100	97.7	95.2	98.1	100	100	100	100	98.0
Trucks	0	14	0	14	3	0	1	4	0	9	1	10	0	0	0	0	28
% Trucks	0	3.3	0	2.6	5.5	0	4.3	4.2	0	2.3	4.8	1.9	0	0	0	0	2.0

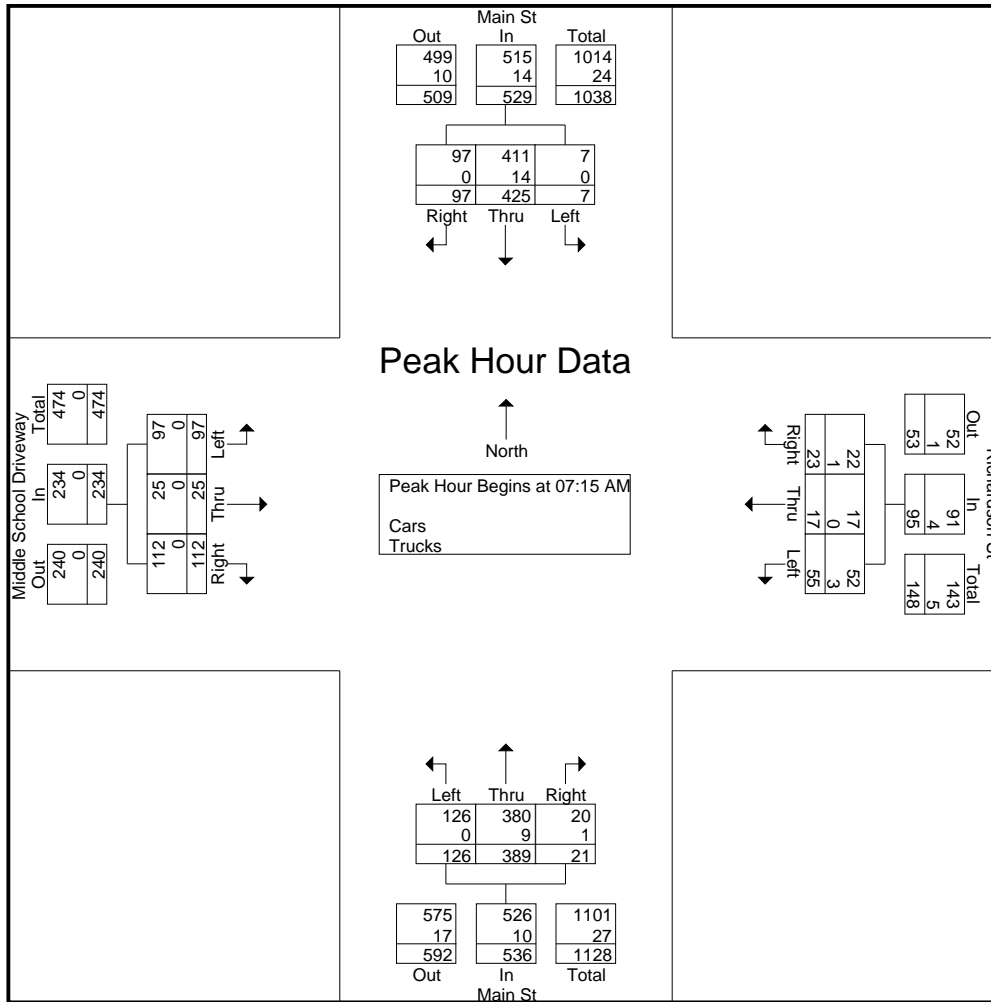


# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 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				07:00 AM				07:15 AM				07:00 AM			
+0 mins.	1	84	28	113	<b>18</b>	5	9	<b>32</b>	29	82	<b>7</b>	118	5	2	11	18
+15 mins.	2	93	<b>51</b>	<b>146</b>	6	5	3	14	<b>59</b>	91	6	<b>156</b>	25	4	32	61
+30 mins.	0	<b>125</b>	16	141	16	<b>6</b>	<b>10</b>	32	32	<b>116</b>	3	151	<b>47</b>	<b>11</b>	<b>43</b>	<b>101</b>
+45 mins.	<b>4</b>	123	2	129	15	5	4	24	6	100	5	111	22	9	34	65
Total Volume	7	425	97	529	55	21	26	102	126	389	21	536	99	26	120	245
% App. Total	1.3	80.3	18.3		53.9	20.6	25.5		23.5	72.6	3.9		40.4	10.6	49	
PHF	.438	.850	.475	.906	.764	.875	.650	.797	.534	.838	.750	.859	.527	.591	.698	.606
Cars	7	411	97	515	52	21	26	99	126	380	20	526	99	26	120	245
% Cars	100	96.7	100	97.4	94.5	100	100	97.1	100	97.7	95.2	98.1	100	100	100	100
Trucks	0	14	0	14	3	0	0	3	0	9	1	10	0	0	0	0
% Trucks	0	3.3	0	2.6	5.5	0	0	2.9	0	2.3	4.8	1.9	0	0	0	0

# Accurate Counts

978-664-2565

File Name : 96800002

Site Code : 96800002

Start Date : 5/11/2023

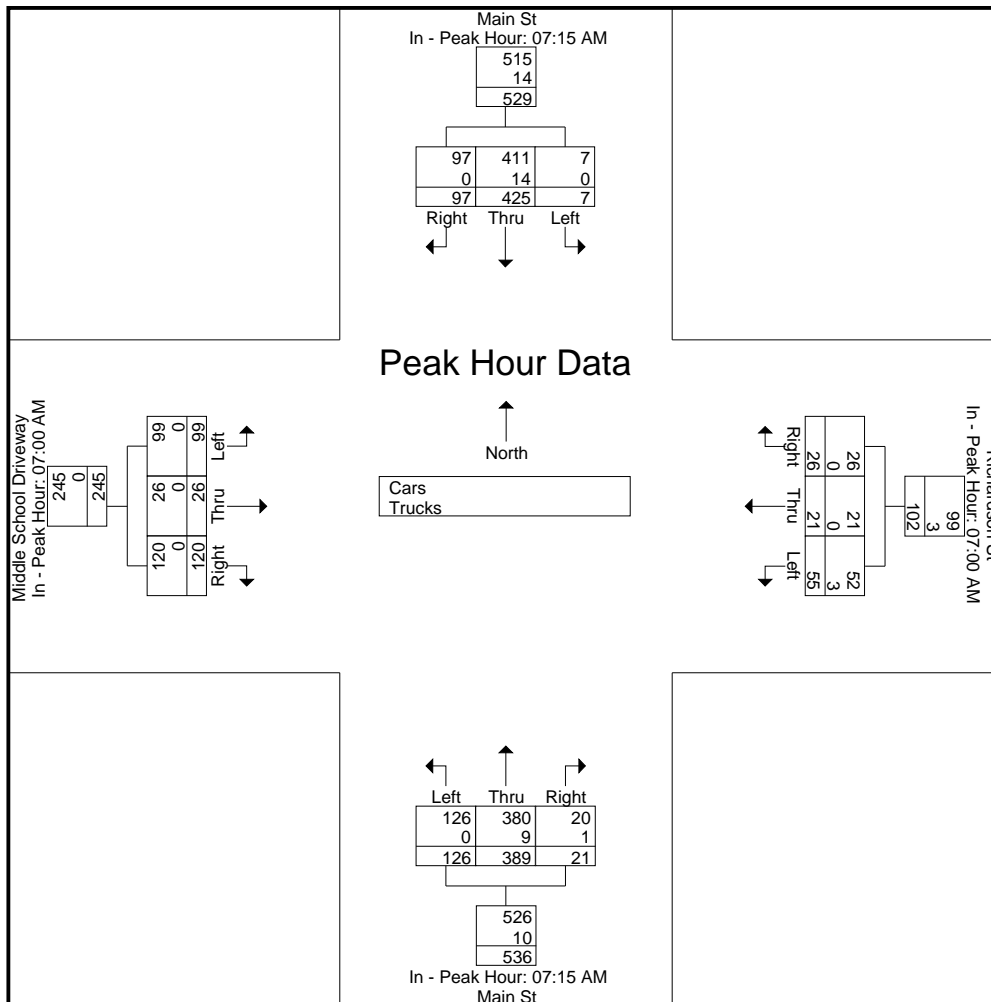
Page No : 3

N/S Street : Main Street

E/W Street : Richardson St / Middle School Dwy

City/State : Wakefield, MA

Weather : Clear



# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 4

## Groups Printed- Cars

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	2	90	6	18	5	9	9	54	8	5	2	11	219
07:15 AM	1	82	28	4	5	3	29	81	7	25	4	32	301
07:30 AM	2	87	51	15	6	10	59	87	5	47	11	43	423
07:45 AM	0	123	16	15	5	4	32	113	3	22	9	34	376
<b>Total</b>	<b>5</b>	<b>382</b>	<b>101</b>	<b>52</b>	<b>21</b>	<b>26</b>	<b>129</b>	<b>335</b>	<b>23</b>	<b>99</b>	<b>26</b>	<b>120</b>	<b>1319</b>
08:00 AM	4	119	2	18	1	5	6	99	5	3	1	3	266
08:15 AM	0	105	3	6	1	1	1	97	7	4	0	2	227
08:30 AM	1	104	1	14	0	5	4	137	4	0	1	2	273
08:45 AM	1	100	2	18	1	2	5	130	8	0	0	3	270
<b>Total</b>	<b>6</b>	<b>428</b>	<b>8</b>	<b>56</b>	<b>3</b>	<b>13</b>	<b>16</b>	<b>463</b>	<b>24</b>	<b>7</b>	<b>2</b>	<b>10</b>	<b>1036</b>
<b>Grand Total</b>	<b>11</b>	<b>810</b>	<b>109</b>	<b>108</b>	<b>24</b>	<b>39</b>	<b>145</b>	<b>798</b>	<b>47</b>	<b>106</b>	<b>28</b>	<b>130</b>	<b>2355</b>
Apprch %	1.2	87.1	11.7	63.2	14	22.8	14.6	80.6	4.7	40.2	10.6	49.2	
Total %	0.5	34.4	4.6	4.6	1	1.7	6.2	33.9	2	4.5	1.2	5.5	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 07:15 AM																	
07:15 AM	1	82	28	111	4	5	3	12	29	81	7	117	25	4	32	61	301
07:30 AM	2	87	51	140	15	6	10	31	59	87	5	151	47	11	43	101	423
07:45 AM	0	123	16	139	15	5	4	24	32	113	3	148	22	9	34	65	376
08:00 AM	4	119	2	125	18	1	5	24	6	99	5	110	3	1	3	7	266
<b>Total Volume</b>	<b>7</b>	<b>411</b>	<b>97</b>	<b>515</b>	<b>52</b>	<b>17</b>	<b>22</b>	<b>91</b>	<b>126</b>	<b>380</b>	<b>20</b>	<b>526</b>	<b>97</b>	<b>25</b>	<b>112</b>	<b>234</b>	<b>1366</b>
% App. Total	1.4	79.8	18.8		57.1	18.7	24.2		24	72.2	3.8		41.5	10.7	47.9		
PHF	.438	.835	.475	.920	.722	.708	.550	.734	.534	.841	.714	.871	.516	.568	.651	.579	.807

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 7

## Groups Printed- Trucks

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	4	0	0	0	0	0	1	0	0	0	0	5
07:15 AM	0	2	0	2	0	0	0	1	0	0	0	0	5
07:30 AM	0	6	0	1	0	0	0	4	1	0	0	0	12
07:45 AM	0	2	0	0	0	0	0	3	0	0	0	0	5
<b>Total</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>27</b>
08:00 AM	0	4	0	0	0	1	0	1	0	0	0	0	6
08:15 AM	1	3	0	0	0	0	0	5	1	0	0	0	10
08:30 AM	0	2	0	0	0	1	0	4	1	0	0	0	8
08:45 AM	0	4	0	0	0	0	0	5	0	0	0	0	9
<b>Total</b>	<b>1</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>
<b>Grand Total</b>	<b>1</b>	<b>27</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>24</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>
Apprch %	3.6	96.4	0	60	0	40	0	88.9	11.1	0	0	0	
Total %	1.7	45	0	5	0	3.3	0	40	5	0	0	0	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
<b>Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1</b>																	
<b>Peak Hour for Entire Intersection Begins at 07:30 AM</b>																	
07:30 AM	0	6	0	6	1	0	0	1	0	4	1	5	0	0	0	0	12
07:45 AM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5
08:00 AM	0	4	0	4	0	0	1	1	0	1	0	1	0	0	0	0	6
08:15 AM	1	3	0	4	0	0	0	0	0	5	1	6	0	0	0	0	10
<b>Total Volume</b>	<b>1</b>	<b>15</b>	<b>0</b>	<b>16</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>
<b>% App. Total</b>	<b>6.2</b>	<b>93.8</b>	<b>0</b>		<b>50</b>	<b>0</b>	<b>50</b>		<b>0</b>	<b>86.7</b>	<b>13.3</b>		<b>0</b>	<b>0</b>	<b>0</b>		
PHF	.250	.625	.000	.667	.250	.000	.250	.500	.000	.650	.500	.625	.000	.000	.000	.000	.688

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 10

### Groups Printed- Bikes Peds

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	4	9	0	9
07:15 AM	0	0	0	2	0	0	0	2	0	0	0	14	0	0	0	3	21	0	21
07:30 AM	0	0	0	0	0	0	0	1	0	0	0	31	0	1	0	2	34	1	35
07:45 AM	0	0	0	1	0	0	0	3	0	0	0	18	0	0	0	1	23	0	23
<b>Total</b>	0	0	0	3	0	0	0	9	0	0	0	65	0	1	0	10	87	1	88
08:00 AM	0	0	0	0	0	0	0	5	0	1	0	5	0	1	0	2	12	2	14
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	4	5	1	6
08:30 AM	0	0	0	0	0	0	0	2	0	1	0	2	0	0	0	1	5	1	6
08:45 AM	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	1	4	1	5
<b>Total</b>	0	0	0	0	0	0	0	9	0	4	0	9	0	1	0	8	26	5	31
<b>Grand Total</b>	0	0	0	3	0	0	0	18	0	4	0	74	0	2	0	18	113	6	119
Apprch %	0	0	0		0	0	0		0	100	0		0	100	0				
Total %	0	0	0		0	0	0		0	66.7	0		0	33.3	0		95	5	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
<b>Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1</b>																	
<b>Peak Hour for Entire Intersection Begins at 08:00 AM</b>																	
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
<b>Total Volume</b>	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5
<b>% App. Total</b>	0	0	0		0	0	0		0	100	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.00	.000	1.00	.000	.250	.000	.250	.625

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
02:00 PM	8	115	7	14	1	6	6	128	25	1	0	6	317
02:15 PM	5	88	5	6	1	8	11	83	16	32	14	27	296
02:30 PM	2	74	6	7	2	4	7	118	20	12	5	6	263
02:45 PM	6	86	6	8	3	1	14	114	21	7	3	8	277
<b>Total</b>	<b>21</b>	<b>363</b>	<b>24</b>	<b>35</b>	<b>7</b>	<b>19</b>	<b>38</b>	<b>443</b>	<b>82</b>	<b>52</b>	<b>22</b>	<b>47</b>	<b>1153</b>
03:00 PM	4	96	5	9	2	5	7	109	10	6	4	11	268
03:15 PM	4	98	5	13	2	4	12	113	21	13	5	7	297
03:30 PM	2	112	7	6	4	4	10	132	27	13	17	22	356
03:45 PM	6	92	2	17	1	4	3	125	32	3	4	6	295
<b>Total</b>	<b>16</b>	<b>398</b>	<b>19</b>	<b>45</b>	<b>9</b>	<b>17</b>	<b>32</b>	<b>479</b>	<b>90</b>	<b>35</b>	<b>30</b>	<b>46</b>	<b>1216</b>
04:00 PM	8	124	3	14	0	6	7	128	29	3	0	4	326
04:15 PM	3	101	4	8	0	3	9	151	22	3	1	7	312
04:30 PM	6	110	2	11	0	3	2	124	23	2	2	4	289
04:45 PM	8	94	11	17	2	4	13	122	24	1	0	7	303
<b>Total</b>	<b>25</b>	<b>429</b>	<b>20</b>	<b>50</b>	<b>2</b>	<b>16</b>	<b>31</b>	<b>525</b>	<b>98</b>	<b>9</b>	<b>3</b>	<b>22</b>	<b>1230</b>
05:00 PM	2	123	9	16	3	4	12	132	35	3	6	9	354
05:15 PM	7	124	7	19	3	6	20	135	29	5	2	8	365
05:30 PM	7	95	10	15	1	5	15	145	43	3	1	6	346
05:45 PM	3	108	7	23	3	4	16	124	58	0	1	7	354
<b>Total</b>	<b>19</b>	<b>450</b>	<b>33</b>	<b>73</b>	<b>10</b>	<b>19</b>	<b>63</b>	<b>536</b>	<b>165</b>	<b>11</b>	<b>10</b>	<b>30</b>	<b>1419</b>
<b>Grand Total</b>	<b>81</b>	<b>1640</b>	<b>96</b>	<b>203</b>	<b>28</b>	<b>71</b>	<b>164</b>	<b>1983</b>	<b>435</b>	<b>107</b>	<b>65</b>	<b>145</b>	<b>5018</b>
Apprch %	4.5	90.3	5.3	67.2	9.3	23.5	6.4	76.8	16.8	33.8	20.5	45.7	
Total %	1.6	32.7	1.9	4	0.6	1.4	3.3	39.5	8.7	2.1	1.3	2.9	
Cars	81	1618	96	202	27	70	163	1941	433	107	65	145	4948
% Cars	100	98.7	100	99.5	96.4	98.6	99.4	97.9	99.5	100	100	100	98.6
Trucks	0	22	0	1	1	1	1	42	2	0	0	0	70
% Trucks	0	1.3	0	0.5	3.6	1.4	0.6	2.1	0.5	0	0	0	1.4

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	123	9	134	16	<b>3</b>	4	23	12	132	35	179	3	<b>6</b>	<b>9</b>	<b>18</b>	354
05:15 PM	<b>7</b>	<b>124</b>	7	<b>138</b>	19	3	<b>6</b>	28	<b>20</b>	135	29	184	<b>5</b>	2	8	15	<b>365</b>
05:30 PM	7	95	<b>10</b>	112	15	1	5	21	15	<b>145</b>	43	<b>203</b>	3	1	6	10	346
05:45 PM	3	108	7	118	<b>23</b>	3	4	<b>30</b>	16	124	<b>58</b>	198	0	1	7	8	354
<b>Total Volume</b>	<b>19</b>	<b>450</b>	<b>33</b>	<b>502</b>	<b>73</b>	<b>10</b>	<b>19</b>	<b>102</b>	<b>63</b>	<b>536</b>	<b>165</b>	<b>764</b>	<b>11</b>	<b>10</b>	<b>30</b>	<b>51</b>	<b>1419</b>
% App. Total	3.8	89.6	6.6		71.6	9.8	18.6		8.2	70.2	21.6		21.6	19.6	58.8		
PHF	.679	.907	.825	.909	.793	.833	.792	.850	.788	.924	.711	.941	.550	.417	.833	.708	.972
Cars	19	446	33	498	73	10	19	102	63	530	165	758	11	10	30	51	1409
% Cars	100	99.1	100	99.2	100	100	100	100	100	98.9	100	99.2	100	100	100	100	99.3
Trucks	0	4	0	4	0	0	0	0	0	6	0	6	0	0	0	0	10
% Trucks	0	0.9	0	0.8	0	0	0	0	0	1.1	0	0.8	0	0	0	0	0.7

# Accurate Counts

978-664-2565

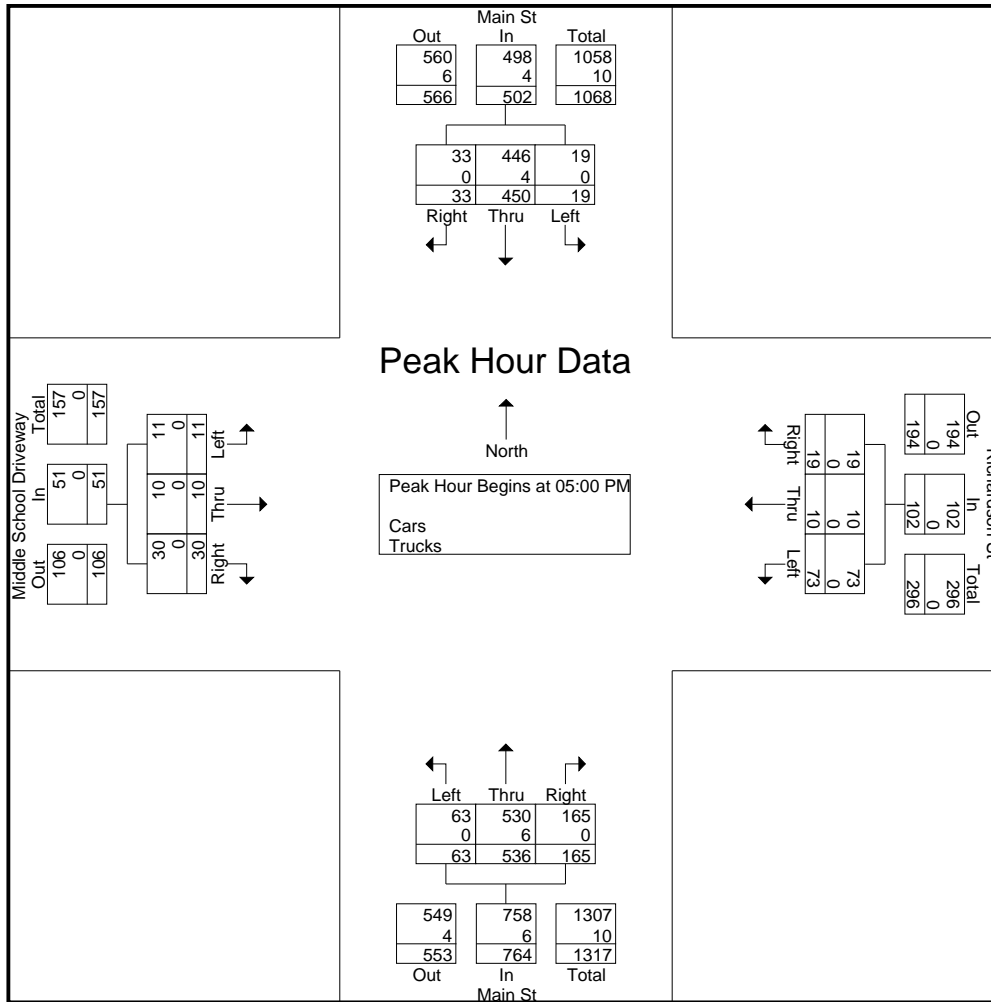
File Name : 96800002

Site Code : 96800002

Start Date : 5/11/2023

Page No : 2

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

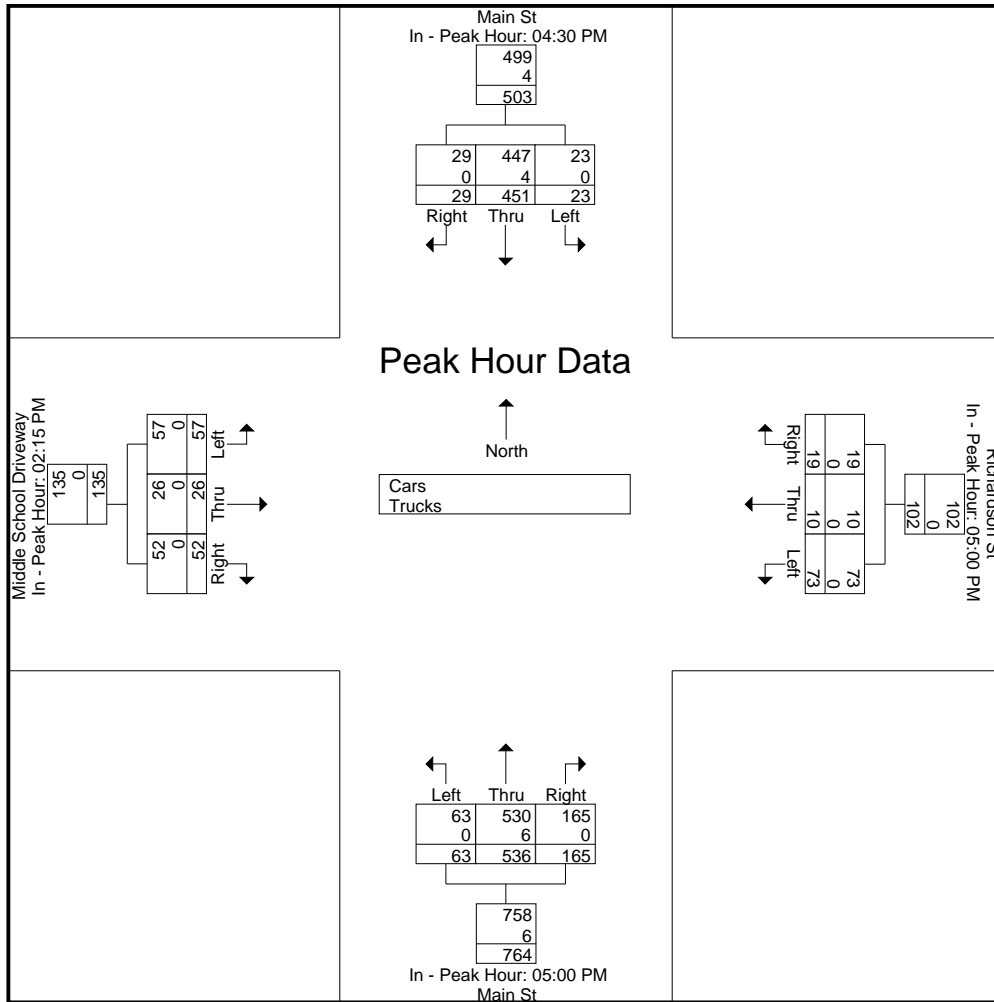
	04:30 PM				05:00 PM				05:00 PM				02:15 PM			
+0 mins.	6	110	2	118	16	3	4	23	12	132	35	179	<b>32</b>	<b>14</b>	<b>27</b>	<b>73</b>
+15 mins.	8	94	11	113	19	3	6	28	20	135	29	184	12	5	6	23
+30 mins.	2	123	9	134	15	1	5	21	15	145	43	203	7	3	8	18
+45 mins.	7	124	7	138	23	3	4	30	16	124	58	198	6	4	11	21
Total Volume	23	451	29	503	73	10	19	102	63	536	165	764	57	26	52	135
% App. Total	4.6	89.7	5.8		71.6	9.8	18.6		8.2	70.2	21.6		42.2	19.3	38.5	
PHF	.719	.909	.659	.911	.793	.833	.792	.850	.788	.924	.711	.941	.445	.464	.481	.462
Cars	23	447	29	499	73	10	19	102	63	530	165	758	57	26	52	135
% Cars	100	99.1	100	99.2	100	100	100	100	100	98.9	100	99.2	100	100	100	100
Trucks	0	4	0	4	0	0	0	0	0	6	0	6	0	0	0	0
% Trucks	0	0.9	0	0.8	0	0	0	0	0	1.1	0	0.8	0	0	0	0

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 3





# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 4

## Groups Printed- Cars

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
02:00 PM	8	112	7	14	1	6	6	127	25	1	0	6	313
02:15 PM	5	87	5	6	1	8	11	78	16	32	14	27	290
02:30 PM	2	72	6	7	2	4	6	114	20	12	5	6	256
02:45 PM	6	85	6	8	3	1	14	108	20	7	3	8	269
<b>Total</b>	<b>21</b>	<b>356</b>	<b>24</b>	<b>35</b>	<b>7</b>	<b>19</b>	<b>37</b>	<b>427</b>	<b>81</b>	<b>52</b>	<b>22</b>	<b>47</b>	<b>1128</b>
03:00 PM	4	94	5	8	2	4	7	108	10	6	4	11	263
03:15 PM	4	98	5	13	2	4	12	110	21	13	5	7	294
03:30 PM	2	108	7	6	3	4	10	128	27	13	17	22	347
03:45 PM	6	91	2	17	1	4	3	123	32	3	4	6	292
<b>Total</b>	<b>16</b>	<b>391</b>	<b>19</b>	<b>44</b>	<b>8</b>	<b>16</b>	<b>32</b>	<b>469</b>	<b>90</b>	<b>35</b>	<b>30</b>	<b>46</b>	<b>1196</b>
04:00 PM	8	122	3	14	0	6	7	125	28	3	0	4	320
04:15 PM	3	100	4	8	0	3	9	148	22	3	1	7	308
04:30 PM	6	110	2	11	0	3	2	122	23	2	2	4	287
04:45 PM	8	93	11	17	2	4	13	120	24	1	0	7	300
<b>Total</b>	<b>25</b>	<b>425</b>	<b>20</b>	<b>50</b>	<b>2</b>	<b>16</b>	<b>31</b>	<b>515</b>	<b>97</b>	<b>9</b>	<b>3</b>	<b>22</b>	<b>1215</b>
05:00 PM	2	121	9	16	3	4	12	130	35	3	6	9	350
05:15 PM	7	123	7	19	3	6	20	133	29	5	2	8	362
05:30 PM	7	94	10	15	1	5	15	144	43	3	1	6	344
05:45 PM	3	108	7	23	3	4	16	123	58	0	1	7	353
<b>Total</b>	<b>19</b>	<b>446</b>	<b>33</b>	<b>73</b>	<b>10</b>	<b>19</b>	<b>63</b>	<b>530</b>	<b>165</b>	<b>11</b>	<b>10</b>	<b>30</b>	<b>1409</b>
<b>Grand Total</b>	<b>81</b>	<b>1618</b>	<b>96</b>	<b>202</b>	<b>27</b>	<b>70</b>	<b>163</b>	<b>1941</b>	<b>433</b>	<b>107</b>	<b>65</b>	<b>145</b>	<b>4948</b>
Apprch %	4.5	90.1	5.3	67.6	9	23.4	6.4	76.5	17.1	33.8	20.5	45.7	
Total %	1.6	32.7	1.9	4.1	0.5	1.4	3.3	39.2	8.8	2.2	1.3	2.9	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	121	9	132	16	3	4	23	12	130	35	177	3	6	9	18	350
05:15 PM	7	123	7	137	19	3	6	28	20	133	29	182	5	2	8	15	362
05:30 PM	7	94	10	111	15	1	5	21	15	144	43	202	3	1	6	10	344
05:45 PM	3	108	7	118	23	3	4	30	16	123	58	197	0	1	7	8	353
<b>Total Volume</b>	<b>19</b>	<b>446</b>	<b>33</b>	<b>498</b>	<b>73</b>	<b>10</b>	<b>19</b>	<b>102</b>	<b>63</b>	<b>530</b>	<b>165</b>	<b>758</b>	<b>11</b>	<b>10</b>	<b>30</b>	<b>51</b>	<b>1409</b>
% App. Total	3.8	89.6	6.6		71.6	9.8	18.6		8.3	69.9	21.8		21.6	19.6	58.8		
PHF	.679	.907	.825	.909	.793	.833	.792	.850	.788	.920	.711	.938	.550	.417	.833	.708	.973

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 7

## Groups Printed- Trucks

Start Time	Main St From North			Richardson St From East			Main St From South			Middle School Driveway From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
02:00 PM	0	3	0	0	0	0	0	1	0	0	0	0	4
02:15 PM	0	1	0	0	0	0	0	5	0	0	0	0	6
02:30 PM	0	2	0	0	0	0	1	4	0	0	0	0	7
02:45 PM	0	1	0	0	0	0	0	6	1	0	0	0	8
<b>Total</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>
03:00 PM	0	2	0	1	0	1	0	1	0	0	0	0	5
03:15 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
03:30 PM	0	4	0	0	1	0	0	4	0	0	0	0	9
03:45 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
<b>Total</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
04:00 PM	0	2	0	0	0	0	0	3	1	0	0	0	6
04:15 PM	0	1	0	0	0	0	0	3	0	0	0	0	4
04:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
04:45 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
<b>Total</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>
05:00 PM	0	2	0	0	0	0	0	2	0	0	0	0	4
05:15 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
05:30 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>
<b>Grand Total</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>42</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>70</b>
Apprch %	0	100	0	33.3	33.3	33.3	2.2	93.3	4.4	0	0	0	
Total %	0	31.4	0	1.4	1.4	1.4	1.4	60	2.9	0	0	0	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:15 PM																	
02:15 PM	0	1	0	1	0	0	0	0	0	5	0	5	0	0	0	0	6
02:30 PM	0	2	0	2	0	0	0	0	1	4	0	5	0	0	0	0	7
02:45 PM	0	1	0	1	0	0	0	0	0	6	1	7	0	0	0	0	8
03:00 PM	0	2	0	2	1	0	1	2	0	1	0	1	0	0	0	0	5
<b>Total Volume</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>16</b>	<b>1</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26</b>
<b>% App. Total</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>50</b>	<b>0</b>	<b>50</b>	<b>100</b>	<b>5.6</b>	<b>88.9</b>	<b>5.6</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
PHF	.000	.750	.000	.750	.250	.000	.250	.250	.250	.667	.250	.643	.000	.000	.000	.000	.813

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Richardson St / Middle School Dwy  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800002  
 Site Code : 96800002  
 Start Date : 5/11/2023  
 Page No : 10

### Groups Printed- Bikes Peds

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
02:00 PM	0	0	0	0	0	0	0	2	0	0	0	2	0	1	0	1	5	1	6
02:15 PM	0	1	0	1	0	2	0	1	0	0	0	152	1	1	0	1	155	5	160
02:30 PM	0	0	0	0	0	1	0	3	0	1	0	22	0	0	0	3	28	2	30
02:45 PM	0	3	0	0	0	2	0	6	0	0	0	25	0	0	0	3	34	5	39
<b>Total</b>	0	4	0	1	0	5	0	12	0	1	0	201	1	2	0	8	222	13	235
03:00 PM	0	0	0	0	0	0	0	8	0	3	0	13	0	0	0	0	21	3	24
03:15 PM	0	2	0	0	0	2	0	6	0	0	0	22	0	0	0	6	34	4	38
03:30 PM	0	0	0	0	0	0	0	2	0	0	0	12	0	0	0	4	18	0	18
03:45 PM	0	2	0	0	0	0	0	2	0	2	0	17	0	0	1	5	24	5	29
<b>Total</b>	0	4	0	0	0	2	0	18	0	5	0	64	0	0	1	15	97	12	109
04:00 PM	0	2	0	0	0	0	0	2	0	1	0	3	0	0	0	3	8	3	11
04:15 PM	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	5	10	0	10
04:30 PM	0	2	0	0	0	1	0	3	0	1	0	4	0	0	0	6	13	4	17
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	5	1	6
<b>Total</b>	0	4	0	0	0	1	0	8	0	2	0	11	0	1	0	17	36	8	44
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	2	0	0	0	3	6	1	7
05:15 PM	0	1	0	0	0	1	0	2	0	0	0	4	0	2	0	1	7	4	11
05:30 PM	0	1	0	0	0	1	0	5	1	0	0	10	0	0	0	5	20	3	23
05:45 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	4	6	1	7
<b>Total</b>	0	2	0	0	0	3	0	9	1	1	0	17	0	2	0	13	39	9	48
<b>Grand Total</b>	0	14	0	1	0	11	0	47	1	9	0	293	1	5	1	53	394	42	436
Apprch %	0	100	0		0	100	0		10	90	0		14.3	71.4	14.3				
Total %	0	33.3	0		0	26.2	0		2.4	21.4	0		2.4	11.9	2.4		90.4	9.6	

Start Time	Main St From North				Richardson St From East				Main St From South				Middle School Driveway 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 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:15 PM																	
02:15 PM	0	1	0	1	0	2	0	2	0	0	0	0	1	1	0	2	5
02:30 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
02:45 PM	0	3	0	3	0	2	0	2	0	0	0	0	0	0	0	0	5
03:00 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
<b>Total Volume</b>	0	4	0	4	0	5	0	5	0	4	0	4	1	1	0	2	15
<b>% App. Total</b>	0	100	0		0	100	0		0	100	0		50	50	0		
PHF	.000	.333	.000	.333	.000	.625	.000	.625	.000	.333	.000	.333	.250	.250	.000	.250	.750

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	108	1	2	63	0	0	174
07:15 AM	137	3	9	97	0	0	246
07:30 AM	167	6	8	127	0	0	308
07:45 AM	134	5	6	138	0	0	283
<b>Total</b>	<b>546</b>	<b>15</b>	<b>25</b>	<b>425</b>	<b>0</b>	<b>0</b>	<b>1011</b>
08:00 AM	128	4	4	108	0	0	244
08:15 AM	113	3	4	100	0	0	220
08:30 AM	120	4	14	130	0	0	268
08:45 AM	103	4	4	125	0	0	236
<b>Total</b>	<b>464</b>	<b>15</b>	<b>26</b>	<b>463</b>	<b>0</b>	<b>0</b>	<b>968</b>
<b>Grand Total</b>	<b>1010</b>	<b>30</b>	<b>51</b>	<b>888</b>	<b>0</b>	<b>0</b>	<b>1979</b>
Apprch %	97.1	2.9	5.4	94.6	0	0	
Total %	51	1.5	2.6	44.9	0	0	
Cars	977	28	48	871	0	0	1924
% Cars	96.7	93.3	94.1	98.1	0	0	97.2
Trucks	33	2	3	17	0	0	55
% Trucks	3.3	6.7	5.9	1.9	0	0	2.8

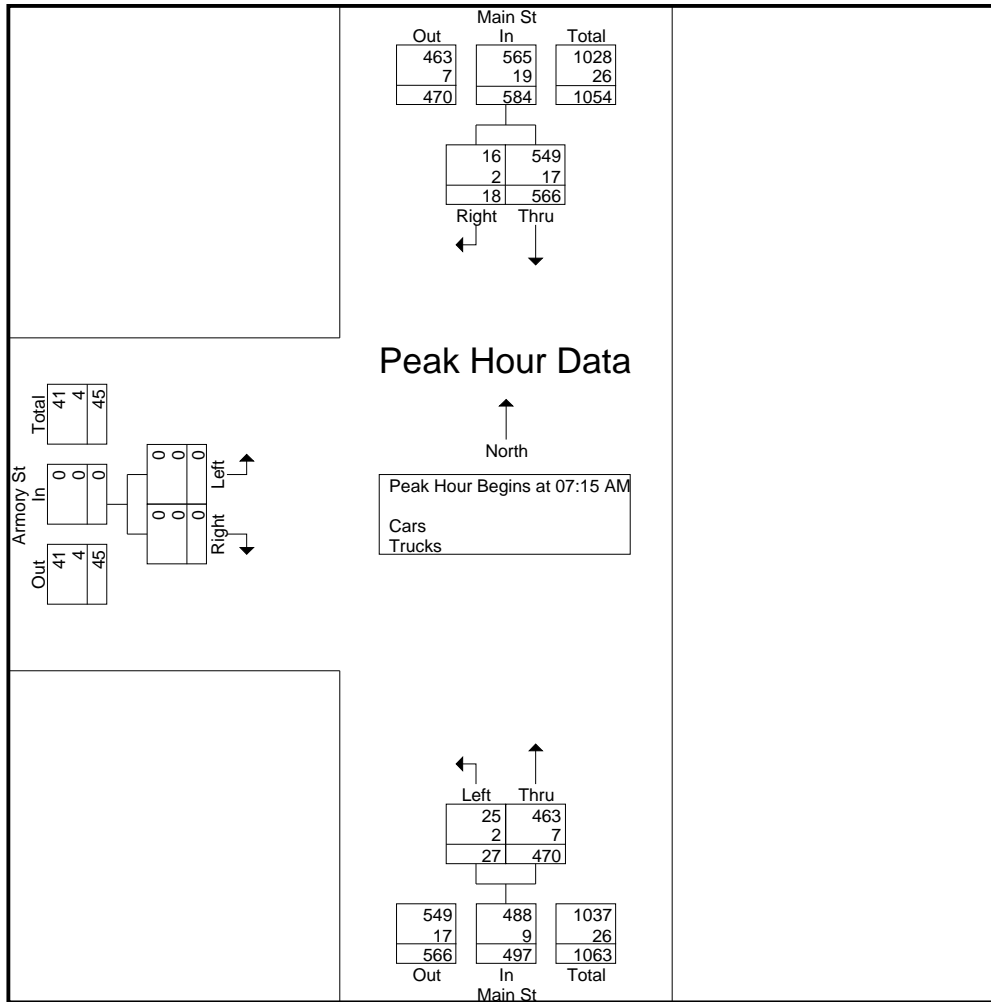
Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	137	3	140	<b>9</b>	97	106	0	0	0	246
07:30 AM	<b>167</b>	<b>6</b>	<b>173</b>	8	127	135	0	0	0	<b>308</b>
07:45 AM	134	5	139	6	<b>138</b>	<b>144</b>	0	0	0	283
08:00 AM	128	4	132	4	108	112	0	0	0	244
<b>Total Volume</b>	<b>566</b>	<b>18</b>	<b>584</b>	<b>27</b>	<b>470</b>	<b>497</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1081</b>
% App. Total	96.9	3.1		5.4	94.6		0	0		
PHF	.847	.750	.844	.750	.851	.863	.000	.000	.000	.877
Cars	549	16	565	25	463	488	0	0	0	1053
% Cars	97.0	88.9	96.7	92.6	98.5	98.2	0	0	0	97.4
Trucks	17	2	19	2	7	9	0	0	0	28
% Trucks	3.0	11.1	3.3	7.4	1.5	1.8	0	0	0	2.6

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 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			07:45 AM			07:00 AM		
+0 mins.	137	3	140	6	<b>138</b>	<b>144</b>	0	0	0
+15 mins.	<b>167</b>	<b>6</b>	<b>173</b>	4	108	112	0	0	0
+30 mins.	134	5	139	4	100	104	0	0	0
+45 mins.	128	4	132	<b>14</b>	130	144	0	0	0
Total Volume	566	18	584	28	476	504	0	0	0
% App. Total	96.9	3.1		5.6	94.4		0	0	
PHF	.847	.750	.844	.500	.862	.875	.000	.000	.000
Cars	549	16	565	25	465	490	0	0	0
% Cars	97	88.9	96.7	89.3	97.7	97.2	0	0	0
Trucks	17	2	19	3	11	14	0	0	0
% Trucks	3	11.1	3.3	10.7	2.3	2.8	0	0	0

# Accurate Counts

978-664-2565

File Name : 96800003

Site Code : 96800003

Start Date : 5/11/2023

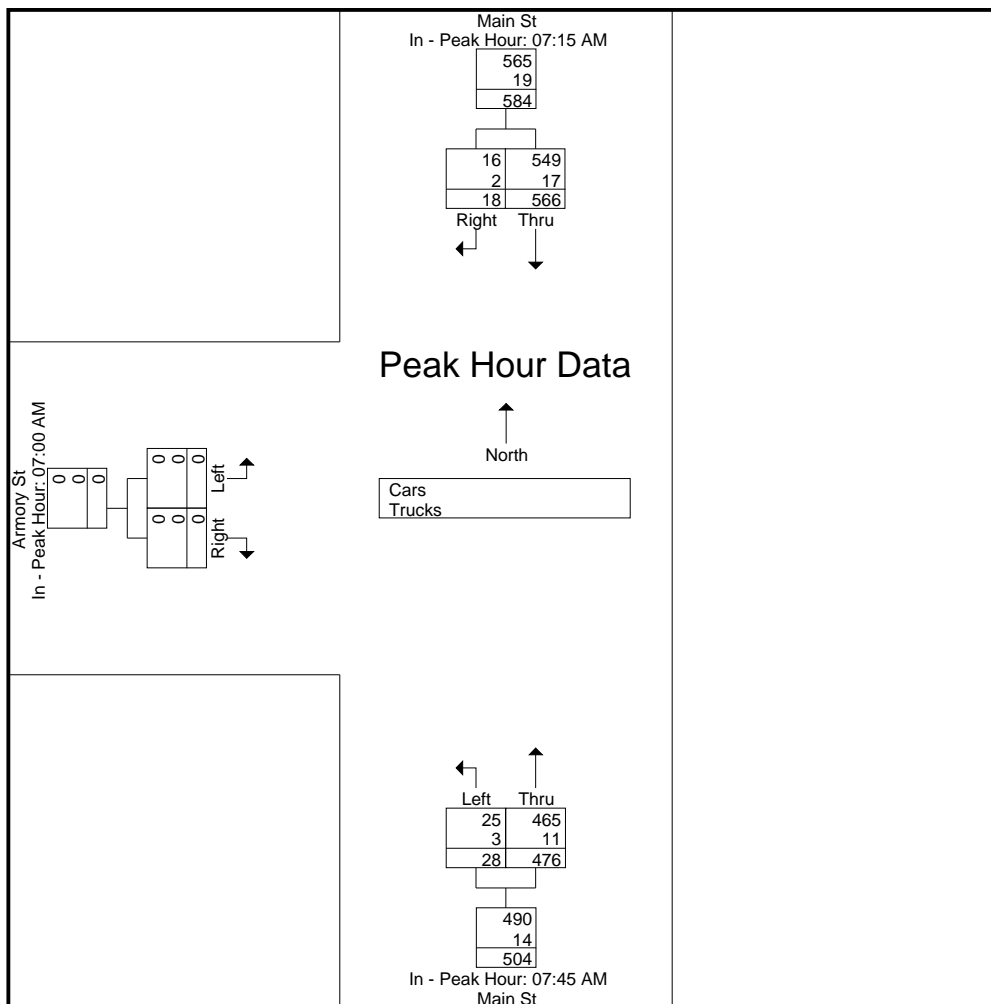
Page No : 3

N/S Street : Main Street

E/W Street : Armory Street

City/State : Wakefield, MA

Weather : Clear



# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 4

### Groups Printed- Cars

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	104	1	2	63	0	0	170
07:15 AM	133	3	9	96	0	0	241
07:30 AM	162	5	8	126	0	0	301
07:45 AM	129	5	6	134	0	0	274
<b>Total</b>	<b>528</b>	<b>14</b>	<b>25</b>	<b>419</b>	<b>0</b>	<b>0</b>	<b>986</b>
08:00 AM	125	3	2	107	0	0	237
08:15 AM	109	3	4	98	0	0	214
08:30 AM	118	4	13	126	0	0	261
08:45 AM	97	4	4	121	0	0	226
<b>Total</b>	<b>449</b>	<b>14</b>	<b>23</b>	<b>452</b>	<b>0</b>	<b>0</b>	<b>938</b>
<b>Grand Total</b>	<b>977</b>	<b>28</b>	<b>48</b>	<b>871</b>	<b>0</b>	<b>0</b>	<b>1924</b>
Apprch %	97.2	2.8	5.2	94.8	0	0	
Total %	50.8	1.5	2.5	45.3	0	0	

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	133	3	136	9	96	105	0	0	0	241
07:30 AM	<b>162</b>	<b>5</b>	<b>167</b>	8	126	134	0	0	0	<b>301</b>
07:45 AM	129	5	134	6	<b>134</b>	<b>140</b>	0	0	0	274
08:00 AM	125	3	128	2	107	109	0	0	0	237
Total Volume	549	16	565	25	463	488	0	0	0	1053
% App. Total	97.2	2.8		5.1	94.9		0	0		
PHF	.847	.800	.846	.694	.864	.871	.000	.000	.000	.875

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 7

### Groups Printed- Trucks

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	4	0	0	0	0	0	4
07:15 AM	4	0	0	1	0	0	5
07:30 AM	5	1	0	1	0	0	7
07:45 AM	5	0	0	4	0	0	9
<b>Total</b>	<b>18</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>25</b>
08:00 AM	3	1	2	1	0	0	7
08:15 AM	4	0	0	2	0	0	6
08:30 AM	2	0	1	4	0	0	7
08:45 AM	6	0	0	4	0	0	10
<b>Total</b>	<b>15</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>30</b>
<b>Grand Total</b>	<b>33</b>	<b>2</b>	<b>3</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>55</b>
Apprch %	94.3	5.7	15	85	0	0	
Total %	60	3.6	5.5	30.9	0	0	

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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 08:00 AM										
08:00 AM	3	1	4	2	1	3	0	0	0	7
08:15 AM	4	0	4	0	2	2	0	0	0	6
08:30 AM	2	0	2	1	4	5	0	0	0	7
08:45 AM	6	0	6	0	4	4	0	0	0	10
<b>Total Volume</b>	<b>15</b>	<b>1</b>	<b>16</b>	<b>3</b>	<b>11</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>
% App. Total	93.8	6.2		21.4	78.6		0	0		
PHF	.625	.250	.667	.375	.688	.700	.000	.000	.000	.750





# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 1

### Groups Printed- Cars - Trucks

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	136	5	4	133	0	0	278
04:15 PM	111	4	22	128	0	0	265
04:30 PM	127	3	13	119	0	0	262
04:45 PM	119	6	9	121	0	0	255
<b>Total</b>	<b>493</b>	<b>18</b>	<b>48</b>	<b>501</b>	<b>0</b>	<b>0</b>	<b>1060</b>
05:00 PM	128	8	8	137	0	0	281
05:15 PM	137	4	8	140	0	0	289
05:30 PM	118	2	5	138	0	0	263
05:45 PM	133	3	10	200	0	0	346
<b>Total</b>	<b>516</b>	<b>17</b>	<b>31</b>	<b>615</b>	<b>0</b>	<b>0</b>	<b>1179</b>
<b>Grand Total</b>	<b>1009</b>	<b>35</b>	<b>79</b>	<b>1116</b>	<b>0</b>	<b>0</b>	<b>2239</b>
Apprch %	96.6	3.4	6.6	93.4	0	0	
Total %	45.1	1.6	3.5	49.8	0	0	
Cars	1000	34	79	1101	0	0	2214
% Cars	99.1	97.1	100	98.7	0	0	98.9
Trucks	9	1	0	15	0	0	25
% Trucks	0.9	2.9	0	1.3	0	0	1.1

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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 05:00 PM										
05:00 PM	128	<b>8</b>	136	8	137	145	0	0	0	281
05:15 PM	<b>137</b>	4	<b>141</b>	8	140	148	0	0	0	289
05:30 PM	118	2	120	5	138	143	0	0	0	263
05:45 PM	133	3	136	<b>10</b>	<b>200</b>	<b>210</b>	0	0	0	<b>346</b>
<b>Total Volume</b>	<b>516</b>	<b>17</b>	<b>533</b>	<b>31</b>	<b>615</b>	<b>646</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1179</b>
% App. Total	96.8	3.2		4.8	95.2		0	0		
PHF	.942	.531	.945	.775	.769	.769	.000	.000	.000	.852
Cars	511	16	527	31	609	640	0	0	0	1167
% Cars	99.0	94.1	98.9	100	99.0	99.1	0	0	0	99.0
Trucks	5	1	6	0	6	6	0	0	0	12
% Trucks	1.0	5.9	1.1	0	1.0	0.9	0	0	0	1.0

# Accurate Counts

978-664-2565

File Name : 96800003

Site Code : 96800003

Start Date : 5/11/2023

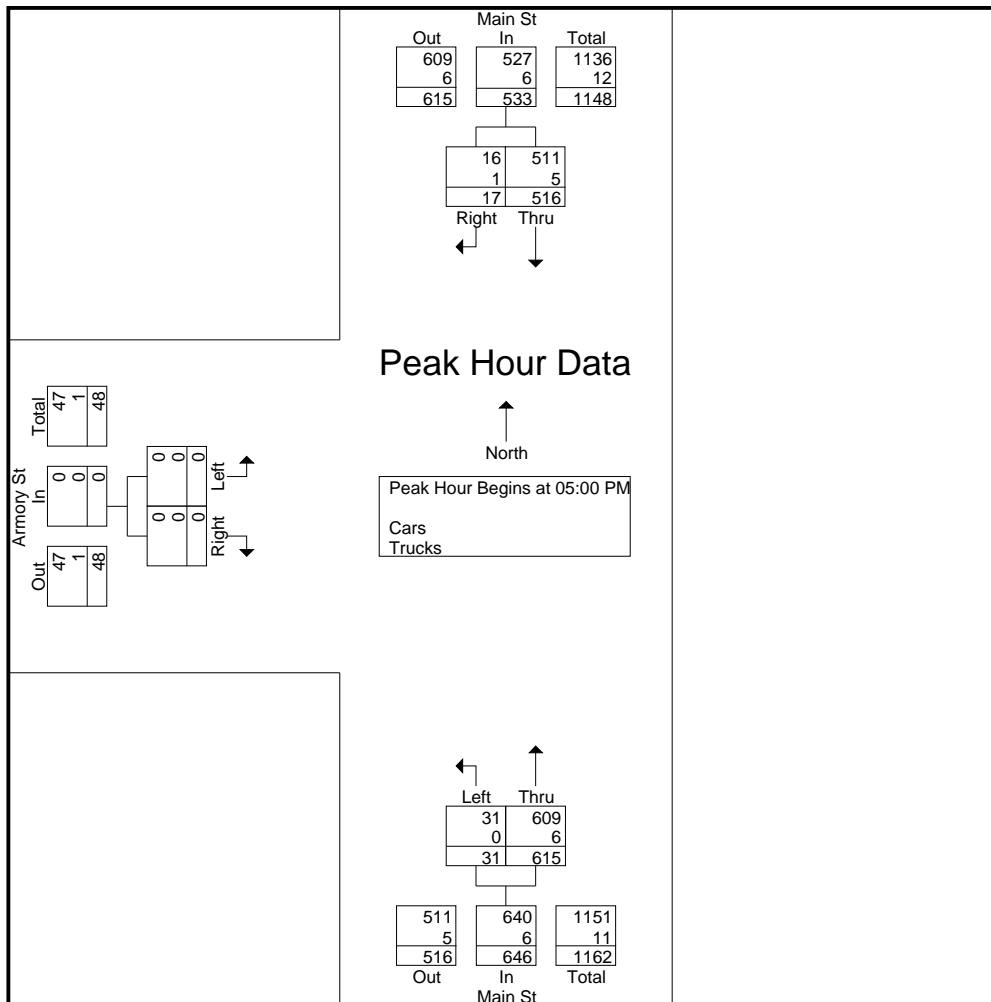
Page No : 2

N/S Street : Main Street

E/W Street : Armory Street

City/State : Wakefield, MA

Weather : Clear



**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			05:00 PM			04:00 PM		
+0 mins.	128	8	136	8	137	145	0	0	0
+15 mins.	137	4	141	8	140	148	0	0	0
+30 mins.	118	2	120	5	138	143	0	0	0
+45 mins.	133	3	136	10	200	210	0	0	0
Total Volume	516	17	533	31	615	646	0	0	0
% App. Total	96.8	3.2		4.8	95.2		0	0	
PHF	.942	.531	.945	.775	.769	.769	.000	.000	.000
Cars	511	16	527	31	609	640	0	0	0
% Cars	99	94.1	98.9	100	99	99.1	0	0	0
Trucks	5	1	6	0	6	6	0	0	0
% Trucks	1	5.9	1.1	0	1	0.9	0	0	0

# Accurate Counts

978-664-2565

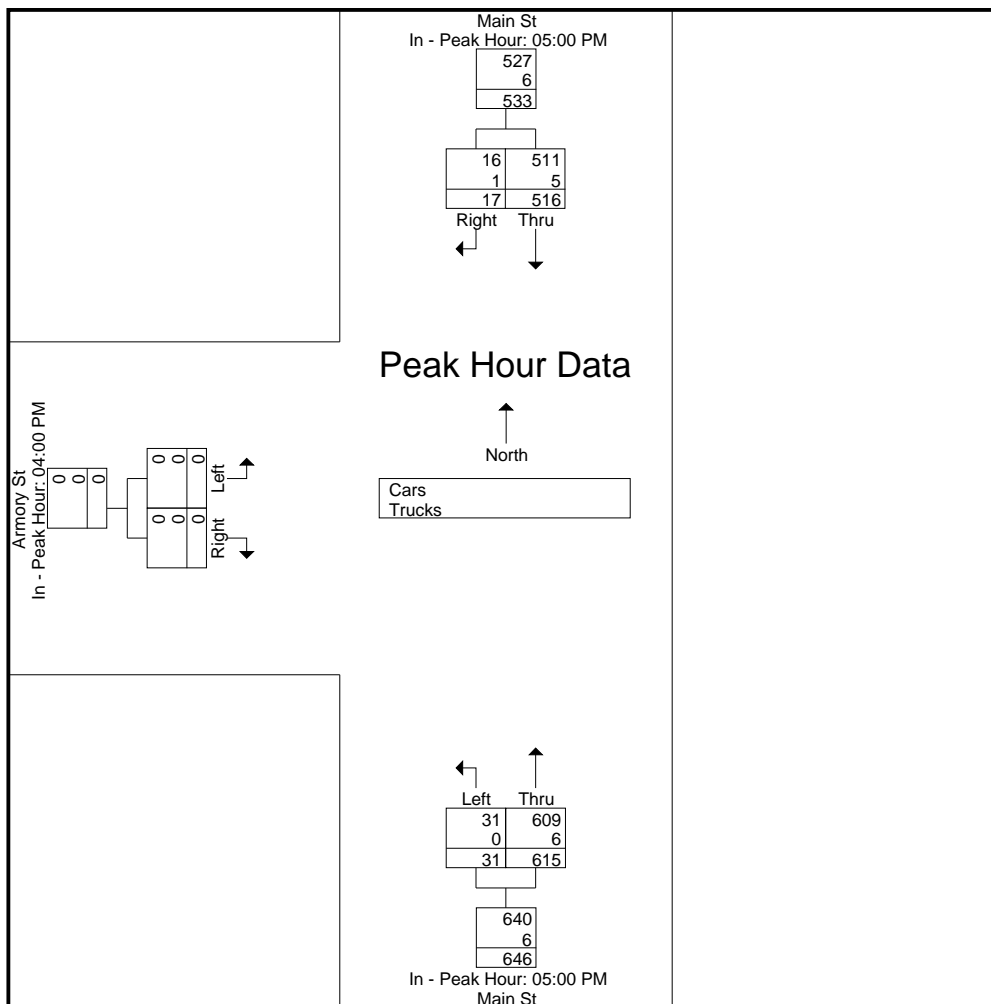
File Name : 96800003

Site Code : 96800003

Start Date : 5/11/2023

Page No : 3

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear



# Accurate Counts

978-664-2565

File Name : 96800003

Site Code : 96800003

Start Date : 5/11/2023

Page No : 4

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

### Groups Printed- Cars

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	134	5	4	130	0	0	273
04:15 PM	110	4	22	125	0	0	261
04:30 PM	127	3	13	118	0	0	261
04:45 PM	118	6	9	119	0	0	252
<b>Total</b>	<b>489</b>	<b>18</b>	<b>48</b>	<b>492</b>	<b>0</b>	<b>0</b>	<b>1047</b>
05:00 PM	125	7	8	135	0	0	275
05:15 PM	136	4	8	138	0	0	286
05:30 PM	117	2	5	137	0	0	261
05:45 PM	133	3	10	199	0	0	345
<b>Total</b>	<b>511</b>	<b>16</b>	<b>31</b>	<b>609</b>	<b>0</b>	<b>0</b>	<b>1167</b>
<b>Grand Total</b>	<b>1000</b>	<b>34</b>	<b>79</b>	<b>1101</b>	<b>0</b>	<b>0</b>	<b>2214</b>
Apprch %	96.7	3.3	6.7	93.3	0	0	
Total %	45.2	1.5	3.6	49.7	0	0	

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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 05:00 PM										
05:00 PM	125	<b>7</b>	132	8	135	143	0	0	0	275
05:15 PM	<b>136</b>	4	<b>140</b>	8	138	146	0	0	0	286
05:30 PM	117	2	119	5	137	142	0	0	0	261
05:45 PM	133	3	136	<b>10</b>	<b>199</b>	<b>209</b>	0	0	0	<b>345</b>
<b>Total Volume</b>	<b>511</b>	<b>16</b>	<b>527</b>	<b>31</b>	<b>609</b>	<b>640</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1167</b>
% App. Total	97	3		4.8	95.2		0	0		
PHF	.939	.571	.941	.775	.765	.766	.000	.000	.000	.846

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 7

### Groups Printed- Trucks

Start Time	Main St From North		Main St From South		Armory St From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	2	0	0	3	0	0	5
04:15 PM	1	0	0	3	0	0	4
04:30 PM	0	0	0	1	0	0	1
04:45 PM	1	0	0	2	0	0	3
<b>Total</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>13</b>
05:00 PM	3	1	0	2	0	0	6
05:15 PM	1	0	0	2	0	0	3
05:30 PM	1	0	0	1	0	0	2
05:45 PM	0	0	0	1	0	0	1
<b>Total</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>12</b>
<b>Grand Total</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>25</b>
Apprch %	90	10	0	100	0	0	
Total %	36	4	0	60	0	0	

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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 04:15 PM										
04:15 PM	1	0	1	0	<b>3</b>	<b>3</b>	0	0	0	4
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	1	0	1	0	2	2	0	0	0	3
05:00 PM	<b>3</b>	<b>1</b>	<b>4</b>	0	2	2	0	0	0	<b>6</b>
Total Volume	5	1	6	0	8	8	0	0	0	14
% App. Total	83.3	16.7		0	100		0	0		
PHF	.417	.250	.375	.000	.667	.667	.000	.000	.000	.583

# Accurate Counts

978-664-2565

N/S Street : Main Street  
 E/W Street : Armory Street  
 City/State : Wakefield, MA  
 Weather : Clear

File Name : 96800003  
 Site Code : 96800003  
 Start Date : 5/11/2023  
 Page No : 10

## Groups Printed- Bikes Peds

Start Time	Main St From North			Main St From South			Armory St From West			Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds			
04:00 PM	3	0	0	0	1	0	0	0	2	2	4	6
04:15 PM	0	0	0	0	0	3	0	0	6	9	0	9
04:30 PM	0	0	1	0	1	0	0	0	4	5	1	6
04:45 PM	0	0	0	0	0	1	0	0	4	5	0	5
<b>Total</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>21</b>	<b>5</b>	<b>26</b>
05:00 PM	0	0	0	0	0	3	0	0	4	7	0	7
05:15 PM	1	0	1	0	0	2	0	1	1	4	2	6
05:30 PM	1	0	3	0	1	0	0	0	12	15	2	17
05:45 PM	0	0	1	0	0	0	0	0	8	9	0	9
<b>Total</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>25</b>	<b>35</b>	<b>4</b>	<b>39</b>
<b>Grand Total</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>41</b>	<b>56</b>	<b>9</b>	<b>65</b>
Apprch %	100	0		0	100		0	100				
Total %	55.6	0		0	33.3		0	11.1		86.2	13.8	

Start Time	Main St From North			Main St From South			Armory St From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	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	3	0	3	0	1	1	0	0	0	4
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
% App. Total	100	0		0	100		0	0		
PHF	.250	.000	.250	.000	.500	.500	.000	.000	.000	.313

SEASONAL ADJUSTMENT DATA

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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.

PUBLIC TRANSPORTATION SCHEDULES

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# 137 Reading Depot – Malden Ctr Sta

Schedule Change – Weekday i

### Connections

- ORANGE LINE
- HAVERHILL LINE

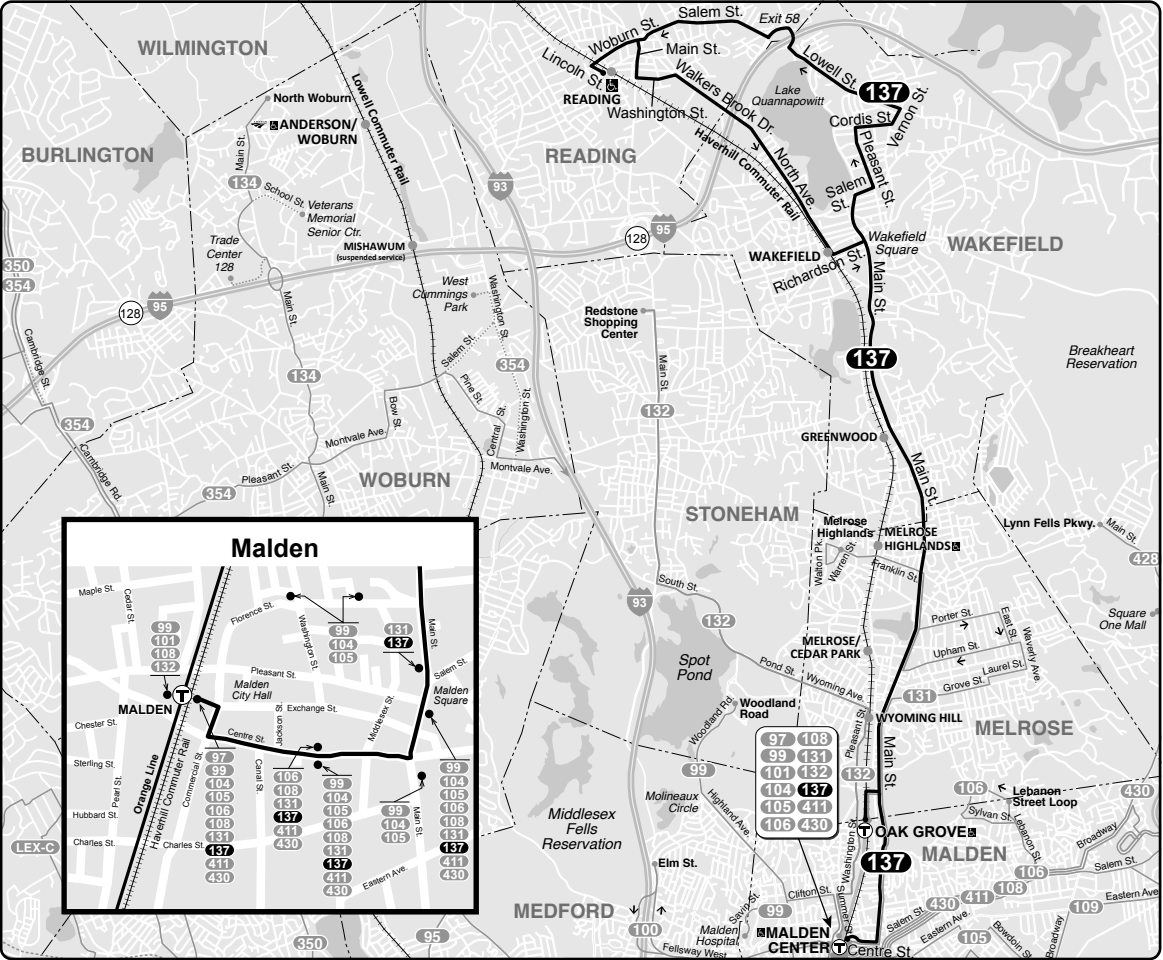
Information **617-222-3200**  
 Lost and Found **617-222-2229**  
 TTY **617-222-5146**

Realtime arrival information, maps, and more

**mbta.com**



A126-3-22.1



- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free with a paying customer.
- ♿ All MBTA buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
<b>Bus</b>	<b>\$1.70</b>	<b>\$1.70</b>	<b>\$0.85</b>
<b>Bus + Subway</b>	<b>\$2.40</b>	<b>\$4.10</b>	<b>\$1.10</b>

Complete fare/pass rules and free/reduced fare eligibility:  
[mbta.com/fares](http://mbta.com/fares) or call **617-222-3200**

**Weekday 137**

Inbound				Outbound			
Reading Depot	Wakefield Square	Oak Grove Station	Malden Center Station	Malden Center Station	Oak Grove Station	Wakefield Square	Reading Depot
5:25	5:33	5:49	5:57	4:45	4:52	5:07	5:22
6:00	6:12	6:32	6:46	5:20	5:27	5:42	5:57
6:55	7:07	7:27	-	6:27	6:36	6:56	7:12
7:15	7:27	7:47	-	7:07	7:16	7:36	7:52
7:35	7:47	8:07	-	-	7:36	7:56	8:12
7:55	8:07	8:26	-	-	7:56	8:16	8:32
8:15	8:27	8:46	-	-	8:16	8:36	8:52
8:35	8:47	9:06	-	-	8:30	8:50	9:06
8:55	9:07	9:26	9:38	-	8:51	9:11	9:27
9:30	9:42	10:01	10:13	-	9:23	9:43	9:59
10:02	10:14	10:33	10:45	9:45	9:54	10:13	10:32
10:35	10:47	11:06	11:19	10:20	10:30	10:48	11:07
11:10	11:23	11:44	11:57	10:55	11:04	11:23	11:42
11:45	11:58	<b>12:19</b>	<b>12:32</b>	11:30	11:38	11:57	<b>12:16</b>
<b>12:19</b>	<b>12:32</b>	<b>12:53</b>	<b>1:05</b>	<b>12:05</b>	<b>12:14</b>	<b>12:34</b>	<b>12:53</b>
<b>12:56</b>	<b>1:07</b>	<b>1:24</b>	<b>1:36</b>	<b>12:40</b>	<b>12:49</b>	<b>1:10</b>	<b>1:29</b>
<b>1:32</b>	<b>1:43</b>	<b>2:00</b>	<b>2:15</b>	<b>1:13</b>	<b>1:23</b>	<b>1:43</b>	<b>2:02</b>
<b>2:05</b>	<b>2:17</b>	<b>2:43</b>	<b>2:58</b>	<b>1:45</b>	<b>1:55</b>	<b>2:15</b>	<b>2:34</b>
<b>2:37</b>	<b>2:49</b>	<b>3:10</b>	<b>3:24</b>	<b>2:10</b>	<b>2:19</b>	<b>2:40</b>	-
<b>3:20</b>	<b>3:32</b>	<b>3:50</b>	<b>4:04</b>	<b>3:05</b>	<b>3:15</b>	<b>3:36</b>	<b>3:55</b>
<b>3:58</b>	<b>4:10</b>	<b>4:28</b>	<b>4:42</b>	<b>3:32</b>	<b>3:42</b>	<b>4:03</b>	<b>4:22</b>
<b>4:25</b>	<b>4:37</b>	<b>4:55</b>	-	-	<b>4:00</b>	<b>4:21</b>	<b>4:40</b>
<b>4:43</b>	<b>4:55</b>	<b>5:13</b>	-	-	<b>4:20</b>	<b>4:41</b>	<b>5:00</b>
<b>5:03</b>	<b>5:15</b>	<b>5:33</b>	-	-	<b>4:40</b>	<b>5:01</b>	<b>5:20</b>
<b>5:23</b>	<b>5:35</b>	<b>5:53</b>	-	-	<b>5:00</b>	<b>5:21</b>	<b>5:40</b>
<b>5:43</b>	<b>5:55</b>	<b>6:12</b>	-	-	<b>5:20</b>	<b>5:41</b>	<b>6:00</b>
<b>6:03</b>	<b>6:14</b>	<b>6:31</b>	-	-	<b>5:40</b>	<b>6:01</b>	<b>6:20</b>
<b>6:23</b>	<b>6:34</b>	<b>6:51</b>	-	-	<b>6:00</b>	<b>6:21</b>	<b>6:40</b>
<b>6:43</b>	<b>6:54</b>	<b>7:11</b>	-	-	<b>6:20</b>	<b>6:41</b>	<b>7:00</b>
<b>7:03</b>	<b>7:14</b>	<b>7:31</b>	-	-	<b>6:40</b>	<b>7:01</b>	<b>7:20</b>
<b>7:23</b>	<b>7:34</b>	<b>7:51</b>	-	-	<b>7:00</b>	<b>7:17</b>	<b>7:36</b>
<b>7:39</b>	<b>7:50</b>	<b>8:07</b>	-	-	<b>7:20</b>	<b>7:37</b>	<b>7:56</b>
<b>8:23</b>	<b>8:34</b>	<b>8:51</b>	<b>9:04</b>	<b>7:35</b>	<b>7:44</b>	<b>8:01</b>	<b>8:20</b>
<b>8:59</b>	<b>9:08</b>	<b>9:26</b>	<b>9:39</b>	<b>8:10</b>	<b>8:19</b>	<b>8:37</b>	<b>8:56</b>
<b>9:57</b>	<b>10:06</b>	<b>10:20</b>	<b>10:30</b>	<b>9:10</b>	<b>9:19</b>	<b>9:35</b>	<b>9:54</b>
<b>10:33</b>	<b>10:42</b>	<b>10:56</b>	<b>11:06</b>	<b>9:50</b>	<b>9:59</b>	<b>10:15</b>	<b>10:30</b>

**S**

**S**

**Saturday 137**

Inbound				Outbound			
Reading Depot	Wakefield Square	Oak Grove Station	Malden Center Station	Malden Center Station	Oak Grove Station	Wakefield Square	Reading Depot
6:00	6:10	6:25	6:36	6:00	6:08	6:23	6:38
6:41	6:51	7:06	7:17	6:40	6:48	7:03	7:18
7:21	7:31	7:46	7:57	7:25	7:33	7:48	8:03
8:06	8:16	8:31	8:42	8:05	8:13	8:31	8:46
8:49	8:59	9:16	9:27	8:50	8:58	9:18	9:33
9:36	9:48	10:07	10:18	9:35	9:43	10:03	10:18
10:21	10:34	10:55	11:07	10:30	10:38	10:58	11:14
11:17	11:31	11:50	<b>12:02</b>	11:15	11:24	11:50	<b>12:06</b>
<b>12:09</b>	<b>12:23</b>	<b>12:42</b>	<b>12:54</b>	<b>12:10</b>	<b>12:19</b>	<b>12:41</b>	<b>12:56</b>
<b>12:59</b>	<b>1:13</b>	<b>1:32</b>	<b>1:44</b>	<b>1:00</b>	<b>1:09</b>	<b>1:31</b>	<b>1:46</b>
<b>1:49</b>	<b>2:03</b>	<b>2:23</b>	<b>2:34</b>	<b>1:50</b>	<b>1:59</b>	<b>2:21</b>	<b>2:36</b>
<b>2:39</b>	<b>2:53</b>	<b>3:11</b>	<b>3:22</b>	<b>2:40</b>	<b>2:49</b>	<b>3:11</b>	<b>3:26</b>
<b>3:29</b>	<b>3:42</b>	<b>4:00</b>	<b>4:11</b>	<b>3:30</b>	<b>3:39</b>	<b>4:00</b>	<b>4:15</b>
<b>4:18</b>	<b>4:30</b>	<b>4:47</b>	<b>4:58</b>	<b>4:20</b>	<b>4:29</b>	<b>4:50</b>	<b>5:05</b>
<b>5:08</b>	<b>5:20</b>	<b>5:37</b>	<b>5:48</b>	<b>5:05</b>	<b>5:15</b>	<b>5:34</b>	<b>5:49</b>
<b>5:52</b>	<b>6:04</b>	<b>6:21</b>	<b>6:32</b>	<b>5:55</b>	<b>6:05</b>	<b>6:24</b>	<b>6:39</b>
<b>6:42</b>	<b>6:54</b>	<b>7:11</b>	<b>7:22</b>	<b>6:45</b>	<b>6:55</b>	<b>7:14</b>	<b>7:29</b>
<b>7:32</b>	<b>7:44</b>	<b>8:01</b>	<b>8:12</b>	<b>8:30</b>	<b>8:40</b>	<b>8:58</b>	-
-	<b>9:05</b>	<b>9:20</b>	<b>9:31</b>	-	-	-	-

**S** runs only on school days

PM times are **bold**

Information in this timetable is subject to change without notice. Traffic and weather may affect running times.

Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

**Sunday 137**

Inbound				Outbound			
Reading Depot	Wakefield Square	Oak Grove Station	Malden Center Station	Malden Center Station	Oak Grove Station	Wakefield Square	Reading Depot
8:00	8:11	8:25	8:36	8:40	8:49	9:05	9:19
9:22	9:34	9:50	10:01	10:10	10:19	10:36	10:50
10:53	11:05	11:21	11:34	11:40	11:50	<b>12:07</b>	<b>12:21</b>
<b>12:24</b>	<b>12:36</b>	<b>12:54</b>	<b>1:06</b>	<b>1:20</b>	<b>1:29</b>	<b>1:47</b>	<b>2:01</b>
<b>2:04</b>	<b>2:16</b>	<b>2:32</b>	<b>2:44</b>	<b>2:55</b>	<b>3:05</b>	<b>3:23</b>	<b>3:37</b>
<b>3:40</b>	<b>3:51</b>	<b>4:06</b>	<b>4:17</b>	<b>4:25</b>	<b>4:34</b>	<b>4:52</b>	<b>5:06</b>
<b>5:09</b>	<b>5:20</b>	<b>5:35</b>	<b>5:46</b>	-	-	-	-

**2023 Holidays**

- SAT** Patriots' Day
- SUN** Memorial Day
- SUN** Independence Day
- SUN** Labor Day
- SAT** Indigenous People's Day
- SUN** Thanksgiving
- SUN** Christmas Day
- SUN** New Year's Eve
- SUN** New Year's Day

MASSDOT CRASH RATE WORKSHEETS

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## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wakefield COUNT DATE : May-23

DISTRICT : 4 UNSIGNALIZED :  SIGNALIZED :

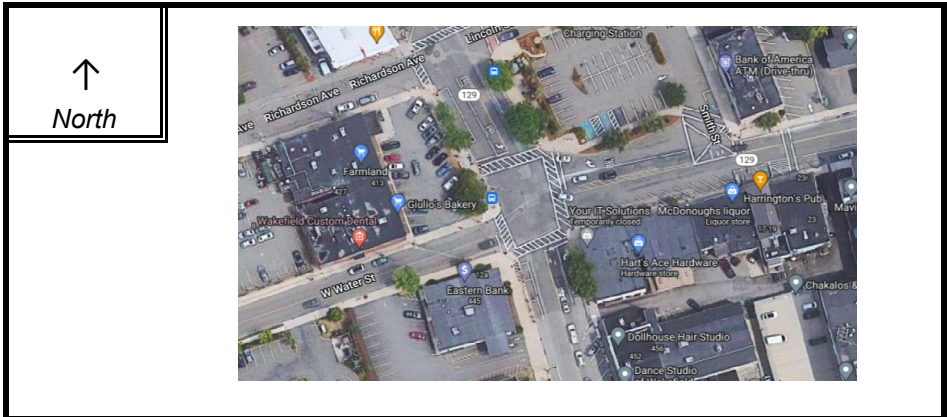
~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Water Street

West Water Street

**INTERSECTION  
 DIAGRAM  
 (Label Approaches)**



**PEAK HOUR VOLUMES**

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	264	326	532	623		<b>1,745</b>

" K " FACTOR : **0.090** INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME : **19,389**

TOTAL # OF CRASHES : 17 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR ( A ) : **3.40**

**CRASH RATE CALCULATION :** **0.48** RATE =  $\frac{( A * 1,000,000 )}{( V * 365 )}$

Comments : Below Statewide and District Crash Rates  
 Project Title & Date: Proposed Mixed-Use Development

## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wakefield COUNT DATE : May-23

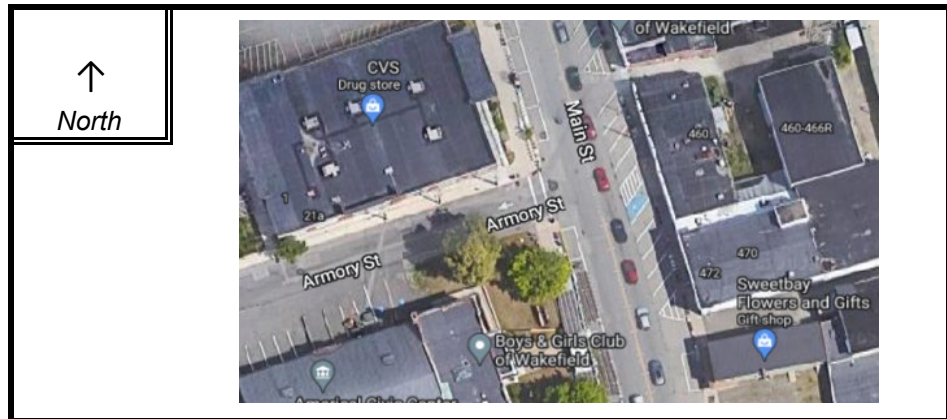
DISTRICT : 4 UNSIGNALIZED :  SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Armory Street

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**PEAK HOUR VOLUMES**

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :			646	533		1,179

" 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 Statewide and District Crash Rates

Project Title & Date: Proposed Mixed-Use Development



## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wakefield                      COUNT DATE : May-23

DISTRICT : 4                      UNSIGNALIZED :                       SIGNALIZED :

### ~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Richardson Street

Galvin Middle School Driveway

**INTERSECTION  
 DIAGRAM  
 (Label Approaches)**



### PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	234	95	536	529		<b>1,394</b>

" 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 Statewide and District Crash Rates  
 Project Title & Date: Proposed Mixed-Use Development

## GROWTH RATE DATA

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**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 Rate
Wakefield	Main Street	North of Water Street	15,739	15,911	14,627	15,330	15,547	16,402	16,582	16,798	12,400	12,574	12,624	-1.97%
Wakefield	Yankee Division Highway	North of Route 28		141,000					137,541	148,269	147,824	146,684	144,478	0.77%
Stoneham	Main Street	South of Reading Townline	24,226	25,213	24,943	25,518	25,671	25,851	25,464	25,795	27,981	26,699	25,691	0.79%
Wakefield	Yankee Division Highway	North of Main Street	133,096	130,226	122,700	135,088	137,350	133,916	134,579	138,422	140,727	139,400	142,046	0.92%
Wakefield	Main Street	At Melrose Cityline	13,049	13,192	12,841	13,211	13,418	12,186	12,320	12,480	13,207	13,392	13,446	0.16%
Wakefield	Yankee Division Highway	North of North Avenue	134,368	133,858	114,891	120,613	153,445	149,609	129,714	134,790	140,043	140,579	137,985	0.96%
Reading	Yankee Division Highway	North of I-93		150,000					154,054	155,608	157,422	157,652	156,392	0.48%
Wakefield	Yankee Division Highway	North of Route 129	99,321	135,116	132,541	134,997	134,946	131,572	141,707	143,419	147,386	144,627	143,036	2.68%
Wakefield	Yankee Division Highway	South of I-95	124,859	127,229	124,187	130,074	129,565	128,788	134,300	134,844	132,277	137,999	140,822	1.14%
														0.66%

TRIP GENERATION DATA

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# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA  
On a: Weekday**

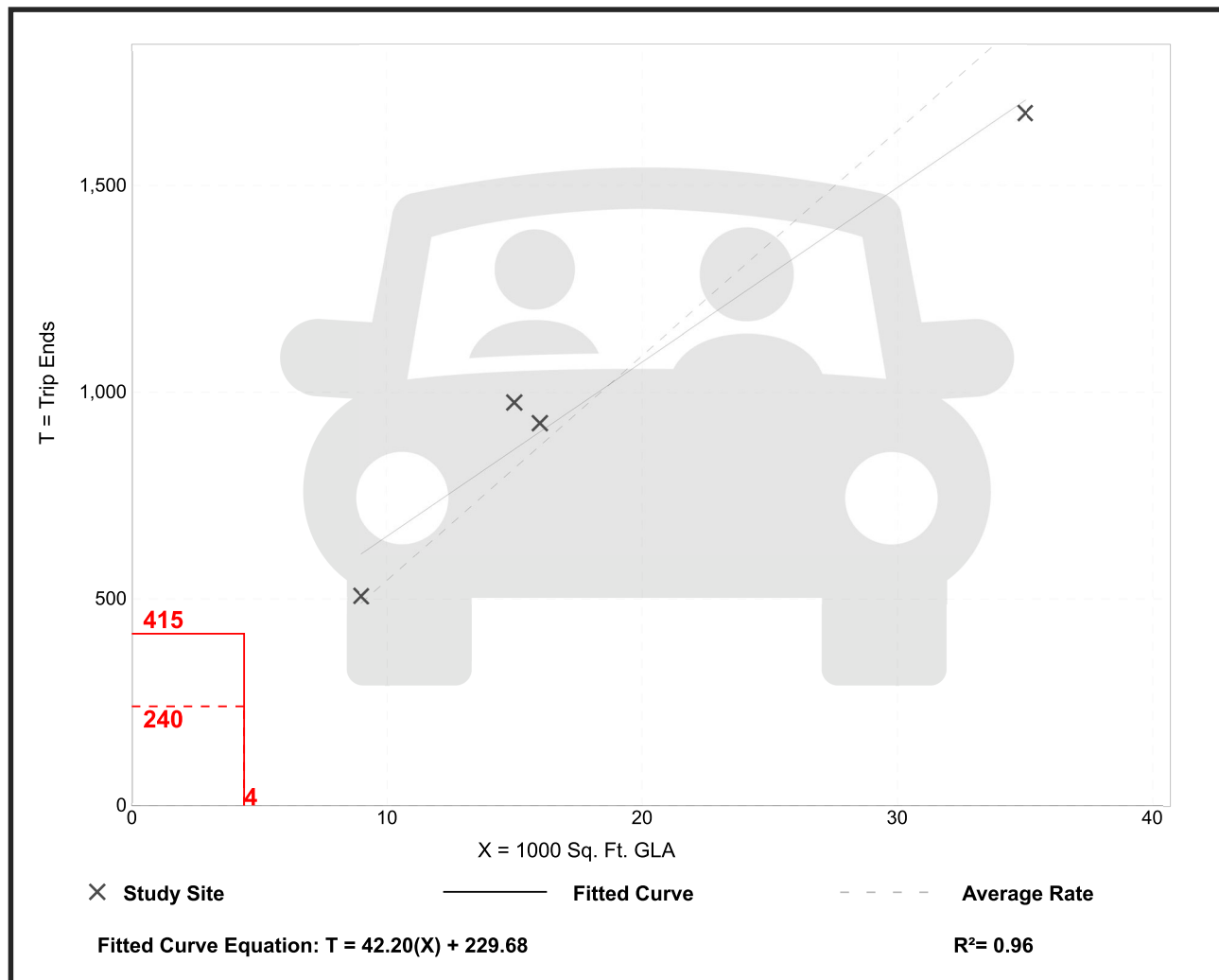
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 4  
 Avg. 1000 Sq. Ft. GLA: 19  
 Directional Distribution: 50% entering, 50% exiting

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

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

## Data Plot and Equation

*Caution – Small Sample Size*



## Strip Retail Plaza (<40k) (822)

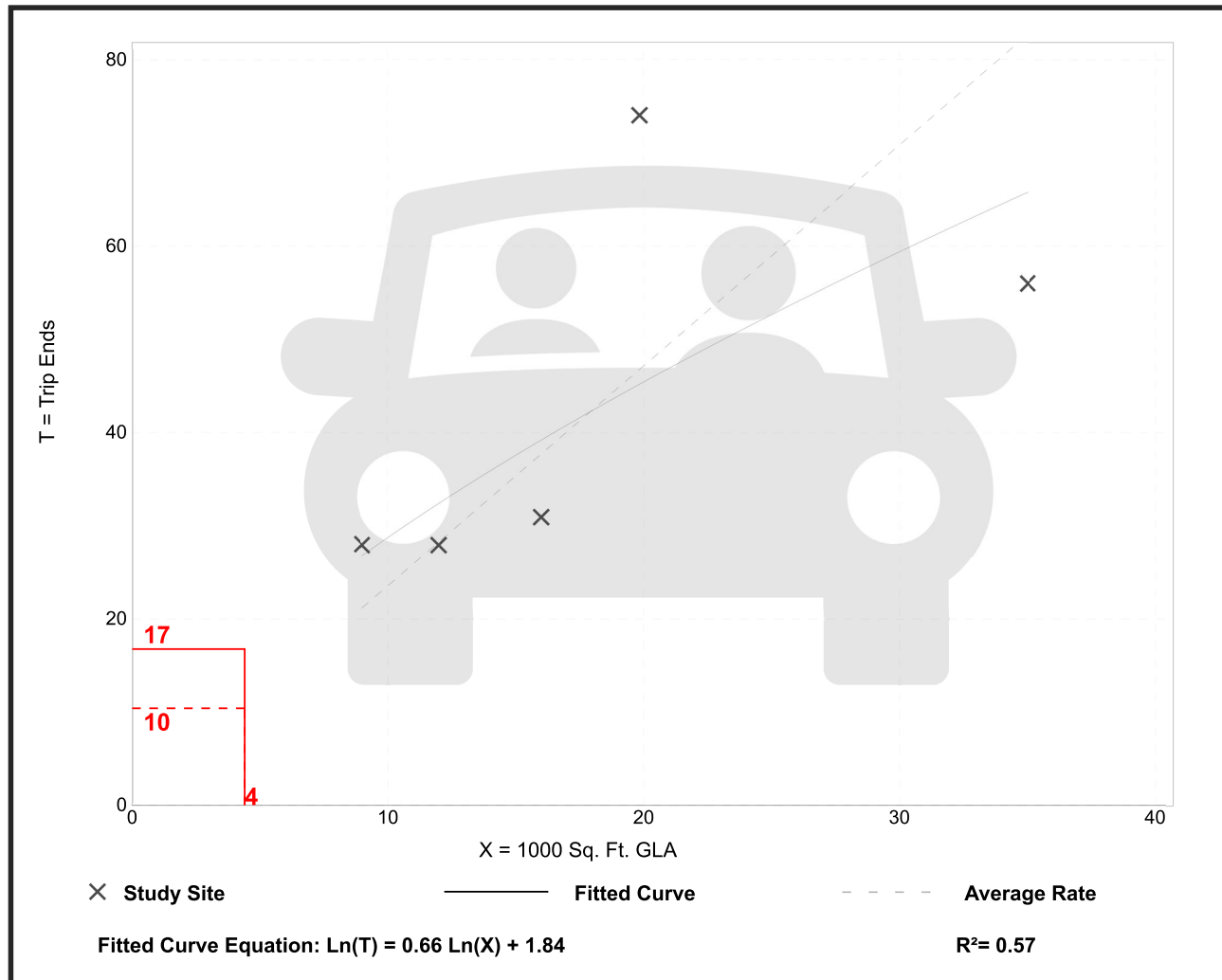
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 5  
 Avg. 1000 Sq. Ft. GLA: 18  
 Directional Distribution: 60% entering, 40% exiting

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

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

### Data Plot and Equation

*Caution – Small Sample Size*



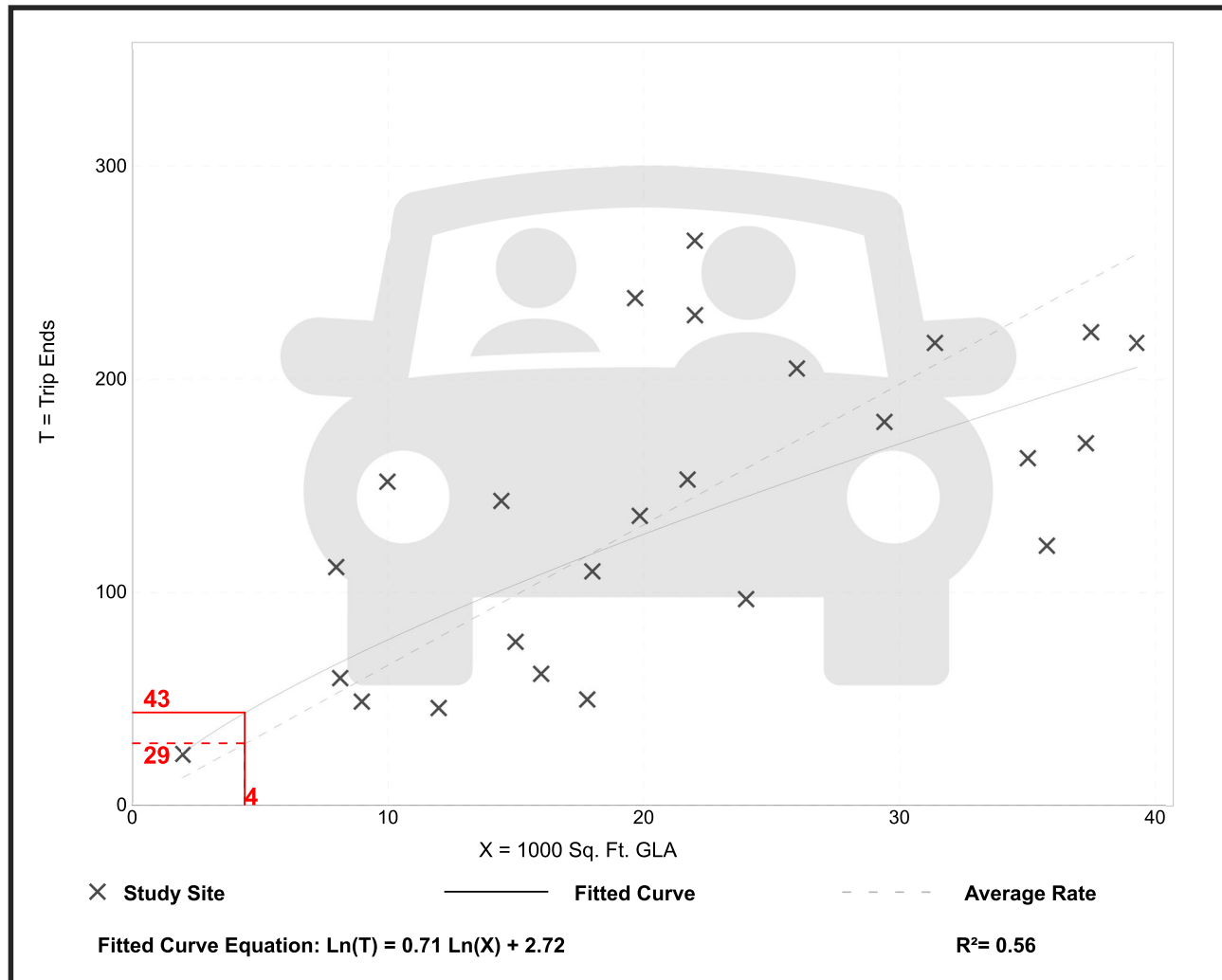
## Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 25  
 Avg. 1000 Sq. Ft. GLA: 21  
 Directional Distribution: 50% entering, 50% exiting

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

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

### Data Plot and Equation



# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

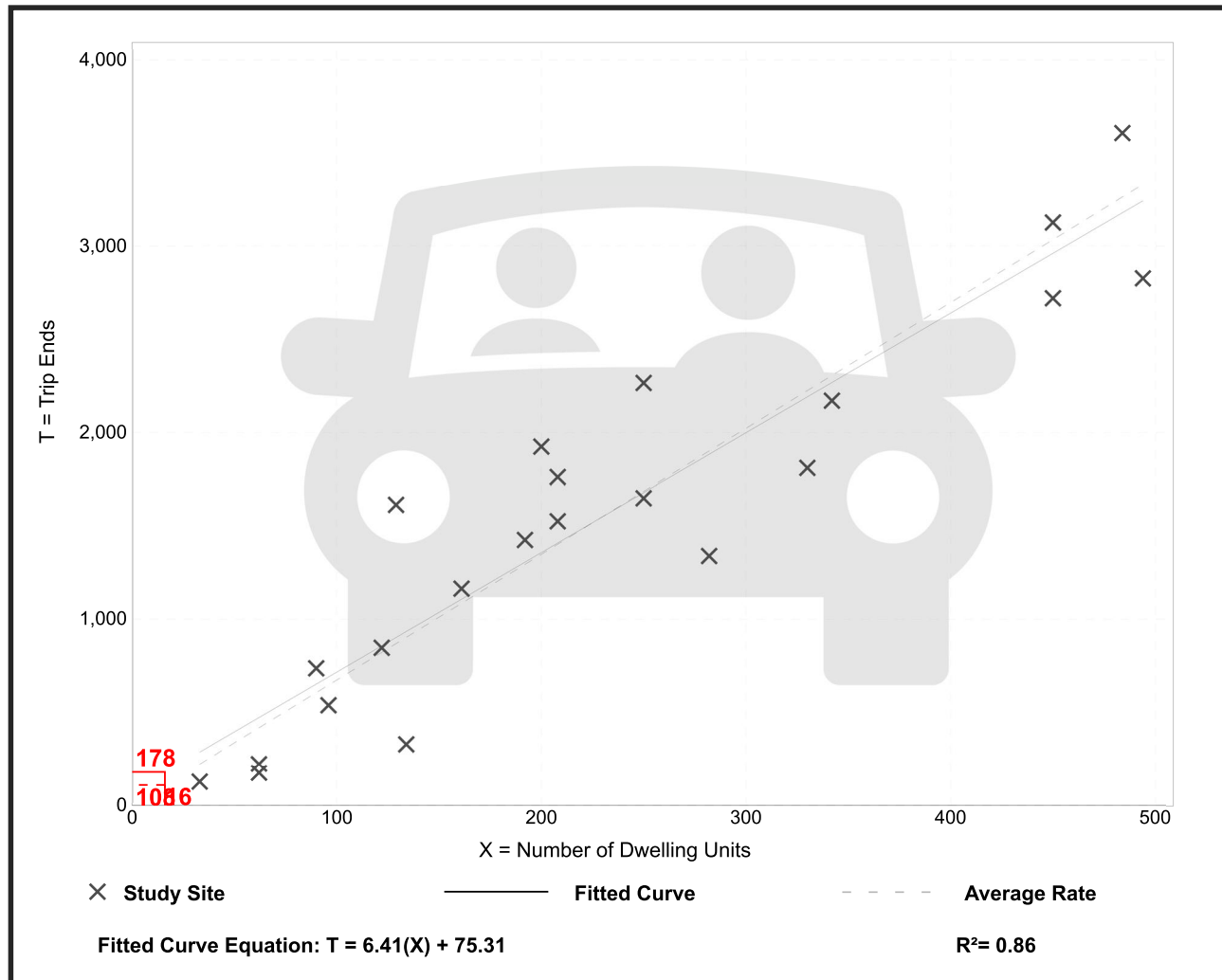
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 22  
Avg. Num. of Dwelling Units: 229  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

## Data Plot and Equation





## Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

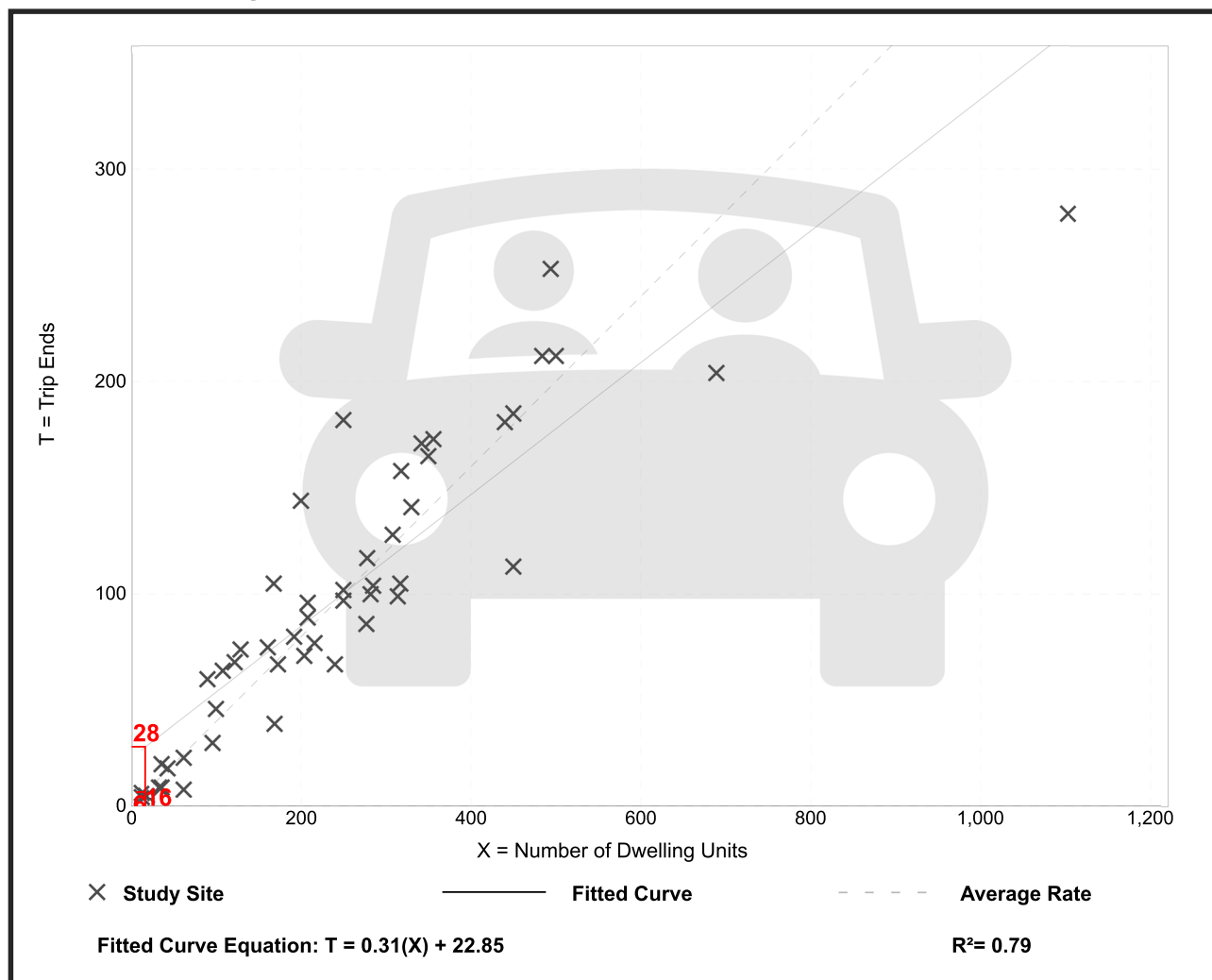
**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 49  
 Avg. Num. of Dwelling Units: 249  
 Directional Distribution: 24% entering, 76% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

### Data Plot and Equation



## Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

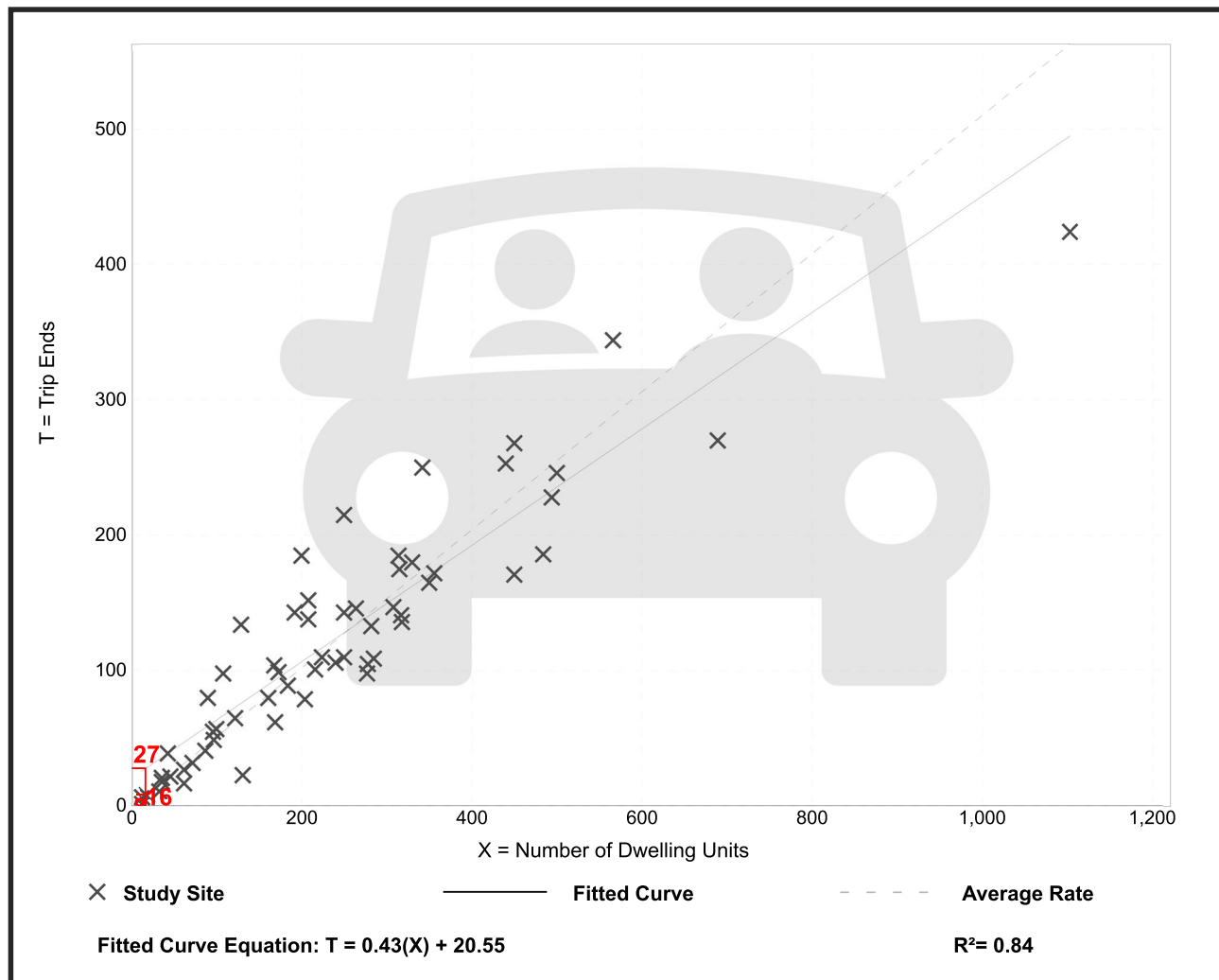
**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 59  
 Avg. Num. of Dwelling Units: 241  
 Directional Distribution: 63% entering, 37% exiting

### Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

### Data Plot and Equation



JOURNEY TO WORK

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Proposed Mixed-Use Development  
Wakefield, Massachusetts

Residence	Workplace	Number	Main Street (North)		Main Street (South)		West Water Street (West)		Water Street (East)		Armory Street (West)		Galvin Middle School (West)		Richardson Street (East)	
Wakefield town	Boston city	2,756	60%	1654		0		0	40%	1102		0		0		0
Wakefield town	Wakefield town	2,443	24%	586	29%	708	10%	244	23%	562	1%	24	8%	195	5%	122
Wakefield town	Woburn city	816	50%	408	50%	408		0		0		0		0		0
Wakefield town	Cambridge city	683	34%	232	33%	225		0	33%	225		0		0		0
Wakefield town	Reading town	624	100%	624		0		0		0		0		0		0
Wakefield town	Burlington town	458	100%	458		0		0		0		0		0		0
Wakefield town	Wakefield town	432	50%	216		0		0	50%	216		0		0		0
Wakefield town	Waltham city	362	50%	181	50%	181		0		0		0		0		0
Wakefield town	Melrose city	357		0	100%	357		0		0		0		0		0
Wakefield town	Rochester city	275		0		0		0	100%	275		0		0		0
Wakefield town	Beverly city	251		0		0		0	100%	251		0		0		0
Wakefield town	Danvers town	247		0		0		0	100%	247		0		0		0
Wakefield town	Wilmington town	244	100%	244		0		0		0		0		0		0
Wakefield town	Medford city	240	40%	96	60%	144		0		0		0		0		0
Wakefield town	Ossipee town	240	60%	144		0		0	40%	96		0		0		0
Wakefield town	Saugus town	225		0	60%	135		0	40%	90		0		0		0
Wakefield town	Andover town	217	100%	217		0		0		0		0		0		0
Wakefield town	Peabody city	215		0		0		0	100%	215		0		0		0
Wakefield town	Wolfeboro town	211	50%	106		0		0	50%	106		0		0		0
Wakefield town	Stoneham town	206		0	100%	206		0		0		0		0		0
Wakefield town	Somerville city	202	50%	101	50%	101		0		0		0		0		0
Wakefield town	Malden city	198		0	100%	198		0		0		0		0		0
Wakefield town	Dover city	194		0		0		0	100%	194		0		0		0
Wakefield town	Newton city	191	100%	191		0		0		0		0		0		0
Wakefield town	Salem city	175		0		0		0	100%	175		0		0		0
Wakefield town	Everett city	171		0	40%	68		0	60%	103		0		0		0
Wakefield town	Bedford town	167	100%	167		0		0		0		0		0		0
Wakefield town	Lexington town	167	60%	100		0		0	40%	67		0		0		0
Wakefield town	Winchester town	165		0	100%	165		0		0		0		0		0
Wakefield town	Chelsea city	159	40%	64		0		0	60%	95		0		0		0
Wakefield town	Lynnfield town	152	50%	76		0		0	50%	76		0		0		0
Wakefield town	Chelmsford town	117	100%	117		0		0		0		0		0		0
Wakefield town	Portsmouth city	107		0		0		0	100%	107		0		0		0
Wakefield town	Framingham town	101	100%	101		0		0		0		0		0		0
Wakefield town	North Reading town	101	50%	51		0		0	50%	51		0		0		0
Wakefield town	Billerica town	100	100%	100		0		0		0		0		0		0
Wakefield town	Kittery town	99		0		0		0	100%	99		0		0		0
				0		0		0		0		0		0		0
		14,068		6,233		2,897		244		4,351		24		195		122
				44.3%		20.6%		1.7%		30.9%		0.2%		1.4%		0.9%
		<u>SAY</u>		<b>44%</b>		<b>21%</b>		<b>2%</b>		<b>31%</b>		<b>0%</b>		<b>1%</b>		<b>1%</b>

## CAPACITY ANALYSIS

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2023 Existing Weekday Morning Peak Hour  
2023 Existing Weekday Evening Peak Hour  
2030 No-Build Weekday Morning Peak Hour  
2030 No-Build Weekday Evening Peak Hour  
2030 Build Weekday Morning Peak Hour  
2030 Build Weekday Evening Peak Hour

2023 Existing Weekday Morning Peak Hour

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2023 Existing Weekday Morning Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Volume (vph)	23	144	13	174	141	150	11	284	181	123	393	28
Future Volume (vph)	23	144	13	174	141	150	11	284	181	123	393	28
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990				0.850			0.850		0.990	
Flt Protected		0.994			0.973			0.998		0.950		
Satd. Flow (prot)	0	1997	0	0	1820	1743	0	1922	1652	1694	1830	0
Flt Permitted		0.926			0.667			0.975		0.204		
Satd. Flow (perm)	0	1861	0	0	1248	1743	0	1878	1652	364	1830	0
Satd. Flow (RTOR)		3				102			92		4	
Adj. Flow (vph)	29	180	16	187	152	161	13	346	221	141	452	32
Lane Group Flow (vph)	0	225	0	0	339	161	0	359	221	141	484	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.28		0.63	0.20		0.78	0.47	0.52	0.73		
Control Delay		30.4		40.8	13.9		55.4	24.7	30.7	40.1		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		30.4		40.8	13.9		55.4	24.7	30.7	40.1		
Queue Length 50th (ft)		134		247	32		269	86	75	329		
Queue Length 95th (ft)		203		#499	97		306	125	99	370		
Internal Link Dist (ft)		303		302			185			236		
Turn Bay Length (ft)						120		65	80			
Base Capacity (vph)		799		534	805		568	564	365	887		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.28		0.63	0.20		0.63	0.39	0.39	0.55		
<b>Intersection Summary</b>												
Cycle Length: 124												

2023 Existing Weekday Morning Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	



2023 Existing Weekday Morning Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

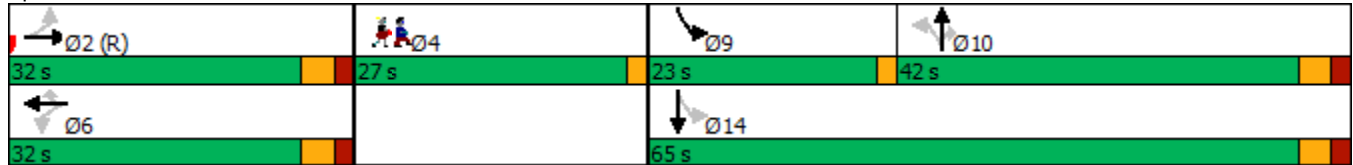
Natural Cycle: 115

Control Type: Actuated-Coordinated

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street



2023 Existing Weekday Morning Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	23	144	13	174	141	150	11	284	181	123	393	28
Future Volume (vph)	23	144	13	174	141	150	11	284	181	123	393	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Fr <sub>t</sub>		0.99			1.00	0.85		1.00	0.85	1.00	0.99	
Fl <sub>t</sub> Protected		0.99			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1997			1821	1743		1923	1652	1694	1830	
Fl <sub>t</sub> Permitted		0.93			0.67	1.00		0.98	1.00	0.20	1.00	
Satd. Flow (perm)		1862			1248	1743		1878	1652	363	1830	
Peak-hour factor, PHF	0.80	0.80	0.80	0.93	0.93	0.93	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	29	180	16	187	152	161	13	346	221	141	452	32
RTOR Reduction (vph)	0	2	0	0	0	59	0	0	69	0	3	0
Lane Group Flow (vph)	0	223	0	0	339	102	0	359	152	141	481	0
Heavy Vehicles (%)	0%	3%	8%	2%	1%	5%	0%	2%	1%	3%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		52.3			52.3	52.3		30.4	30.4	44.7	44.7	
Effective Green, g (s)		52.3			52.3	52.3		30.4	30.4	44.7	44.7	
Actuated g/C Ratio		0.42			0.42	0.42		0.25	0.25	0.36	0.36	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		785			526	735		460	405	262	659	
v/s Ratio Prot										0.05	c0.26	
v/s Ratio Perm		0.12			c0.27	0.06		0.19	0.09	0.14		
v/c Ratio		0.28			0.64	0.14		0.78	0.37	0.54	0.73	
Uniform Delay, d <sub>1</sub>		23.6			28.5	22.0		43.7	38.9	29.6	34.4	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.9			2.7	0.1		8.4	0.6	2.1	4.2	
Delay (s)		24.5			31.2	22.1		52.0	39.5	31.7	38.6	
Level of Service		C			C	C		D	D	C	D	
Approach Delay (s)		24.5			28.3			47.3			37.0	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2023 Existing Weekday Morning Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	106.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖			↕	
Traffic Vol, veh/h	97	25	112	55	17	23	126	389	21	7	425	97
Future Vol, veh/h	97	25	112	55	17	23	126	389	21	7	425	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	74	74	74	86	86	86	91	91	91
Heavy Vehicles, %	0	0	0	6	0	4	0	2	5	0	3	0
Mvmt Flow	167	43	193	74	23	31	147	452	24	8	467	107

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1322	1307	521	1413	1348	464	574	0	0	476	0	0
Stage 1	537	537	-	758	758	-	-	-	-	-	-	-
Stage 2	785	770	-	655	590	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 135	161	559	113	152	594	1009	-	-	1097	-	-
Stage 1	532	526	-	393	418	-	-	-	-	-	-	-
Stage 2	389	413	-	448	498	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 98	136	559	~ 49	128	594	1009	-	-	1097	-	-
Mov Cap-2 Maneuver	~ 98	136	-	~ 49	128	-	-	-	-	-	-	-
Stage 1	454	520	-	336	357	-	-	-	-	-	-	-
Stage 2	295	353	-	266	493	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	299.2		\$ 486.1		2.2		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1009	-	-	104	559	73	1097	-	-
HCM Lane V/C Ratio	0.145	-	-	2.023	0.345	1.759	0.007	-	-
HCM Control Delay (s)	9.2	-	-	\$ 560.3	14.8	\$ 486.1	8.3	0	-
HCM Lane LOS	A	-	-	F	B	F	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	17.7	1.5	11.2	0	-	-

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

2023 Existing Weekday Evening Peak Hour

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2023 Existing Weekday Evening Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Volume (vph)	13	218	33	137	89	100	23	258	251	204	346	73
Future Volume (vph)	13	218	33	137	89	100	23	258	251	204	346	73
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850			0.850		0.974	
Flt Protected		0.998			0.971			0.996		0.950		
Satd. Flow (prot)	0	2010	0	0	1820	1794	0	1920	1652	1728	1832	0
Flt Permitted		0.980			0.566			0.937		0.257		
Satd. Flow (perm)	0	1973	0	0	1061	1794	0	1806	1652	467	1832	0
Satd. Flow (RTOR)		5				95			133		12	
Adj. Flow (vph)	15	248	38	156	101	114	24	274	267	219	372	78
Lane Group Flow (vph)	0	301	0	0	257	114	0	298	267	219	450	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.36		0.58	0.14		0.75	0.57	0.62	0.66		
Control Delay		32.3		41.2	10.4		56.7	24.9	32.5	35.3		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		32.3		41.2	10.4		56.7	24.9	32.5	35.3		
Queue Length 50th (ft)		187		182	10		224	94	119	288		
Queue Length 95th (ft)		307		#381	58		297	167	152	339		
Internal Link Dist (ft)		303		302			185			236		
Turn Bay Length (ft)						120		65	80			
Base Capacity (vph)		829		444	806		538	586	397	892		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.36		0.58	0.14		0.55	0.46	0.55	0.50		

Intersection Summary

Cycle Length: 124

2023 Existing Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	

2023 Existing Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

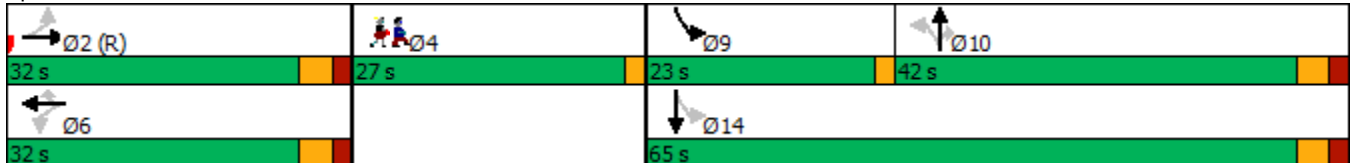
Natural Cycle: 105

Control Type: Actuated-Coordinated

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street



2023 Existing Weekday Evening Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕	↕		↕	↕	↕	↕	↕
Traffic Volume (vph)	13	218	33	137	89	100	23	258	251	204	346	73
Future Volume (vph)	13	218	33	137	89	100	23	258	251	204	346	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Fr <sub>t</sub>		0.98			1.00	0.85		1.00	0.85	1.00	0.97	
Fl <sub>t</sub> Protected		1.00			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		2009			1819	1794		1920	1652	1728	1832	
Fl <sub>t</sub> Permitted		0.98			0.57	1.00		0.94	1.00	0.26	1.00	
Satd. Flow (perm)		1973			1061	1794		1807	1652	468	1832	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	15	248	38	156	101	114	24	274	267	219	372	78
RTOR Reduction (vph)	0	3	0	0	0	56	0	0	104	0	8	0
Lane Group Flow (vph)	0	298	0	0	257	58	0	298	163	219	442	0
Heavy Vehicles (%)	0%	2%	3%	1%	2%	2%	0%	2%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		51.1			51.1	51.1		27.2	27.2	45.9	45.9	
Effective Green, g (s)		51.1			51.1	51.1		27.2	27.2	45.9	45.9	
Actuated g/C Ratio		0.41			0.41	0.41		0.22	0.22	0.37	0.37	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		813			437	739		396	362	342	678	
v/s Ratio Prot										0.09	c0.24	
v/s Ratio Perm		0.15			c0.24	0.03		c0.16	0.10	0.15		
v/c Ratio		0.37			0.59	0.08		0.75	0.45	0.64	0.65	
Uniform Delay, d <sub>1</sub>		25.2			28.3	22.1		45.3	41.9	29.5	32.4	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		1.3			2.0	0.0		7.9	0.9	4.1	2.3	
Delay (s)		26.5			30.3	22.2		53.1	42.8	33.6	34.7	
Level of Service		C			C	C		D	D	C	C	
Approach Delay (s)		26.5			27.8			48.3			34.3	
Approach LOS		C			C			D			C	

Intersection Summary

HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



2023 Existing Weekday Evening Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	13.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↗			↕	
Traffic Vol, veh/h	11	10	30	73	10	19	63	536	165	19	450	33
Future Vol, veh/h	11	10	30	73	10	19	63	536	165	19	450	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	85	85	85	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	15	14	42	86	12	22	67	570	176	21	495	36

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1364	1435	513	1375	1365	658	531	0	0	746	0	0
Stage 1	555	555	-	792	792	-	-	-	-	-	-	-
Stage 2	809	880	-	583	573	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	126	135	565	124	149	468	1047	-	-	871	-	-
Stage 1	520	516	-	385	404	-	-	-	-	-	-	-
Stage 2	377	368	-	502	507	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	104	122	565	97	135	468	1047	-	-	871	-	-
Mov Cap-2 Maneuver	104	122	-	97	135	-	-	-	-	-	-	-
Stage 1	487	498	-	360	378	-	-	-	-	-	-	-
Stage 2	326	344	-	436	490	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	26.9		157.5		0.7		0.3	
HCM LOS	D		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1047	-	-	112	565	118	871	-	-
HCM Lane V/C Ratio	0.064	-	-	0.264	0.075	1.017	0.024	-	-
HCM Control Delay (s)	8.7	-	-	48.3	11.9	157.5	9.2	0	-
HCM Lane LOS	A	-	-	E	B	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1	0.2	6.8	0.1	-	-

2030 No-Build Weekday Morning Peak Hour

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2030 No-Build Weekday Morning Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	25	157	14	187	151	168	12	307	195	141	426	30
Future Volume (vph)	25	157	14	187	151	168	12	307	195	141	426	30
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990				0.850			0.850		0.990	
Flt Protected		0.994			0.973			0.998		0.950		
Satd. Flow (prot)	0	1997	0	0	1820	1743	0	1922	1652	1694	1830	0
Flt Permitted		0.922			0.639			0.971		0.188		
Satd. Flow (perm)	0	1852	0	0	1196	1743	0	1870	1652	335	1830	0
Satd. Flow (RTOR)		3				107			91		4	
Adj. Flow (vph)	31	196	18	201	162	181	15	374	238	162	490	34
Lane Group Flow (vph)	0	245	0	0	363	181	0	389	238	162	524	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.33		0.75	0.24		0.80	0.48	0.58	0.74		
Control Delay		33.2		48.3	15.8		54.4	25.2	30.7	38.6		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		33.2		48.3	15.8		54.4	25.2	30.7	38.6		
Queue Length 50th (ft)		153		286	42		292	98	83	354		
Queue Length 95th (ft)		230		#582	117		324	136	106	386		
Internal Link Dist (ft)		303		302			185			236		
Turn Bay Length (ft)						120		65	80			
Base Capacity (vph)		750		483	768		572	569	366	887		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.33		0.75	0.24		0.68	0.42	0.44	0.59		
<b>Intersection Summary</b>												
Cycle Length: 124												

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	

2030 No-Build Weekday Morning Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

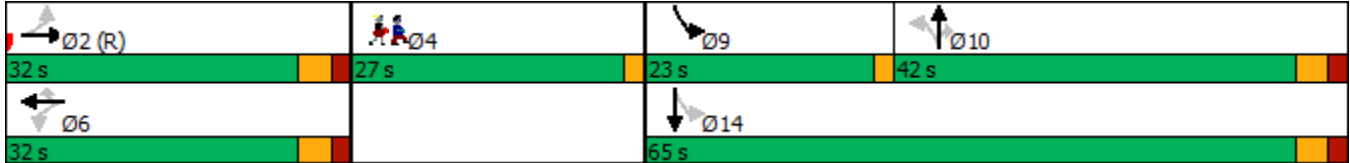
Natural Cycle: 125

Control Type: Actuated-Coordinated

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street



2030 No-Build Weekday Morning Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Volume (vph)	25	157	14	187	151	168	12	307	195	141	426	30
Future Volume (vph)	25	157	14	187	151	168	12	307	195	141	426	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85		1.00	0.85	1.00	0.99	
Flt Protected		0.99			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1997			1821	1743		1923	1652	1694	1830	
Flt Permitted		0.92			0.64	1.00		0.97	1.00	0.19	1.00	
Satd. Flow (perm)		1852			1196	1743		1870	1652	335	1830	
Peak-hour factor, PHF	0.80	0.80	0.80	0.93	0.93	0.93	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	31	196	18	201	162	181	15	374	238	162	490	34
RTOR Reduction (vph)	0	2	0	0	0	64	0	0	67	0	2	0
Lane Group Flow (vph)	0	243	0	0	363	117	0	389	171	162	522	0
Heavy Vehicles (%)	0%	3%	8%	2%	1%	5%	0%	2%	1%	3%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		49.4			49.4	49.4		32.4	32.4	47.6	47.6	
Effective Green, g (s)		49.4			49.4	49.4		32.4	32.4	47.6	47.6	
Actuated g/C Ratio		0.40			0.40	0.40		0.26	0.26	0.38	0.38	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		737			476	694		488	431	273	702	
v/s Ratio Prot										0.06	c0.28	
v/s Ratio Perm		0.13			c0.30	0.07		0.21	0.10	0.16		
v/c Ratio		0.33			0.76	0.17		0.80	0.40	0.59	0.74	
Uniform Delay, d1		25.8			32.2	24.1		42.7	37.7	28.4	32.9	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.2			7.1	0.1		8.8	0.6	3.4	4.3	
Delay (s)		27.0			39.3	24.2		51.5	38.3	31.9	37.2	
Level of Service		C			D	C		D	D	C	D	
Approach Delay (s)		27.0			34.3			46.5			35.9	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2030 No-Build Weekday Morning Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	176.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔			↔	
Traffic Vol, veh/h	104	27	120	59	18	25	135	420	23	8	461	104
Future Vol, veh/h	104	27	120	59	18	25	135	420	23	8	461	104
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	74	74	74	86	86	86	91	91	91
Heavy Vehicles, %	0	0	0	6	0	4	0	2	5	0	3	0
Mvmt Flow	179	47	207	80	24	34	157	488	27	9	507	114

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1427	1411	564	1525	1455	502	621	0	0	515	0	0
Stage 1	582	582	-	816	816	-	-	-	-	-	-	-
Stage 2	845	829	-	709	639	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 114	140	529	94	131	565	969	-	-	1061	-	-
Stage 1	502	502	-	365	393	-	-	-	-	-	-	-
Stage 2	360	388	-	419	474	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 77	116	529	~ 34	108	565	969	-	-	1061	-	-
Mov Cap-2 Maneuver	~ 77	116	-	~ 34	108	-	-	-	-	-	-	-
Stage 1	421	495	-	306	329	-	-	-	-	-	-	-
Stage 2	263	325	-	228	468	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	\$ 470.3		\$ 915.2		2.2		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	969	-	-	83	529	52	1061	-	-
HCM Lane V/C Ratio	0.162	-	-	2.721	0.391	2.651	0.008	-	-
HCM Control Delay (s)	9.4	-	-	\$ 886.3	16.1	\$ 915.2	8.4	0	-
HCM Lane LOS	A	-	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	21.8	1.8	14.3	0	-	-

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

2030 No-Build Weekday Evening Peak Hour

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2030 No-Build Weekday Evening Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕	↗	↖	↖	
Traffic Volume (vph)	14	235	35	149	95	121	25	280	269	228	372	78
Future Volume (vph)	14	235	35	149	95	121	25	280	269	228	372	78
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850			0.850		0.974	
Flt Protected		0.998			0.970			0.996		0.950		
Satd. Flow (prot)	0	2010	0	0	1818	1794	0	1920	1652	1728	1832	0
Flt Permitted		0.978			0.534			0.930		0.235		
Satd. Flow (perm)	0	1969	0	0	1001	1794	0	1793	1652	427	1832	0
Satd. Flow (RTOR)		5				107			131		12	
Adj. Flow (vph)	16	267	40	169	108	138	27	298	286	245	400	84
Lane Group Flow (vph)	0	323	0	0	277	138	0	325	286	245	484	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.41		0.70	0.18		0.78	0.59	0.67	0.67		
Control Delay		34.9		48.3	11.7		57.4	26.5	33.0	34.1		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		34.9		48.3	11.7		57.4	26.5	33.0	34.1		
Queue Length 50th (ft)		212		214	18		245	109	130	305		
Queue Length 95th (ft)		337		#442	71		325	186	165	361		
Internal Link Dist (ft)		303		302			185			236		
Turn Bay Length (ft)						120		65	80			
Base Capacity (vph)		785		397	777		535	584	397	892		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.41		0.70	0.18		0.61	0.49	0.62	0.54		

Intersection Summary

Cycle Length: 124

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	

2030 No-Build Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

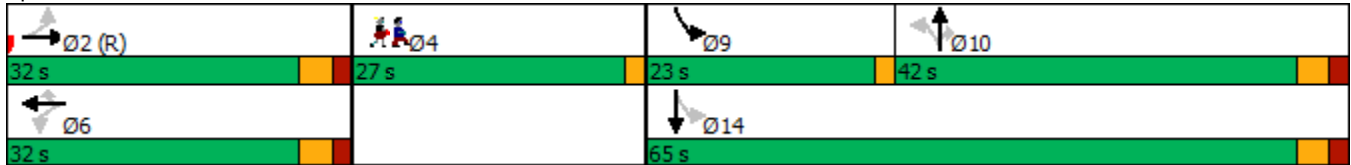
Natural Cycle: 115

Control Type: Actuated-Coordinated

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street



2030 No-Build Weekday Evening Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	↕
Traffic Volume (vph)	14	235	35	149	95	121	25	280	269	228	372	78
Future Volume (vph)	14	235	35	149	95	121	25	280	269	228	372	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85		1.00	0.85	1.00	0.97	
Flt Protected		1.00			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		2009			1818	1794		1920	1652	1728	1832	
Flt Permitted		0.98			0.53	1.00		0.93	1.00	0.23	1.00	
Satd. Flow (perm)		1970			1000	1794		1794	1652	427	1832	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	16	267	40	169	108	138	27	298	286	245	400	84
RTOR Reduction (vph)	0	3	0	0	0	65	0	0	101	0	7	0
Lane Group Flow (vph)	0	320	0	0	277	73	0	325	185	245	477	0
Heavy Vehicles (%)	0%	2%	3%	1%	2%	2%	0%	2%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		48.5			48.5	48.5		28.8	28.8	48.5	48.5	
Effective Green, g (s)		48.5			48.5	48.5		28.8	28.8	48.5	48.5	
Actuated g/C Ratio		0.39			0.39	0.39		0.23	0.23	0.39	0.39	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		770			391	701		416	383	352	716	
v/s Ratio Prot										c0.10	0.26	
v/s Ratio Perm		0.16			c0.28	0.04		c0.18	0.11	0.17		
v/c Ratio		0.42			0.71	0.10		0.78	0.48	0.70	0.67	
Uniform Delay, d1		27.4			31.8	24.0		44.6	41.2	28.5	31.1	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.7			5.8	0.1		9.2	1.0	5.9	2.3	
Delay (s)		29.1			37.6	24.0		53.9	42.1	34.4	33.4	
Level of Service		C			D	C		D	D	C	C	
Approach Delay (s)		29.1			33.1			48.4			33.7	
Approach LOS		C			C			D			C	

Intersection Summary

HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2030 No-Build Weekday Evening Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	24											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕			↕	
Traffic Vol, veh/h	12	11	32	78	11	20	68	578	177	20	485	35
Future Vol, veh/h	12	11	32	78	11	20	68	578	177	20	485	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	85	85	85	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	17	15	45	92	13	24	72	615	188	22	533	38

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1468	1543	552	1479	1468	709	571	0	0	803	0	0
Stage 1	596	596	-	853	853	-	-	-	-	-	-	-
Stage 2	872	947	-	626	615	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	107	116	537	105	129	438	1012	-	-	830	-	-
Stage 1	494	495	-	357	378	-	-	-	-	-	-	-
Stage 2	348	342	-	475	485	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	85	104	537	~ 78	115	438	1012	-	-	830	-	-
Mov Cap-2 Maneuver	85	104	-	~ 78	115	-	-	-	-	-	-	-
Stage 1	459	476	-	332	351	-	-	-	-	-	-	-
Stage 2	295	318	-	405	466	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	33.5		286.1		0.7		0.4	
HCM LOS	D		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	93	537	96	830	-	-
HCM Lane V/C Ratio	0.071	-	-	0.348	0.084	1.336	0.026	-	-
HCM Control Delay (s)	8.8	-	-	63.1	12.3	286.1	9.5	0	-
HCM Lane LOS	A	-	-	F	B	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.4	0.3	9.2	0.1	-	-

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

2030 Build Weekday Morning Peak Hour

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2030 Build Weekday Morning Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Volume (vph)	25	157	14	189	151	168	12	311	197	141	430	30
Future Volume (vph)	25	157	14	189	151	168	12	311	197	141	430	30
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990				0.850			0.850		0.990	
Flt Protected		0.994			0.973			0.998		0.950		
Satd. Flow (prot)	0	1997	0	0	1820	1743	0	1922	1652	1694	1830	0
Flt Permitted		0.921			0.636			0.971		0.192		
Satd. Flow (perm)	0	1850	0	0	1190	1743	0	1870	1652	342	1830	0
Satd. Flow (RTOR)		3				107			91		4	
Adj. Flow (vph)	31	196	18	203	162	181	15	379	240	162	494	34
Lane Group Flow (vph)	0	245	0	0	365	181	0	394	240	162	528	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.33		0.77	0.24		0.79	0.47	0.57	0.74		
Control Delay		33.6		49.8	16.0		53.4	25.0	30.1	38.0		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		33.6		49.8	16.0		53.4	25.0	30.1	38.0		
Queue Length 50th (ft)		155		~293	43		293	98	82	353		
Queue Length 95th (ft)		230		#586	117		328	137	106	391		
Internal Link Dist (ft)		303		302			115			236		
Turn Bay Length (ft)						120			65	80		
Base Capacity (vph)		741		475	760		574	570	370	887		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.33		0.77	0.24		0.69	0.42	0.44	0.60		

Intersection Summary

Cycle Length: 124

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	



2030 Build Weekday Morning Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

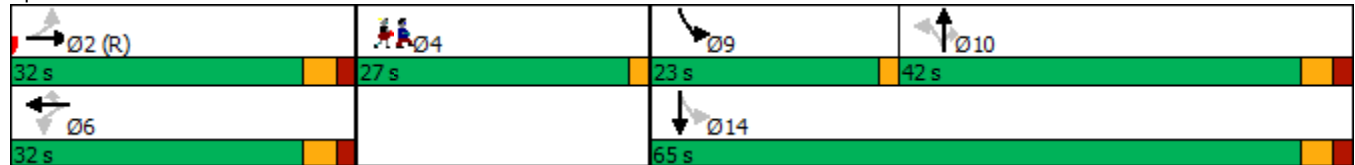
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street



2030 Build Weekday Morning Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Traffic Volume (vph)	25	157	14	189	151	168	12	311	197	141	430	30
Future Volume (vph)	25	157	14	189	151	168	12	311	197	141	430	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Fr <sub>t</sub>		0.99			1.00	0.85		1.00	0.85	1.00	0.99	
Fl <sub>t</sub> Protected		0.99			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1997			1820	1743		1923	1652	1694	1830	
Fl <sub>t</sub> Permitted		0.92			0.64	1.00		0.97	1.00	0.19	1.00	
Satd. Flow (perm)		1851			1189	1743		1871	1652	342	1830	
Peak-hour factor, PHF	0.80	0.80	0.80	0.93	0.93	0.93	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	31	196	18	203	162	181	15	379	240	162	494	34
RTOR Reduction (vph)	0	2	0	0	0	65	0	0	67	0	2	0
Lane Group Flow (vph)	0	243	0	0	365	116	0	394	173	162	526	0
Heavy Vehicles (%)	0%	3%	8%	2%	1%	5%	0%	2%	1%	3%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		48.7			48.7	48.7		33.2	33.2	48.3	48.3	
Effective Green, g (s)		48.7			48.7	48.7		33.2	33.2	48.3	48.3	
Actuated g/C Ratio		0.39			0.39	0.39		0.27	0.27	0.39	0.39	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		726			466	684		500	442	276	712	
v/s Ratio Prot										0.06	c0.29	
v/s Ratio Perm		0.13			c0.31	0.07		0.21	0.10	0.17		
v/c Ratio		0.33			0.78	0.17		0.79	0.39	0.59	0.74	
Uniform Delay, d <sub>1</sub>		26.3			33.0	24.5		42.1	37.1	28.0	32.4	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		1.2			8.4	0.1		8.0	0.6	3.2	4.0	
Delay (s)		27.6			41.4	24.6		50.2	37.7	31.2	36.4	
Level of Service		C			D	C		D	D	C	D	
Approach Delay (s)		27.6			35.8			45.5			35.2	
Approach LOS		C			D			D			D	

Intersection Summary

HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2030 Build Weekday Morning Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	176.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔			↔	
Traffic Vol, veh/h	104	27	120	59	18	25	135	422	23	8	463	104
Future Vol, veh/h	104	27	120	59	18	25	135	422	23	8	463	104
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	74	74	74	86	86	86	91	91	91
Heavy Vehicles, %	0	0	0	6	0	4	0	2	5	0	3	0
Mvmt Flow	179	47	207	80	24	34	157	491	27	9	509	114

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1432	1416	566	1530	1460	505	623	0	0	518	0	0
Stage 1	584	584	-	819	819	-	-	-	-	-	-	-
Stage 2	848	832	-	711	641	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 113	139	528	94	130	563	968	-	-	1058	-	-
Stage 1	501	501	-	364	392	-	-	-	-	-	-	-
Stage 2	359	387	-	418	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 77	115	528	~ 34	108	563	968	-	-	1058	-	-
Mov Cap-2 Maneuver	~ 77	115	-	~ 34	108	-	-	-	-	-	-	-
Stage 1	420	494	-	305	328	-	-	-	-	-	-	-
Stage 2	262	324	-	227	467	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	\$ 470.3		\$ 915.2		2.2		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	83	528	52	1058	-	-
HCM Lane V/C Ratio	0.162	-	-	2.721	0.392	2.651	0.008	-	-
HCM Control Delay (s)	9.4	-	-	\$ 886.3	16.1	\$ 915.2	8.4	0	-
HCM Lane LOS	A	-	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	21.8	1.8	14.3	0	-	-

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

2030 Build Weekday Morning Peak Hour  
4: Main Street & Project Site Driveway

05/19/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	6	517	2	6	609
Future Vol, veh/h	2	6	517	2	6	609
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	7	562	2	7	662

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1239	563	0	0	564	0
Stage 1	563	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	194	526	-	-	1008	-
Stage 1	570	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	192	526	-	-	1008	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	570	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	367	1008
HCM Lane V/C Ratio	-	-	0.024	0.006
HCM Control Delay (s)	-	-	15	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	0

2030 Build Weekday Evening Peak Hour

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2030 Build Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	14	235	35	155	95	121	25	288	274	228	381	78
Future Volume (vph)	14	235	35	155	95	121	25	288	274	228	381	78
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850			0.850		0.974	
Flt Protected		0.998			0.970			0.996		0.950		
Satd. Flow (prot)	0	2010	0	0	1818	1794	0	1920	1652	1728	1832	0
Flt Permitted		0.978			0.528			0.931		0.229		
Satd. Flow (perm)	0	1969	0	0	990	1794	0	1795	1652	416	1832	0
Satd. Flow (RTOR)		5				105			130		12	
Adj. Flow (vph)	16	267	40	176	108	138	27	306	291	245	410	84
Lane Group Flow (vph)	0	323	0	0	284	138	0	333	291	245	494	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Detector Phase	2	2		6	6	6	10	10	10	9	14	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	42.0	42.0	42.0	23.0	65.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%	25.8%	33.9%	33.9%	33.9%	18.5%	52.4%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	37.0	37.0	37.0	21.0	60.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Min	C-Min		Min	Min	Min	Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.42		0.73	0.18		0.79	0.59	0.68	0.68		
Control Delay		35.2		50.5	12.1		57.2	26.8	32.9	34.1		
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay		35.2		50.5	12.1		57.2	26.8	32.9	34.1		
Queue Length 50th (ft)		213		224	19		251	113	129	312		
Queue Length 95th (ft)		337		#456	73		334	191	165	371		
Internal Link Dist (ft)		303		302			56			236		
Turn Bay Length (ft)						120			65	80		
Base Capacity (vph)		777		389	769		535	584	396	892		
Starvation Cap Reductn		0		0	0		0	0	0	0		
Spillback Cap Reductn		0		0	0		0	0	0	0		
Storage Cap Reductn		0		0	0		0	0	0	0		
Reduced v/c Ratio		0.42		0.73	0.18		0.62	0.50	0.62	0.55		

Intersection Summary

Cycle Length: 124

2030 Build Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	22%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	29
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
<b>Intersection Summary</b>	

2030 Build Weekday Evening Peak Hour  
 1: Main Street & West Water Street/Water Street

05/19/2023

Actuated Cycle Length: 124

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

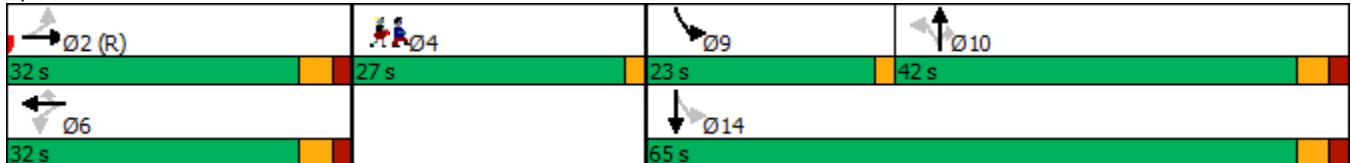
Natural Cycle: 115

Control Type: Actuated-Coordinated

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street & West Water Street/Water Street





2030 Build Weekday Evening Peak Hour  
1: Main Street & West Water Street/Water Street

05/19/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	14	235	35	155	95	121	25	288	274	228	381	78
Future Volume (vph)	14	235	35	155	95	121	25	288	274	228	381	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	12	12	16	13	13	13	11	12	12
Total Lost time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85		1.00	0.85	1.00	0.97	
Flt Protected		1.00			0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		2009			1818	1794		1920	1652	1728	1833	
Flt Permitted		0.98			0.53	1.00		0.93	1.00	0.23	1.00	
Satd. Flow (perm)		1969			989	1794		1795	1652	416	1833	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.93	0.93	0.93
Adj. Flow (vph)	16	267	40	176	108	138	27	306	291	245	410	84
RTOR Reduction (vph)	0	3	0	0	0	64	0	0	99	0	7	0
Lane Group Flow (vph)	0	320	0	0	284	74	0	333	192	245	487	0
Heavy Vehicles (%)	0%	2%	3%	1%	2%	2%	0%	2%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6			10		9	14	
Permitted Phases	2			6		6	10		10	14		
Actuated Green, G (s)		48.0			48.0	48.0		29.3	29.3	49.0	49.0	
Effective Green, g (s)		48.0			48.0	48.0		29.3	29.3	49.0	49.0	
Actuated g/C Ratio		0.39			0.39	0.39		0.24	0.24	0.40	0.40	
Clearance Time (s)		5.0			5.0	5.0		5.0	5.0	2.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		762			382	694		424	390	351	724	
v/s Ratio Prot										c0.10	0.27	
v/s Ratio Perm		0.16			c0.29	0.04		c0.19	0.12	0.18		
v/c Ratio		0.42			0.74	0.11		0.79	0.49	0.70	0.67	
Uniform Delay, d1		27.8			32.7	24.3		44.4	40.9	28.2	30.9	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.7			7.6	0.1		9.2	1.0	6.0	2.5	
Delay (s)		29.5			40.3	24.4		53.6	41.9	34.2	33.4	
Level of Service		C			D	C		D	D	C	C	
Approach Delay (s)		29.5			35.1			48.2			33.6	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2030 Build Weekday Evening Peak Hour  
 3: Main Street & Galvin Middle School driveway/Richardson Street

05/19/2023

Intersection												
Int Delay, s/veh	24.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕		↕	↕			↕	
Traffic Vol, veh/h	12	11	32	78	11	20	68	583	177	20	489	35
Future Vol, veh/h	12	11	32	78	11	20	68	583	177	20	489	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	55	-	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	85	85	85	94	94	94	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	17	15	45	92	13	24	72	620	188	22	537	38

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1477	1552	556	1488	1477	714	575	0	0	808	0	0
Stage 1	600	600	-	858	858	-	-	-	-	-	-	-
Stage 2	877	952	-	630	619	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	105	115	534	103	127	435	1008	-	-	826	-	-
Stage 1	491	493	-	354	376	-	-	-	-	-	-	-
Stage 2	346	341	-	473	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	83	103	534	~ 77	113	435	1008	-	-	826	-	-
Mov Cap-2 Maneuver	83	103	-	~ 77	113	-	-	-	-	-	-	-
Stage 1	456	474	-	329	349	-	-	-	-	-	-	-
Stage 2	293	317	-	403	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.4	299.1	0.7	0.3
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1008	-	-	91	534	94	826	-	-
HCM Lane V/C Ratio	0.072	-	-	0.356	0.084	1.364	0.027	-	-
HCM Control Delay (s)	8.8	-	-	65	12.4	299.1	9.5	0	-
HCM Lane LOS	A	-	-	F	B	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.4	0.3	9.4	0.1	-	-

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

2030 Build Weekday Evening Peak Hour  
4: Main Street & Project Site Driveway

05/19/2023

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	13	576	5	15	558
Future Vol, veh/h	4	13	576	5	15	558
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	626	5	16	607

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1268	629	0	0	631
Stage 1	629	-	-	-	-
Stage 2	639	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	186	482	-	-	951
Stage 1	531	-	-	-	-
Stage 2	526	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	181	482	-	-	951
Mov Cap-2 Maneuver	181	-	-	-	-
Stage 1	531	-	-	-	-
Stage 2	513	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	346	951
HCM Lane V/C Ratio	-	-	0.053	0.017
HCM Control Delay (s)	-	-	16	8.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1