TRANSPORTATION IMPACT ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT
680 WORCESTER STREET (ROUTE 9)
WELLESLEY, MASSACHUSETTS

Prepared for:

J. DERENZO PROPERTIES, LLC
Needham, Massachusetts

June 2018

Prepared by:

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Dear Reviewer:

This letter shall certify that this *Transportation Impact Assessment* has been prepared under my direct supervision and responsible charge. I am a Registered Professional Engineer (P.E.) in the Commonwealth of Massachusetts (Massachusetts P.E. No. 38871, Civil) and hold Certification as a Professional Traffic Operations Engineer (PTOE) from the Transportation Professional Certification Board, Inc. (TPCB), an affiliate of the Institute of Transportation Engineers (ITE) (PTOE Certificate No. 993). I am also a Fellow of the Institute of Transportation Engineers (FITE).

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk

Jeffrey S. Dirk, P.E., PTOE, FITE
Principal

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EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a 20-unit multi-family residential community to be located at 680 Worcester Street, in Wellesley, Massachusetts (hereafter referred to as the "Project").

This assessment was prepared in consultation with the Massachusetts Department of Transportation (MassDOT) and the Town of Wellesley; was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the Traffic Review standards for a Project of Significant Impact (PSI) as defined in Section XVIA of the Town of Wellesley Zoning Bylaw; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1], the Project is expected to generate approximately 108 vehicle trips on an average weekday (two-way, 24-hour volume), with 7 vehicle trips expected during the weekday morning peak-hour and 9 vehicle trips expected during the weekday evening peak-hour;

2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to operate at a level-of-service (LOS) D or better under all analysis conditions where an LOS of "D" or better is defined as "acceptable" operating conditions;

3. Independent of the Project, left-turn movements from the Worcester Street westbound approach at the Worcester Street/Oak Street/Westgate Road intersection were identified as operating over capacity (defined as LOS "F") during both the weekday morning and evening peak hours, with Project-related impacts at the intersection defined as an increase in vehicle queuing of up to one (1) vehicle;

4. All movements exiting the Project site driveway intersection with Worcester Street are expected to operate at LOS D during the peak hours with negligible vehicle queueing predicted;

[1] *Trip Generation*, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

5. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections, with all of the study intersections found to have a motor vehicle crash rate that was below the MassDOT average crash rate; and

6. Lines of sight to and from the Project site driveway intersection with Worcester Street were found to exceed the required minimum distance for the intersection to function in a safe and efficient manner.

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

RECOMMENDATIONS

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

Project Access

Access to the Project will be provided by way of a new driveway that will intersect the south side of Worcester Street approximately 400 feet west of Francis Road. The following recommendations are offered with respect to Project access and internal circulation, many of which have been incorporated into the site plans:

- The Project site driveway will be 24-feet wide and designed to accommodate life safety access as defined by the Wellesley Fire Department.

- A STOP-sign and marked STOP-line have been provided for vehicles exiting the Project site to Worcester Street. As requested by MassDOT, a supplemental sign indicating "BACKING ONTO RTE 9 PROHIBITED" will be installed within the Project site to accompany the STOP-sign.

- All signs and pavement markings to be installed within the Project site will conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[2]

- A sidewalk has been provided to link the proposed building to the sidewalk infrastructure along Worcester Street.

- A school bus waiting area will be provided at an appropriate location defined in consultation with the Town to the extent that school buses will be stopping at the Project site.

- Signs and landscaping to be installed as a part of the Project within intersection sight triangle areas will be designed and maintained so as not to restrict lines of sight.

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

- Snow windrows within sight triangle areas will be promptly removed where such accumulations would impede sight lines.

- Consideration will be given to installing electric vehicle charging stations or the associated infrastructure capacity within the Project site.

Sidewalk Improvements

As documented as a part of this assessment, sidewalk conditions along the Project site frontage and within 600 feet of the Project site were found to be in fair to poor condition, with non-compliant ADA wheelchair ramps located at crossing locations. In addition, a sidewalk is not currently provided along the south side of Worcester Street west of the Project site. The Project proponent has consulted with MassDOT and has agreed to construct a cement concrete sidewalk along the Project site frontage to include the installation of ADA compliant wheelchair ramps for crossing the Project site driveway. MassDOT indicated that they will be installing granite curb and sidewalks along both sides of Worcester Street within the study area as a part of a future roadway improvement project.

Transportation Demand Management

Public transportation services are not provided within the immediate study area; however, public transportation services are provided to the Town of Wellesley by the Massachusetts Bay Transportation Authority (MBTA) (Wellesley Square Station on the Framingham/Worcester Line of the commuter rail system) and the Metro-West Regional Transit Authority (MWRTA) (bus Route 8 which provides service along Linden Street with a stop at Linden Square). In addition, the MWRTA also operates Paratransit Services for passengers who meet ADA requirements and provides transportation services for seniors and the disabled through the Wellesley Council on Aging. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- The owner or property manager will contact MassRIDES to obtain information on facilitating and encouraging healthy transportation options for residents of the Project;

- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents;

- A "welcome packet" will be provided to new residents detailing available public transportation services, bicycle and walking alternatives, and commuter options available through MassRIDES' and their NuRide program which rewards individuals that choose to walk, bicycle, carpool, vanpool or that use public transportation to travel to and from work;

- Residents will be made aware of the Emergency Ride Home (ERH) program available through MassRIDES, which reimburses employees of a participating MassRIDES employer partner worksite that is registered for ERH and that carpool, take transit, bicycle, walk or vanpool to work;

- Pedestrian accommodations have been incorporated within the Project site and link the proposed building to the sidewalk infrastructure along Worcester Street, which will be improved as a part of the Project;

- A mail drop will be provided in a central location; and

- Secure bicycle parking will be provided consisting of: i) exterior bicycle parking; and ii) weather protected bicycle parking located in a secure area within the building.

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

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a 20-unit multi-family residential community to be located at 680 Worcester Street (Route 9) in Wellesley, Massachusetts (hereafter referred to as the "Project"). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project, along Worcester Street and at the following specific intersections: Worcester Street at Oak Street and Westgate Road; Worcester Street at Francis Road; and Worcester Street at the Worcester Street east and westbound U-Turn pockets situated east of Audubon Road (eastbound) and Donizetti Street/Sprague Road (westbound), respectively.

PROJECT DESCRIPTION

The Project will entail the construction of a 20-unit multi-family residential community to be located at 680 Worcester Street in Wellesley, Massachusetts. The Project site encompasses approximately 0.46± acres of land that is bounded by Worcester Street to the north; residential properties and areas of open and wooded space to the south; residential properties to the east; and a commercial property to the west. Figure 1 depicts the Project site location in relation to the existing roadway network. At present the Project site is occupied by a single-family home and associated appurtenances that will be removed to accommodate the Project.

Access to the Project will be provided by way of a new driveway that will intersect the south side of Worcester Street approximately 400 feet west of Francis Road. On-site parking will be provided for 35 vehicles in a parking garage located beneath the proposed building consisting of three (3) visitor parking spaces, four (4) tandem parking spaces, 20 mechanical parking lift spaces and eight (8) non-mechanical lift parking spaces, resulting in a parking ratio of approximately 1.75 spaces per dwelling unit. This parking ratio is within the range of values documented by the Institute of Transportation Engineers (ITE) for an apartment community in a suburban setting.[3]

[3] *Parking Generation*, 4th Edition; Institute of Transportation Engineers; Washington, D.C.; 2010. Observed parking demand ratios for an apartment community were found to range from 0.59 to 1.94 spaces per dwelling unit, with an average parking demand of 1.23 spaces per dwelling unit and an 85th percentile peak parking demand of 1.94 spaces per dwelling unit.

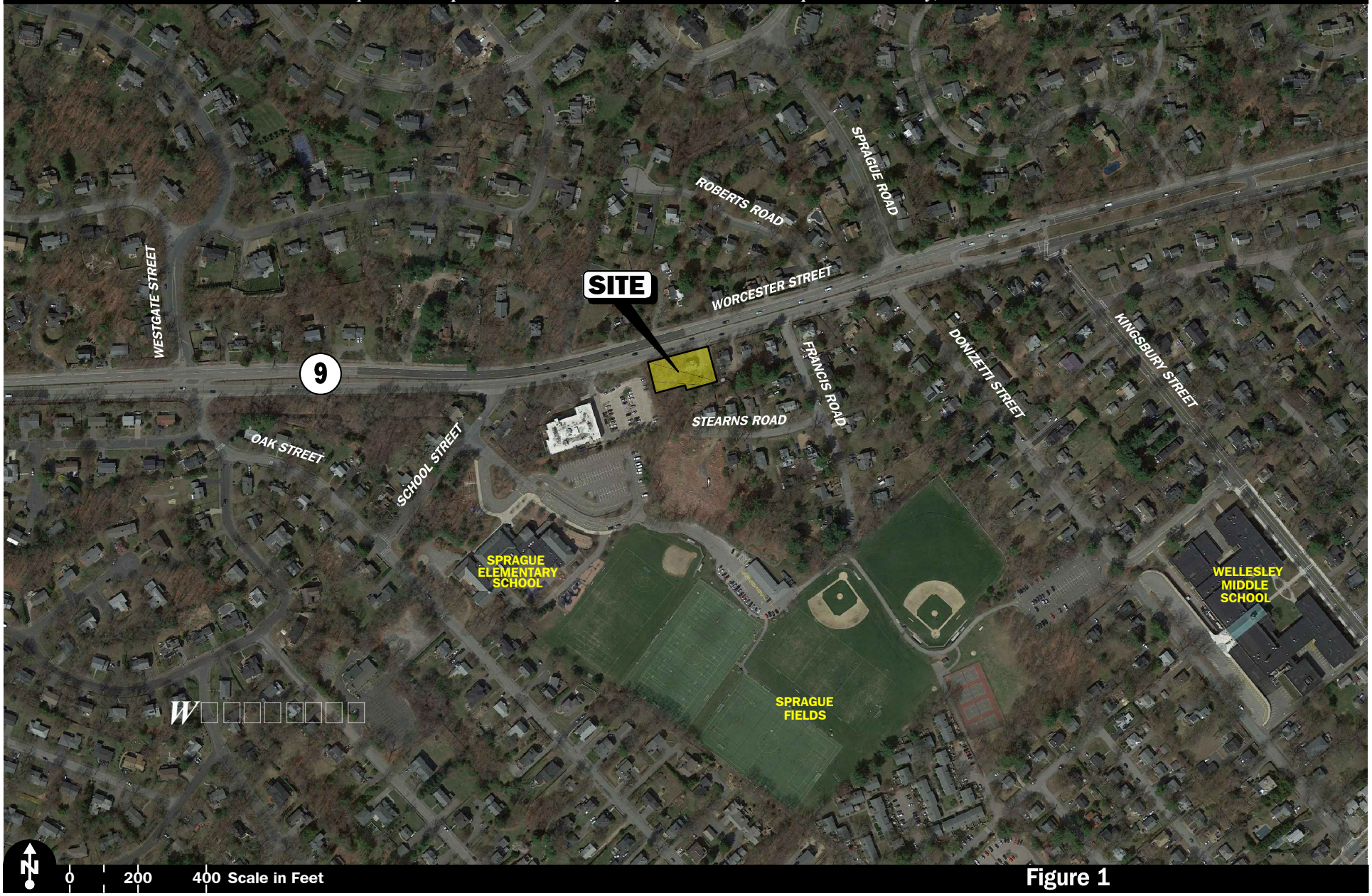

Figure 1

Site Location Map

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STUDY METHODOLOGY

This study was prepared in consultation with the Massachusetts Department of Transportation (MassDOT) and the Town of Wellesley; was performed in accordance with: i) MassDOT's *Transportation Impact Assessment (TIA) Guidelines*; ii) the Traffic Review standards for a Project of Significant Impact (PSI) as defined in Section XVIA of the Town of Wellesley Zoning Bylaw; and iii) the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; 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 geometrics; pedestrian and bicycle facilities; on-street parking; public transportation services; observations of traffic flow; and collection of pedestrian, bicycle and vehicle counts.

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

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

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in September 2017. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; on-street parking; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area for the Project was selected to contain the major roadway providing access to the Project site, Worcester Street, as well as the following specific intersections: Worcester Street at Oak Street and Westgate Road; Worcester Street at Francis Road; and Worcester Street at the Worcester Street east and westbound U-Turn pockets situated east of Audubon Road (eastbound) and Donizetti Street/Sprague Road (westbound), respectively. Note that at the time that the field inventories were conducted as a part of this assessment, MassDOT was in the process of installing new traffic control signals at the Worcester Street/Kingsbury Street intersection and at the proximate east and westbound U-turn areas on Worcester Street.

The following describes the study area roadway and intersections as observed in September 2017.

Roadway

Worcester Street (Route 9)

- Four-lane urban principal arterial roadway under MassDOT jurisdiction
- Traverses in a general east-west direction and provides access to the interstate highway system
- Provides two 11 to 14-foot wide travel lanes separated by a raised median and guardrail, with variable width (6 to 11-foot wide) marked shoulders
- Posted speed limit is 50 miles per hour (mph)
- Sidewalks are provided intermittently along one or both sides of the roadway
- Illumination is provided by way of street lights mounted on wood or metal poles
- Land use within the study area consists of the Project site, the Sprague Elementary School, and residential and commercial uses

Intersections

Table 1 and Figure 2 summarize lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in September 2017.

Table 1
STUDY AREA INTERSECTION DESCRIPTION

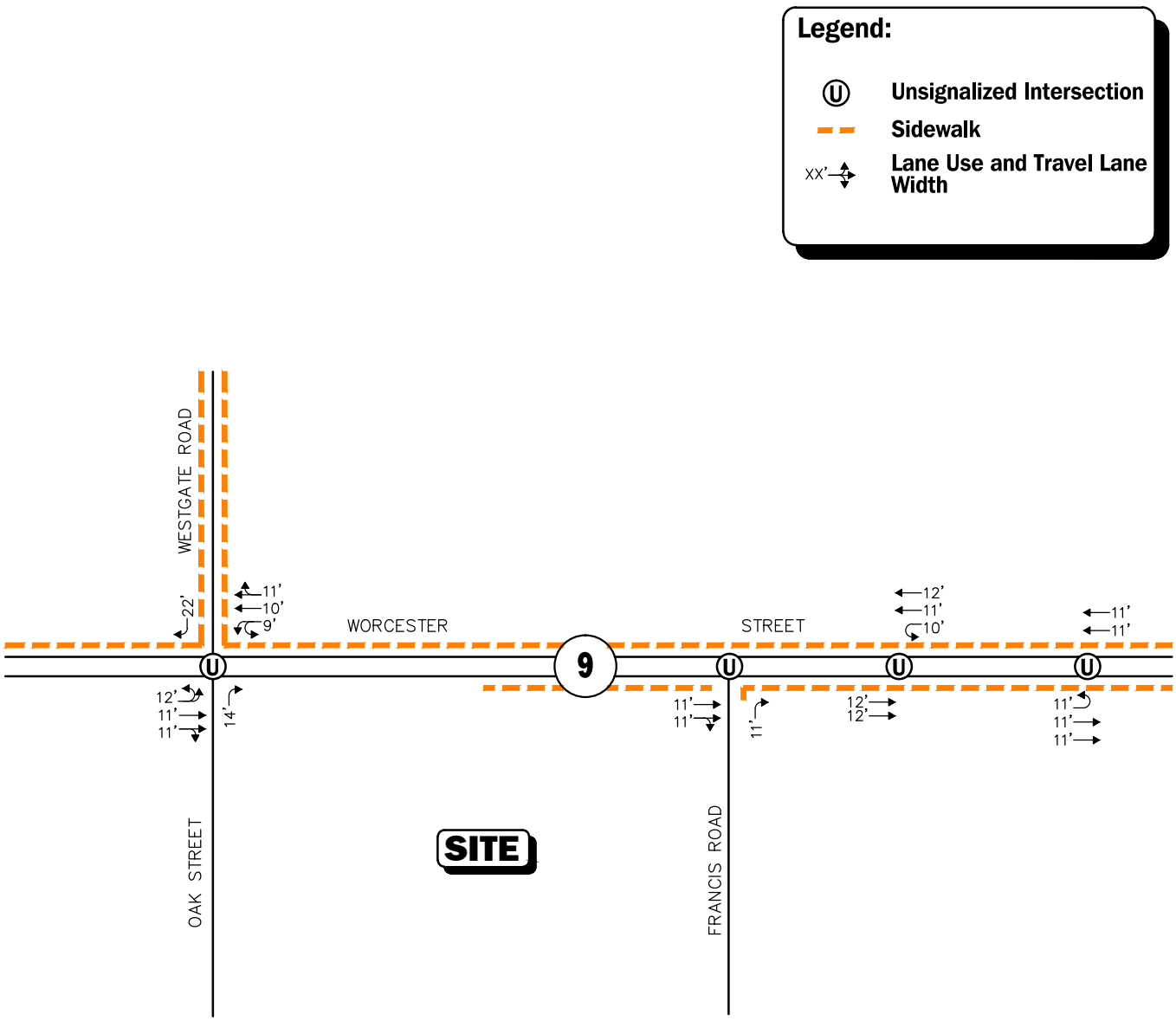
Intersection	Traffic Control Type[a]	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Worcester St./ Oak St./ Westgate Rd.	S	2 through lanes and 1 left-turn lane on Worcester St. east and westbound; 1 right-turn lane on Oak St. and Westgate Rd.	Yes – 8 to 11-feet on Worcester St.	Yes – Sidewalks along the north side of Worcester St. and both sides of Westgate Rd.	Yes – Shoulders use along Worcester St. and shared traveled-way[b] on Oak St. and Westgate Rd.
Worcester St./ Francis Rd.	S	2 lanes on Worcester St. eastbound; 1 lane on Francis Rd.	Yes – 8 to 11-feet on Worcester St.	Yes – Sidewalks along both sides of Worcester St.	Yes – shoulder use along Worcester St.
Worcester St./ Worcester St. Eastbound U-Turns	NC	2 through lanes and 1 U-turn lane on Worcester St. eastbound; 2 lanes on Worcester St. westbound	Yes – 8-feet along Worcester St.	Yes – Sidewalk along the north side of Worcester St.	Yes – Shoulder use along Worcester St.
Worcester St./ Westbound U-Turns	NC	2 through lanes and 1 U-turn lane on Worcester St. westbound; 2 lanes on Worcester St. eastbound	Yes – 6 to 11-feet on Worcester St.	Yes – Sidewalks along both sides of Worcester St.	Yes – Shoulder use along Worcester St.

[a]TS = traffic signal control; F = flashing signal/beacon; S = STOP-sign control; NC = no control present.
[b]Combined shoulder and travel lane width equal to or exceed 14 feet.

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in September 2017 while public schools were in regular session. The ATR counts were conducted over a continuous 48-hour period from September 12th (Tuesday) through September 13th (Wednesday)[4] on Worcester Street in the vicinity of the Project site in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (2:00 to 6:00 PM) peak period manual TMCs performed at the study intersections on September 12th (Tuesday) and September 19th (Tuesday). These time

[4]Recognizing that Wednesday is a half-day for elementary schools in Wellesley, a comparison of the traffic volume data collected on Tuesday and Wednesday as a part of the ATR count along Worcester Street was completed. This comparison indicated that traffic volumes on a Wednesday are approximately 2.6 percent higher on daily (24-hour) basis. Note that the turning movement counts were conducted on a Tuesday.



Not To Scale

Figure 2

Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities

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periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.

Traffic-Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic volume data from MassDOT Continuous Count Station No. 32 located on I-95 north of Route 20 in Weston were reviewed.[5] Based on a review of this data, it was determined that traffic volumes for the month of September are approximately 4.0 percent above average-month conditions and, therefore, the traffic counts that form the basis of this assessment were not adjusted downward in order to provide a conservative (above-average) analysis condition. The 2017 Existing traffic volumes are summarized in Table 2, with the weekday morning and evening peak-hour traffic volumes graphically depicted on Figure 3. Note that the peak-hour traffic volumes presented in Table 2 were obtained from Figure 3.

Table 2
2017 EXISTING TRAFFIC VOLUMES

		Weekday Morning Peak-Hour (7:45 – 8:45 AM)			Weekday Evening Peak-Hour (5:00 – 6:00 PM)		
Location	AWT[a]	VPH[b]	K Factor[c]	Directional Distribution	VPH	K Factor	Directional Distribution
Worcester Street, west of Francis Road	43,850	4,133	9.4	53.3% EB	4,252	9.7	50.8% WB

[a]Average weekday traffic in vehicles per day.
[b]Vehicles per hour.
[c]Percent of daily traffic occurring during the peak-hour.
EB = eastbound; WB = westbound.

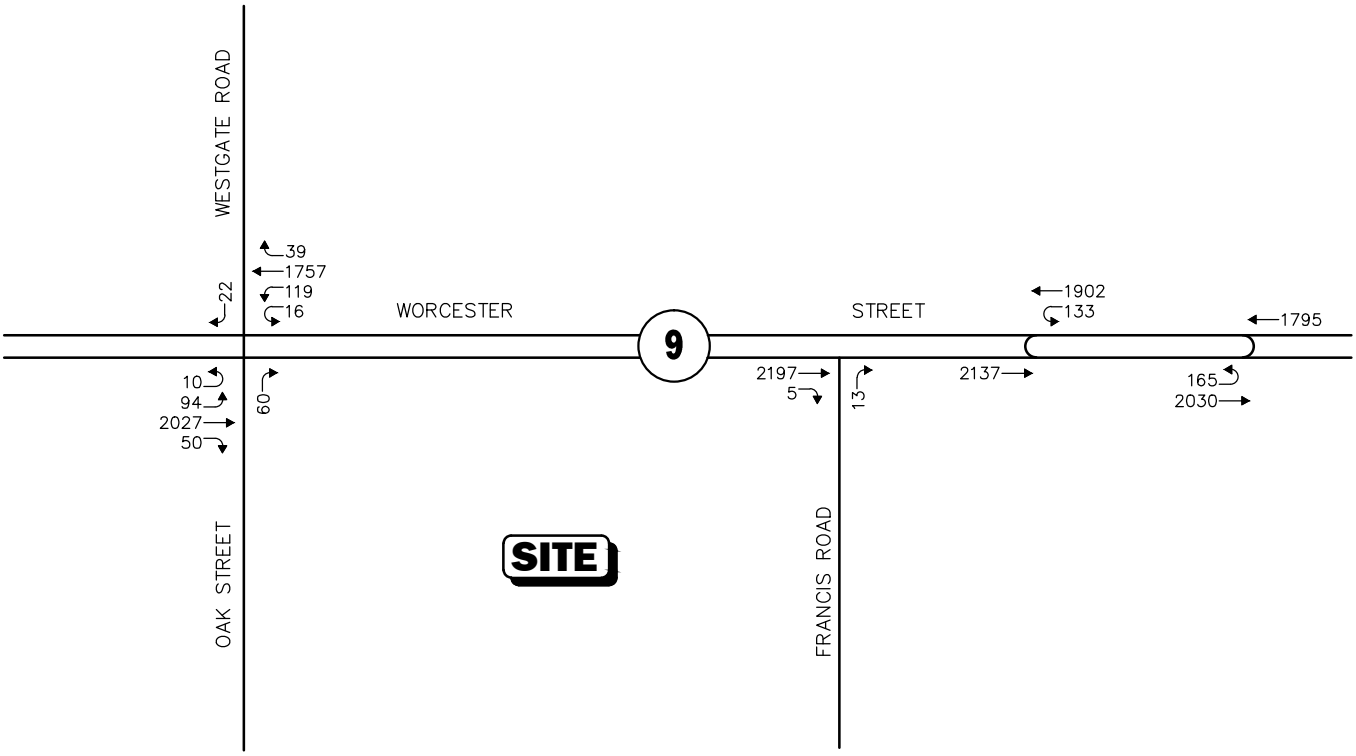
As can be seen in Table 2, Worcester Street in the vicinity of the Project site was found to accommodate approximately 43,850 vehicles on an average weekday (two-way, 24-hour volume), with approximately 4,133 vehicles per hour (vph) during the weekday morning peak-hour and 4,252 vph during the weekday evening peak-hour.

SPOT SPEED MEASUREMENTS

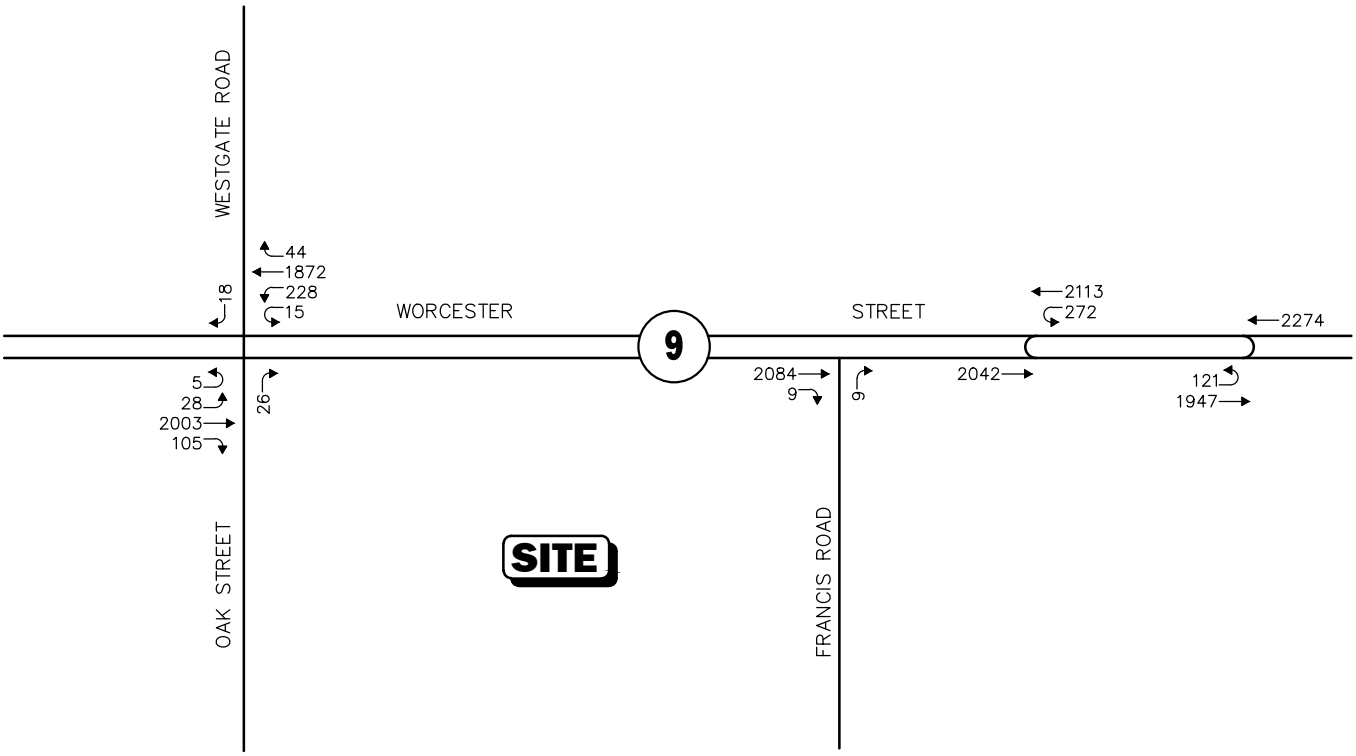
Vehicle travel speed measurements were performed on Worcester Street in the vicinity of the Project site in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

[5]MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2017.

WEEKDAY MORNING PEAK HOUR (7:45 - 8:45 AM)



WEEKDAY EVENING PEAK HOUR (5:00 - 6:00 PM)



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

Not To Scale

Figure 3

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2017 Existing Weekday Peak Hour Traffic Volumes

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Worcester Street, west of Francis Road	
	Eastbound	Westbound
Mean Travel Speed (mph)	42	32
85th Percentile Speed (mph)	47	41
Posted Speed Limit (mph)	50	50

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Worcester Street in the vicinity of the Project site was found to be approximately 42 mph in the eastbound direction and 32 mph westbound. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be approximately 47 mph in the eastbound direction and 41 mph westbound, which is slightly below the posted speed limit (50 mph). The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in September 2017. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities.

Pedestrian Facilities

As detailed on Figure 2, a sidewalk is provided along the north side of Worcester Street and along the south side starting at the Project site and continuing to the east, and along both sides of Westgate Road. Sidewalks are not provided along Oak Street or Francis Road, and marked crosswalks are not provided for crossing for study area intersections. An inventory of sidewalk conditions along the Project site frontage and within 600 feet of the Project site indicates that the sidewalks along Worcester Street are in fair to poor condition, with non-compliant Americans with Disabilities Act (ADA) wheelchair ramps provided at pedestrian crossings. MassDOT has indicated that there are plans to install sidewalks and granite curb along both sides of Worcester Street within the study area as a part of a future roadway improvement project.

Bicycle Facilities

Formal bicycle facilities were not identified within the study area; however, Worcester Street and Westgate Road provide sufficient width (paved shoulder or combined travel lane and paved

shoulder) to support bicycle travel in a shared traveled-way configuration.[6] MassDOT has indicated that there are plans to install bicycle lanes along both sides of Worcester Street within the study area as a part of a future roadway improvement project.

PUBLIC TRANSPORTATION

Public transportation services are not provided within the immediate study area; however, public transportation services are provided to the Town of Wellesley by the Massachusetts Bay Transportation Authority (MBTA) (Wellesley Square Station on the Framingham/Worcester Line of the commuter rail system) and the Metro-West Regional Transit Authority (MWRTA) (bus Route 8). Wellesley Square Station on the Framingham/Worcester Line of the MBTA commuter rail system is located at 1 Grove Street which is within an approximate 5-minute driving distance of the Project site. MWRTA bus Route 8 provides service along Linden Street with a stop at Linden Square which is within a 15-minute walking distance (approximately 0.85 miles) of the Project site. In addition to scheduled stops, MWRTA buses operate in a passenger demand service mode and will stop anywhere along the service route where it is safe to pick-up or discharge a passenger. The MWRTA also operates Paratransit Services for passengers who meet ADA requirements and provides transportation services for seniors and the disabled through the Wellesley Council on Aging.

The public transportation schedules and fare information are provided in the Appendix.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2011 through 2015, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and presented in Table 4.

As can be seen in Table 4, the study area intersections experienced an average of four (4) or fewer reported motor vehicle crashes per year over the five-year review period and were found to have a motor vehicle crash rate below both the MassDOT statewide and District averages for an unsignalized intersection for the MassDOT Highway Division District in which the intersections are located (District 6). No motor vehicle crashes were reported to have occurred at the Worcester Street east or westbound U-turn areas, or at the Worcester Street/Francis Road intersection over the five-year review period.

A review of the MassDOT statewide High Crash Location List indicated that there were no locations within the study area that were included on MassDOT's Highway Safety Improvement Program (HSIP) listing as a high crash location. In addition, no fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period.

Based on a review of the MassDOT motor vehicle crash data, no discernible safety deficiencies were apparent at the study intersections. The detailed MassDOT Crash Rate Worksheets and High Crash Location mapping are provided in the Appendix.

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

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY[a]

	Worcester Street/ Oak Street/ Westgate Road	Worcester Street/ Francis Road	Worcester Street/ EB U-Turn	Worcester Street/ WB U-Turn
Traffic Control Type:[b]	U	U	U	U
Year:				
2011	6	0	0	0
2012	3	0	0	0
2013	3	0	0	0
2014	7	0	0	0
2015	1	0	0	0
Total	20	0	0	0
Average	4.00	0.00	0.00	0.00
Rate[c]	0.23	0.00	0.00	0.00
MassDOT Crash Rate:[d]	0.58/0.53	0.58/0.53	0.58/0.53	0.58/0.53
Significant?[e]	No	No	No	No
Type:				
Angle	7	0	0	0
Rear-End	8	0	0	0
Head-On	0	0	0	0
Sideswipe	1	0	0	0
Fixed Object	2	0	0	0
Pedestrian/Bicycle	0	0	0	0
Unknown/Other	2	0	0	0
Total	20	0	0	0
Conditions:				
Clear	14	0	0	0
Cloudy	4	0	0	0
Rain	1	0	0	0
Snow/Ice	1	0	0	0
Total	20	0	0	0
Lighting:				
Daylight	18	0	0	0
Dawn/Dusk	0	0	0	0
Dark (Road Lit)	2	0	0	0
Dark (Road Unlit)	0	0	0	0
Total	20	0	0	0
Day of Week:				
Monday through Friday	19	0	0	0
Saturday	0	0	0	0
Sunday	1	0	0	0
Total	20	0	0	0
Severity:				
Property Damage Only	16	0	0	0
Personal Injury	4	0	0	0
Fatality	0	0	0	0
Total	20	0	0	0

[a]Source: MassDOT Safety Management/Traffic Operations Unit records, 2011 through 2015.
[b]Traffic Control Type: U = unsignalized; TS = traffic signal.
[c]Crash rate per million vehicles entering the intersection.
[d]Statewide/District crash rate.
[e]The intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 6).

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2025, which reflects a seven-year planning horizon from the current year consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. Independent of the Project, traffic volumes on the roadway network in the year 2025 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2025 No-Build traffic volumes reflect 2025 Build traffic volume conditions with the Project.

FUTURE TRAFFIC GROWTH

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

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

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

Specific Development by Others

The Town of Wellesley Planning Department was contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on this discussion, the following projects were identified for inclusion in this assessment:

- ***Sport Complex, 900 Worcester Road, Wellesley Massachusetts.*** This proposed project will entail the construction of a 130,000 square foot (sf) sport complex that will include two (2) regulation-size ice rinks, a synthetic turf field and a 35,000 sf health club with an aquatics center that will feature an Olympic-size swimming pool to be located at 900 Worcester Road.

- ***Wellesley Square, 8 Delanson Circle, Wellesley, Massachusetts.*** This proposed project consists of the construction of a 95-unit residential apartment community to be located at 8 Delanson Circle.

- ***Wellesley Park, 148 Weston Road, Wellesley, Massachusetts.*** This proposed project consists of the construction of a 55-unit residential apartment community to be located at 148 Weston Road.

- ***16 Sterns Road, Wellesley, Massachusetts.*** This proposed project consists of the construction of a 24-unit residential condominium community to be located at 16 Sterns Road.

Traffic volumes associated with the aforementioned specific development projects by others were obtained from their respective traffic studies or using trip-generation information available from the Institute of Transportation Engineers (ITE)[7] for the appropriate land use, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. 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.

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from Continuous Count Station No. 32 located on I-95 north of Route 20 in Weston were reviewed. Based on a review of this data, it was determined that traffic volumes within the study area have remained relatively stable over the past several years. In order to provide a prudent planning condition for the Project, a 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

The MassDOT and the Town of Wellesley were contacted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2025 within the study area. Based on these discussions, the following roadway improvement was identified:

Route 9 (Worcester Street) at Kingsbury Street Intersection Improvements, Wellesley, Massachusetts. This recently completed project was undertaken by MassDOT to update the existing traffic signal system at the Worcester Street/Kingsbury Street intersection and included the installation of a new traffic signal and associated pedestrian equipment at the intersection, as well as the installation of traffic control signals at both proximate east and westbound U-turn areas on Worcester Street. This project and the associated improvements are reflected in both the 2025 No-Build and 2025 Build condition analyses.

[7] Ibid 1

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

No-Build Traffic Volumes

The 2025 No-Build condition peak-hour traffic-volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2017 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the identified specific development projects by others. The resulting 2025 No-Build weekday morning and evening peak-hour traffic volumes are shown on Figure 4.

PROJECT-GENERATED TRAFFIC

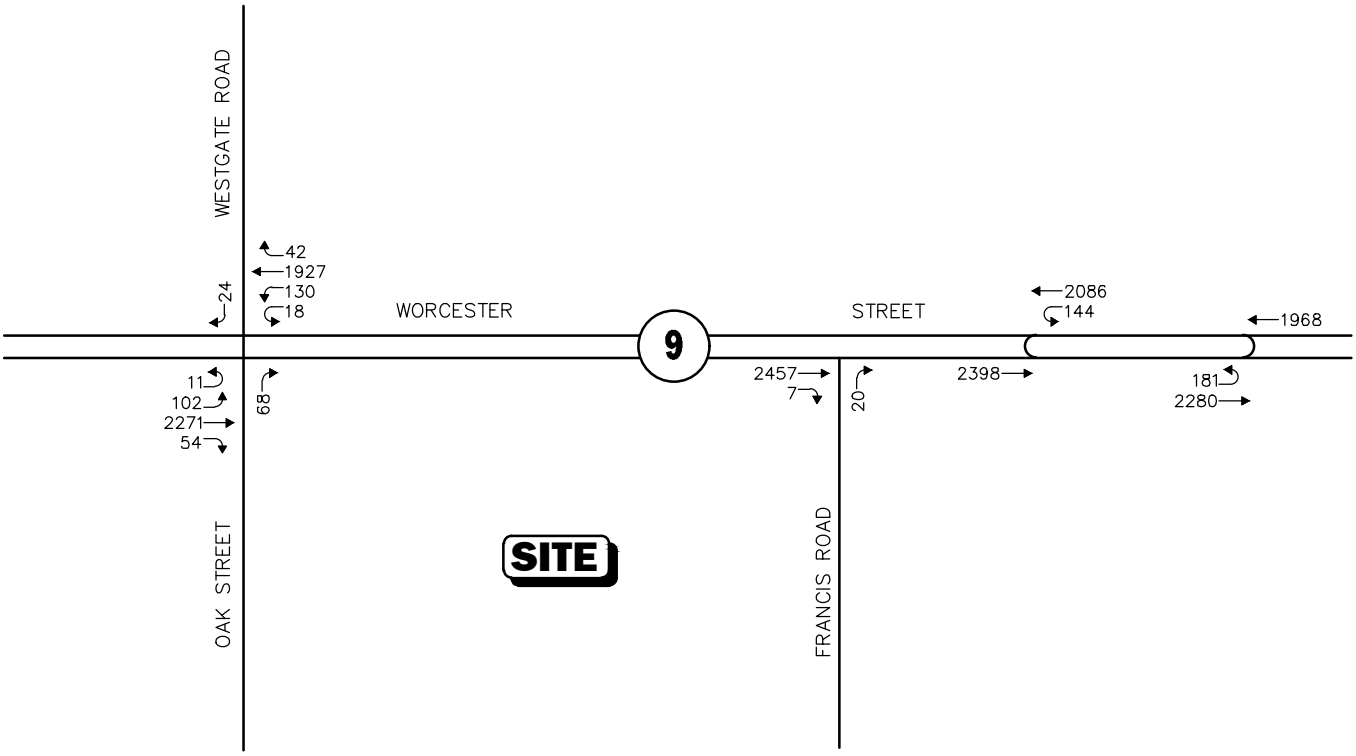
Design year (2025 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of a 20-unit multi-family residential community. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE[8] for a similar land use as that proposed were used. ITE Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)*, was used to develop the base traffic characteristics of the Project.

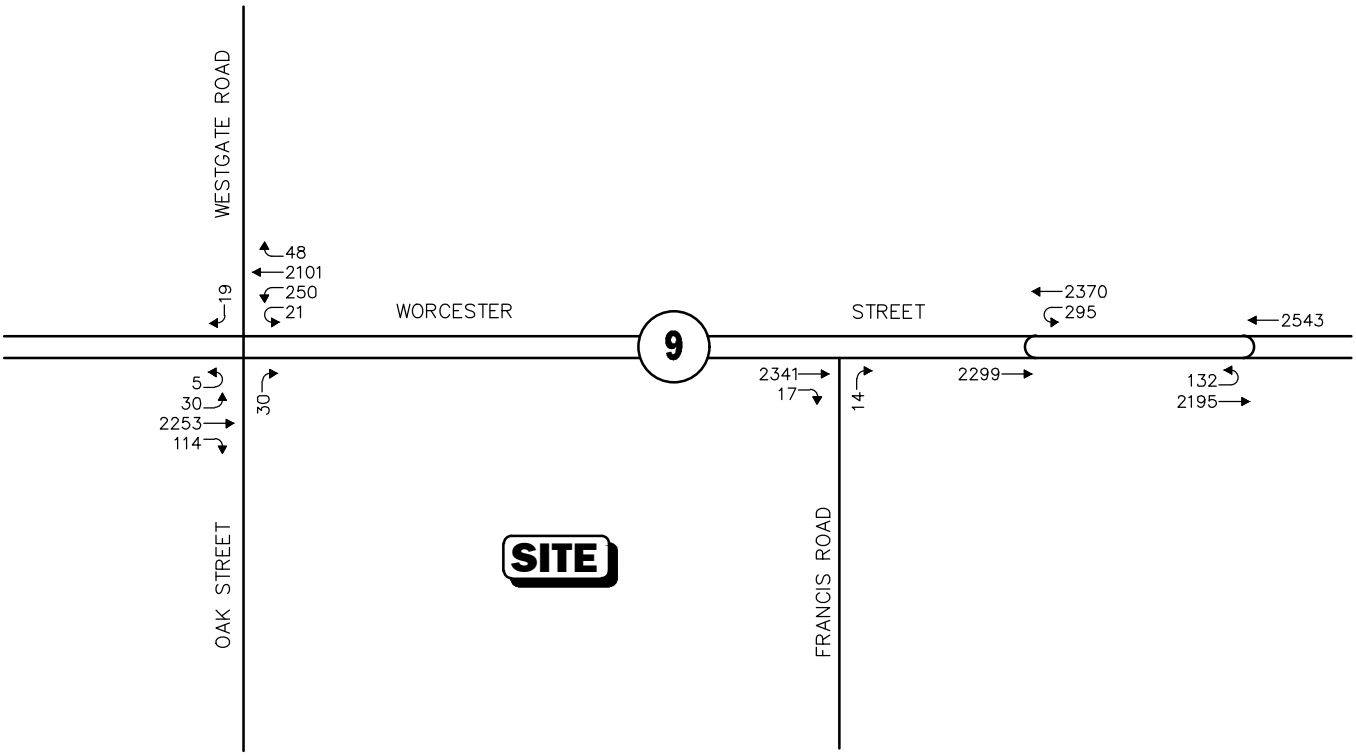
Table 5 summarizes the traffic characteristics of the Project using the above methodology.

[8]Ibid 1.

WEEKDAY MORNING PEAK HOUR (7:45 - 8:45 AM)



WEEKDAY EVENING PEAK HOUR (5:00 - 6:00 PM)



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

Not To Scale

Figure 4

Vanasse & Associates, Inc.
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2025 No-Build
Weekday
Peak Hour Traffic Volumes

Table 5
TRIP GENERATION SUMMARY

Time Period/Direction	Vehicle Trips: Proposed Residential Community (20 Units)[a]
Average Weekday Daily:	
Entering	54
Exiting	54
Total	108
Weekday Morning Peak Hour:	
Entering	2
Exiting	5
Total	7
Weekday Evening Peak Hour:	
Entering	5
Exiting	4
Total	9

[a]Based on ITE LUC 221, *Multifamily Housing (Mid-Rise).*

Project-Generated Traffic Volume Summary

As can be seen in Table 5, the Project is expected to generate approximately 108 vehicle trips on an average weekday (two-way, 24-hour volume, or 54 vehicles entering and 54 exiting), with 7 vehicle trips (2 vehicles entering and 5 exiting) expected during the weekday morning peak-hour and 9 vehicle trips (5 vehicles entering and 4 exiting) expected during the weekday evening peak-hour.

TRIP DISTRIBUTION AND ASSIGNMENT

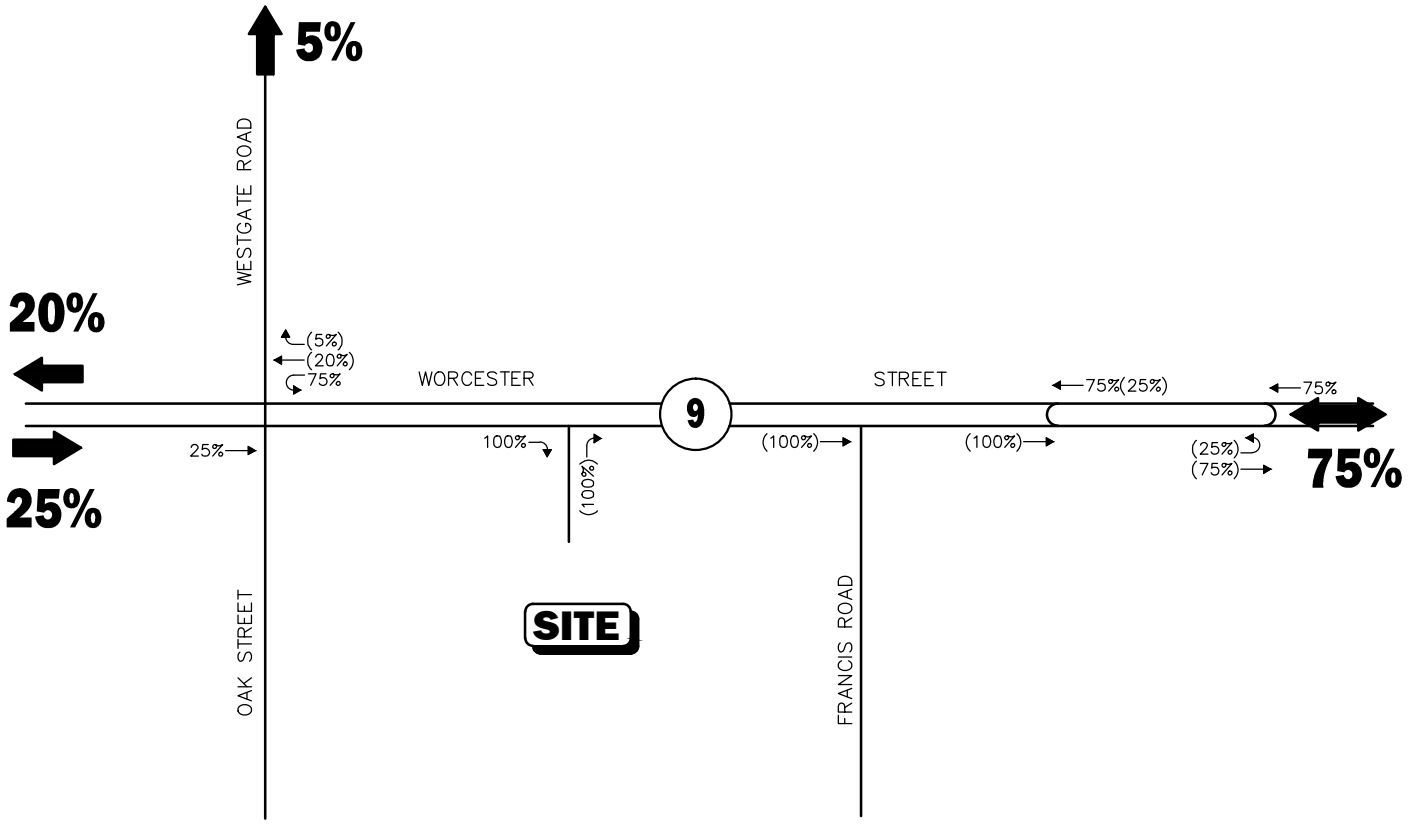
The directional distribution of generated trips to and from the Project site was determined based on a review of Journey-to-Work data obtained from the U.S. Census for persons residing in the Town of Wellesley, and then refined based on existing traffic patterns within the study area during the commuter peak periods. This methodology is consistent with the residential nature of the Project and commuter traffic patterns during the peak hours. The general trip distribution for the Project is graphically depicted on Figure 5. The additional traffic expected to be generated by the Project was assigned on the study area roadway network as shown on Figure 6.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

The 2025 Build condition traffic volumes were developed by adding the traffic expected to be generated by the Project to the 2025 No-Build condition traffic volumes. The 2025 Build weekday morning and evening peak-hour traffic-volumes are graphically depicted on Figure 7.

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure 5

Trip Distribution Map

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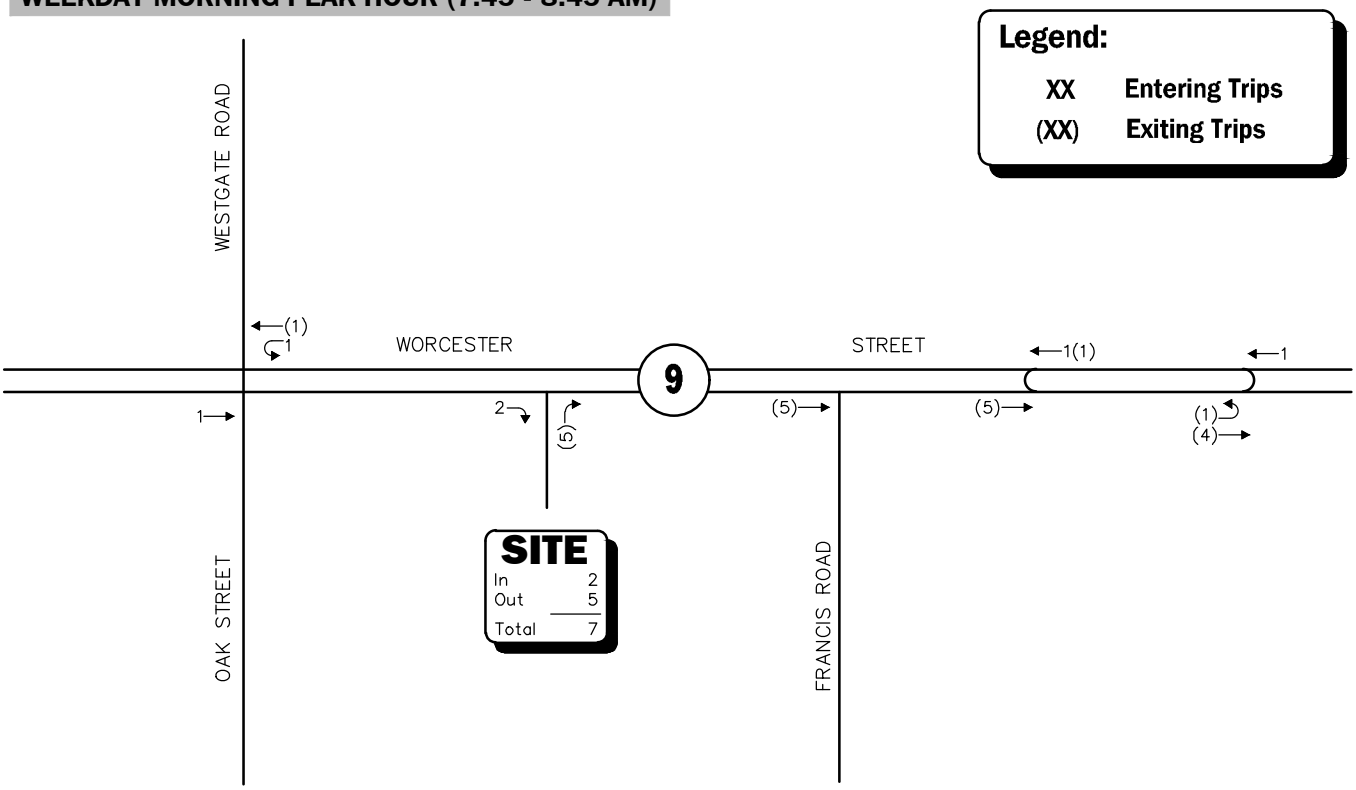
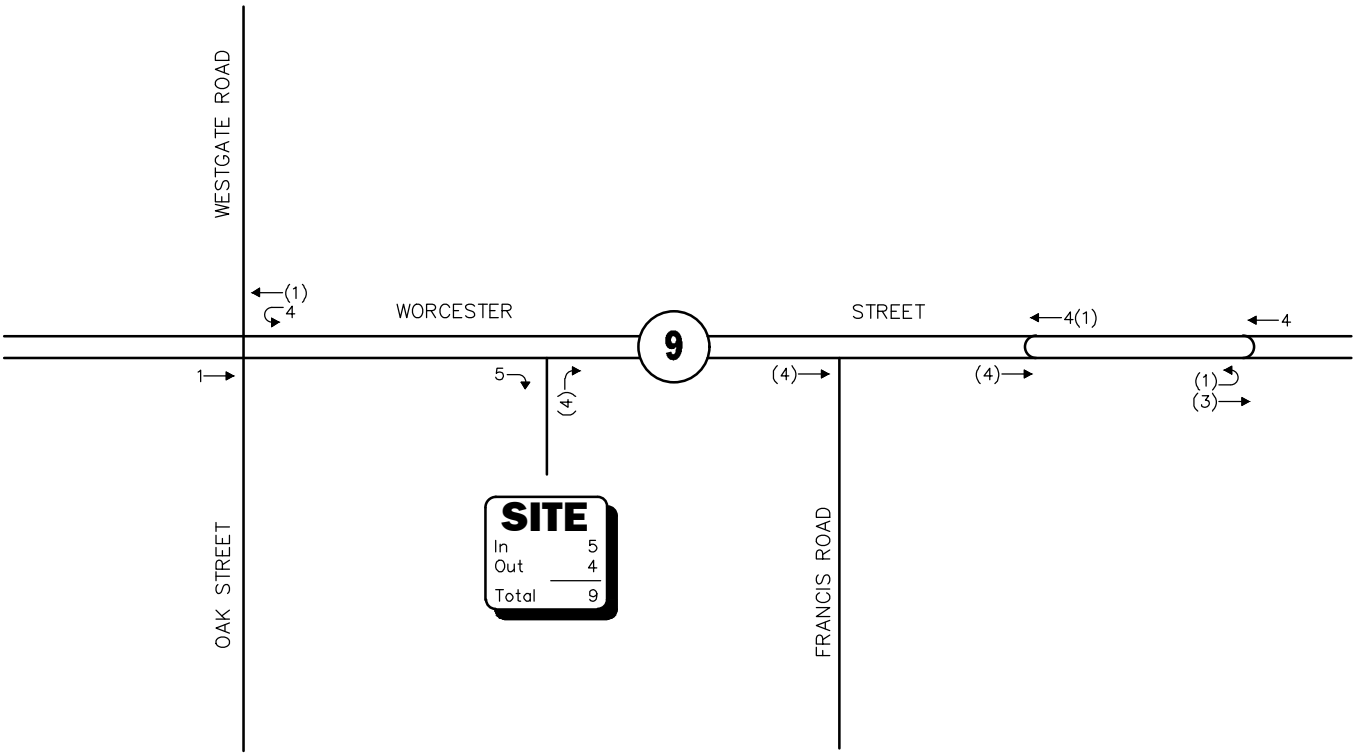
WEEKDAY MORNING PEAK HOUR (7:45 - 8:45 AM)



WEEKDAY EVENING PEAK HOUR (5:00 - 6:00 PM)



Not To Scale

Figure 6

Project-Generated Weekday Peak Hour Traffic Volumes

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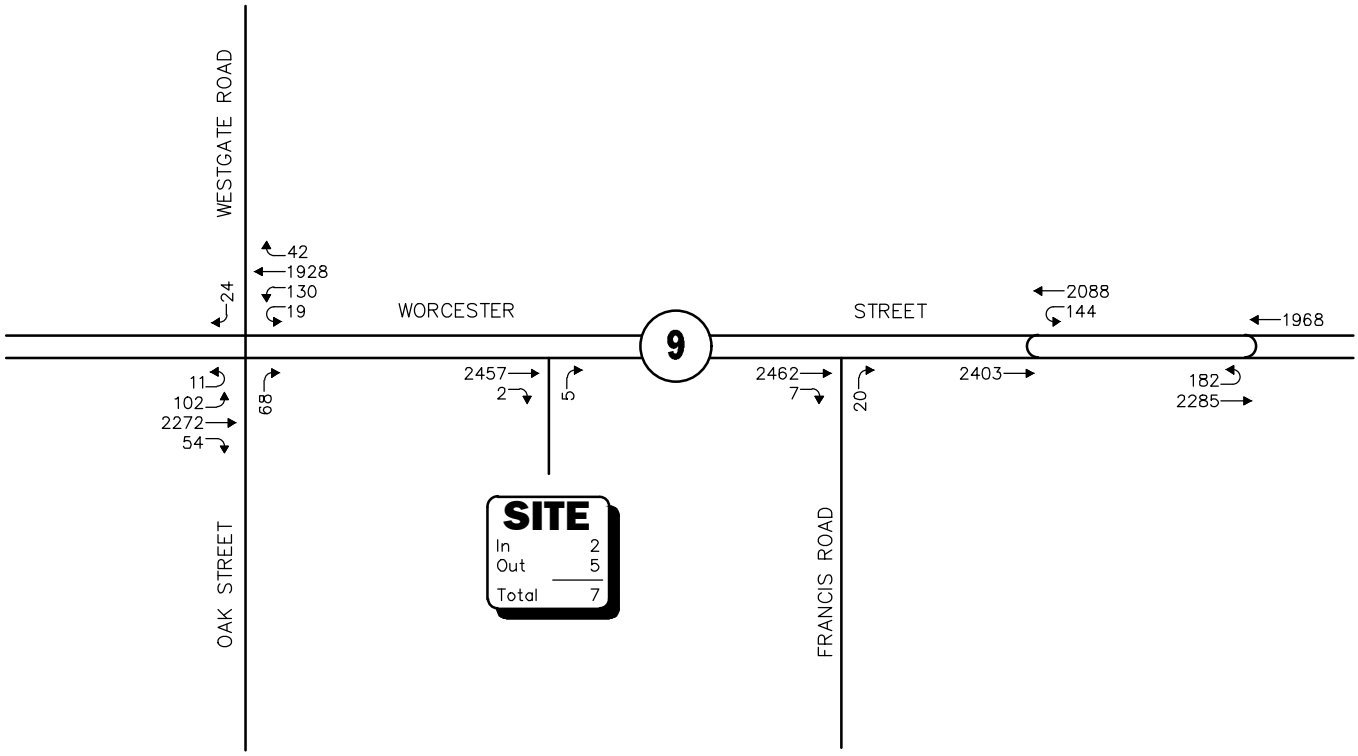
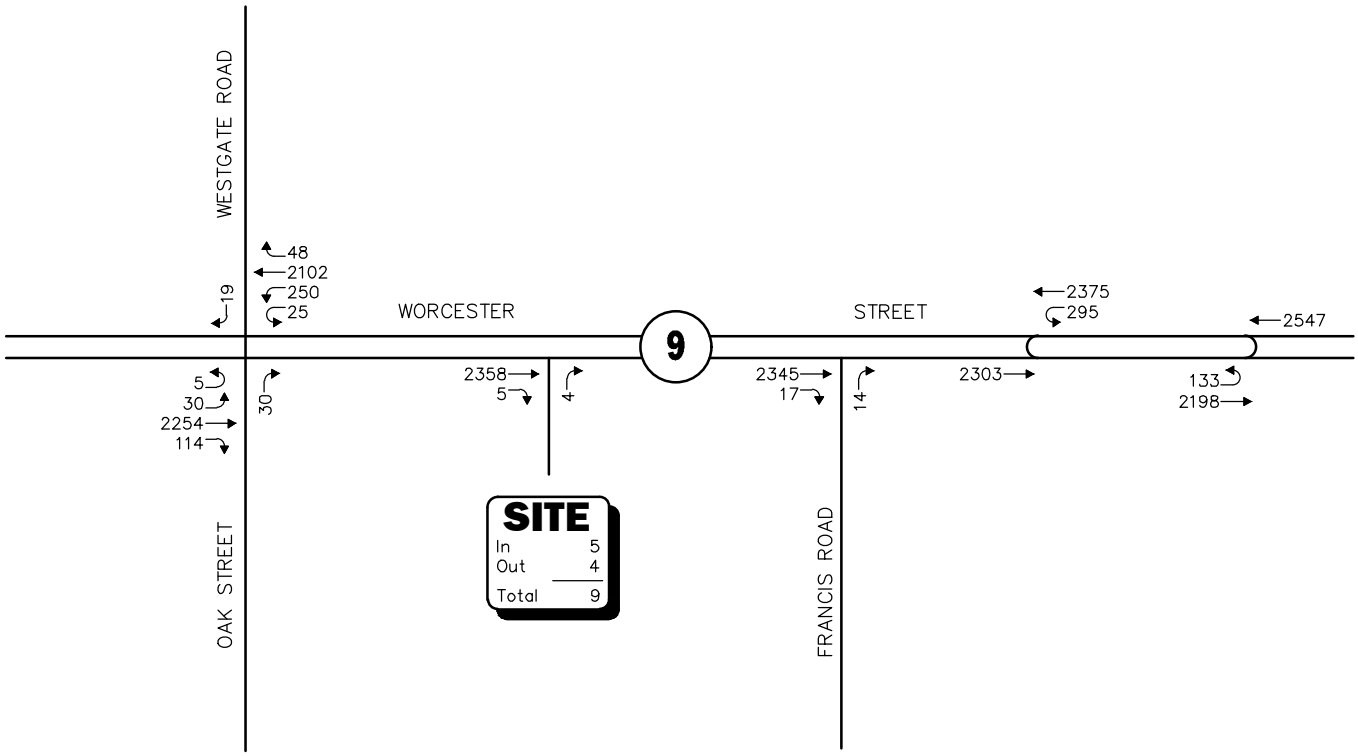
WEEKDAY MORNING PEAK HOUR (7:45 - 8:45 AM)



WEEKDAY EVENING PEAK HOUR (5:00 - 6:00 PM)



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

Not To Scale

Figure 7

Vanasse & Associates, Inc.
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2025 Build
Weekday
Peak Hour Traffic Volumes

Note that no adjustment (reduction) was applied to the Build condition traffic volumes to reflect the removal of the existing single-family home that occupies the Project site.

A summary of peak-hour projected traffic-volume increases outside of 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	2017 Existing	2025 No-Build	2025 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
Worcester Street, east of Worcester Street Eastbound U-Turns:					
Weekday Morning	3,825	4,248	4,253	5	0.1
Weekday Evening	4,221	4,738	4,745	7	0.2
Worcester Street, west of Oak Street:					
Weekday Morning	3,970	4,400	4,402	2	0.1
Weekday Evening	4,036	4,527	4,529	2	0.1
Westgate Road, north of Worcester Street:					
Weekday Morning	155	168	168	0	0.0
Weekday Evening	90	97	97	0	0.0
Oak Street, south of Worcester Street:					
Weekday Morning	229	252	252	0	0.0
Weekday Evening	359	394	394	0	0.0

As shown in Table 6, Project-related traffic-volume increases outside of the study area relative to 2025 No-Build conditions are anticipated to range from 0.0 to 0.2 percent during the peak periods, with vehicle increases shown to range from 0 to 7 vehicles. ***When dispersed over the peak-hour, such increases would not result in a significant impact (increase) on motorist delays or vehicle queuing outside of the immediate study area that is the subject of this assessment.***

TRAFFIC OPERATIONS ANALYSIS

Measuring existing and future traffic volumes quantifies 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.[9] 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.

[9]The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual;* Transportation Research Board; Washington, DC; 2010.

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 2010 *Highway Capacity Manual.*[10] 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 2010 *Highway Capacity Manual*. Table 7 summarizes the relationship between level of service and average control delay for two-way stop controlled and all-way stop controlled intersections.

Table 7
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[a]

Level-Of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
v/c ≤ 1.0	v/c > 1.0	
A	F	≤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

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; page 19-2.

[10]*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

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 over-saturation. 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® 8 software as suggested 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. Table 8 summarizes the relationship between level-of-service and percentile delay, and uses the same numerical delay thresholds as the HCM method. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, to 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

Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection's ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro® intersection capacity analysis software which is based upon the methodology and procedures presented in the 2010 *Highway Capacity Manual*. The Synchro® vehicle queue analysis methodology is a simulation based model which reports the number of vehicles that experience a delay of six seconds or more at an intersection. For signalized intersections, Synchro® reports both the average (50th percentile) the 95th percentile vehicle queue. For unsignalized intersections, Synchro® reports the 95th percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95th percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately three minutes out of 60 minutes during the peak one hour of the day (during the remaining 57 minutes, the vehicle queue length will be less than the 95th percentile queue length).

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2017 Existing, 2025 No-Build and 2025 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 9 and 10, with the detailed analysis results are presented in the Appendix.

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

As can be seen in Tables 9 and 10, ***the addition of Project-related traffic to the study area intersections is not predicted to result in a change in LOS or a significant increase in vehicle queuing over No-Build conditions***. Project-related impacts at the study area intersections were identified as follows:

Worcester Street/Oak Street/Westgate Road – No change in LOS predicted to occur over No-Build conditions with Project-related impacts defined as an increase in vehicle queuing of up to one (1) vehicle. Independent of the Project it was noted that U-turn/left-turn movements from the Worcester Street westbound approach were operating over capacity (defined as LOS "F") during both the weekday morning and evening peak hours, with residual vehicle queues of up to 19 vehicles.

Worcester Street/Francis Road – No change in LOS or vehicle queuing predicted to occur over No-Build conditions with Project-related impacts defined as an increase in average motorist delay of less than 1.0 seconds.

Worcester Street/Worcester Street Eastbound U-Turn – With the planned installation of a traffic signal control at the intersection, no change in LOS or vehicle queuing is predicted to occur over No-Build conditions with Project-related impacts defined as an increase in overall average motorist delay of less than 1.0 seconds.

Worcester Street/Worcester Street Westbound U-Turn – With the planned installation of a traffic signal control at the intersection, no change in LOS or vehicle queuing is predicted to occur over No-Build conditions with Project-related impacts defined as an increase in overall average motorist delay of less than 1.0 seconds.

Worcester Street/Project Site Driveway – Right-turn movements exiting the Project site driveway were shown to operate at LOS D during both the weekday morning and evening peak hours with negligible vehicle queueing predicted. All movements along Worcester Street were shown to operate at LOS A during the peak hours with negligible vehicle queueing predicted.

Table 9
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2017 Existing				2025 No-Build				2025 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Worcester Road at Oak Street and Westgate Road												
Weekday Morning:												
Worcester Street EB UT/LT	104	22.4	C	2	113	28.7	D	2	113	28.9	D	2
Worcester Street EB TH/RT	2,277	0.0	A	0	2,325	0.0	A	0	2,326	0.0	A	0
Worcester Street WB UT/LT	135	37.2	E	3	148	>50.0	F	6	149	>50.0	F	6
Worcester Street WB TH/RT	1,796	0.0	A	0	1,969	0.0	A	0	1,970	0.0	A	0
Oak Street NB RT	60	29.2	D	2	68	40.2	E	2	68	40.2	E	2
Westgate Road SB RT	22	21.9	C	1	24	25.3	D	1	24	25.3	D	1
Weekday Evening:												
Worcester Street EB UT/LT	33	19.0	C	1	35	23.1	C	1	35	23.2	C	1
Worcester Street EB TH/RT	2,108	0.0	A	0	2,367	0.0	A	0	2,368	0.0	A	0
Worcester Street WB UT/LT	243	>50.0	F	11	271	>50.0	F	18	275	>50.0	F	19
Worcester Street WB TH/RT	1,916	0.0	A	0	2,149	0.0	A	0	2,150	0.0	A	0
Oak Street NB RT	26	26.5	D	1	30	34.4	D	1	30	34.4	D	1
Westgate Road SB RT	18	21.2	C	1	19	25.1	D	1	19	25.1	D	1
Worcester Street at Francis Road												
Weekday Morning:												
Worcester Street EB TH/RT	2,202	0.0	A	0	2.464	0.0	A	0	2,469	0.0	A	0
Francis Road NB RT	13	25.4	D	1	20	33.0	D	1	20	33.2	D	1
Weekday Evening:												
Worcester Street EB TH/RT	2,093	0.0	A	0	2,358	0.0	A	0	2,362	0.0	A	0
Francis Road NB RT	9	24.4	C	1	14	31.2	D	1	14	31.2	D	1
Worcester Street at the Worcester Street Eastbound U-Turn												
Weekday Morning:												
Worcester Street EB UT	165	27.8	D	3								
Worcester Street EB TH	2,030	0.0	A	0								
Worcester Street WB TH	1,795	0.0	A	0	(See Signalized Intersection Analysis Table 10)							
Weekday Evening:												
Worcester Street EB UT	121	46.5	E	4								
Worcester Street WB LT	1,947	0.0	A	0								
Worcester Street WB TH	2,274	0.0	A	0								

See notes at end of table.

Table 9 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2017 Existing				2025 No-Build				2025 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Worcester Street at the Worcester Street Westbound U-Turn												
Weekday Morning:												
Worcester Street EB TH	2,137	0.0	A	0	(See Signalized Intersection Analysis Table 10)							
Worcester Street WB UT	133	40.2	E	4								
Worcester Street WB TH	1,902	0.0	A	0								
Weekday Evening:												
Worcester Street EB TH	2,042	0.0	A	0								
Worcester Street WB UT	272	>50.0	F	13								
Worcester Street WB TH	2,113	0.0	A	0								
Worcester Street at the Project Site Driveway												
Weekday Morning:												
Project Site Driveway NB RT	--	--	--	--	--	--	--	--	5	31.0	D	0
Worcester Street EB TH/RT	--	--	--	--	--	--	--	--	2,459	0.0	A	0
Weekday Evening:												
Project Site Driveway NB RT	--	--	--	--	--	--	--	--	4	28.7	D	0
Worcester Street EB TH/RT	--	--	--	--	--	--	--	--	2,363	0.0	A	0

[a]Demand in vehicles per hour.
[b]Average control delay per vehicle (in seconds).
[c]Level-of-Service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; UT = U-turning movements; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 10
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-hour/Movement	2017 Existing V/C[a]	2017 Existing Delay[b]	2017 Existing LOS[c]	2017 Existing Queue[d] 50th/95th	2025 No-Build V/C	2025 No-Build Delay	2025 No-Build LOS	2025 No-Build Queue 50th/95th	2025 Build V/C	2025 Build Delay	2025 Build LOS	2025 Build Queue 50th/95th
Worcester Street at the Worcester Street Eastbound U-Turn												
Weekday Morning:												
Worcester Street EB UT					0.62	46.9	D	5/7	0.62	46.9	D	5/7
Worcester Street EB TH					0.67	1.1	A	0/0	0.67	1.1	A	0/0
Worcester Street WB TH	(See Unsignalized Intersection Analysis Table 9)				0.81	12.1	B	14/24	0.81	12.1	B	14/24
Overall					--	**7.9**	**A**	--	--	**7.9**	**A**	--
Weekday Evening:												
Worcester Street EB UT					0.57	50.6	D	4/6	0.58	50.6	D	4/6
Worcester Street EB TH					0.68	1.1	A	0/0	0.68	1.1	A	0/0
Worcester Street WB TH					0.99	27.6	C	29/47	0.99	28.2	C	29/47
Overall					--	**16.1**	**B**	--	--	**16.4**	**B**	--
Worcester Street at the Worcester Street Westbound U-Turn												
Weekday Morning:												
Worcester Street EB TH					0.90	15.6	B	21/40	0.90	15.7	B	21/40
Worcester Street WB UT					0.60	50.4	D	4/6	0.60	50.4	D	4/6
Worcester Street WB TH					0.61	0.8	A	0/0	0.61	0.8	A	0/0
Overall	(See Unsignalized Intersection Analysis Table 9)				--	**10.0**	**B**	--	--	**10.0**	**B**	--
Weekday Evening:												
Worcester Street EB TH					0.98	30.6	C	33/43	0.98	30.9	C	33/43
Worcester Street WB UT					0.82	58.6	E	8/13	0.82	58.6	E	8/13
Worcester Street WB TH					0.68	1.1	A	0/0	0.68	1.1	A	0/0
Overall					--	**18.4**	**B**	--	--	**18.6**	**B**	--

[a]Volume-to-capacity ratio.
[b]Percentile delay per vehicle in seconds.
[c]Level-of-Service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; UT = U-turning movements; TH = through movements; RT = right-turning movements.

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the intersection of Worcester Street at the Project site driveway in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[11] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an 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 required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 11 presents the measured SSD and ISD at the subject intersection.

Table 11
SIGHT DISTANCE MEASUREMENTS[a]

	Feet		
Intersection/Sight Distance Measurement	Recommended Minimum (SSD)	Desirable (ISD)[b]	Measured
Worcester Street at the Project Site Driveway			
Stopping Sight Distance:			
Worcester Street approaching from the west	570	--	650+
Intersection Sight Distance:			
Looking to the west from the Project Site Driveway	570	575	650+

[a]Recommended minimum values obtained from: *A Policy on Geometric Design of Highways and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2011; and based on an approach speed of 60 mph along Worcester Street.

[b]Value shown is the intersection sight distance for a vehicle turning right exiting a roadway or driveway 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.

[11]*A Policy on Geometric Design of Highway and Streets,* 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

As can be seen in Table 11, the available lines of sight at the Project site driveway intersection with Worcester Street were found to exceed the required minimum distance to function in a safe (SSD) and efficient (ISD) manner based on a 60 mph approach speed along Worcester Street, which is 10 mph above both the posted speed limit (50 mph) and 13 mph above the measured 85th percentile vehicle travel speed (47 mph).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of a 20-unit multi-family residential community to be located at 680 Worcester Street in Wellesley, Massachusetts. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE[12], the Project is expected to generate approximately 108 vehicle trips on an average weekday (two-way, 24-hour volume), with 7 vehicle trips expected during the weekday morning peak-hour and 9 vehicle trips expected during the weekday evening peak-hour;

2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to operate at LOS D or better under all analysis conditions where an LOS of "D" or better is defined as "acceptable" operating conditions;

3. Independent of the Project, left-turn movements from the Worcester Street westbound approach at the Worcester Street/Oak Street/Westgate Road intersection were identified as operating over capacity (defined as LOS "F") during both the weekday morning and evening peak hours, with Project-related impacts at the intersection defined as an increase in vehicle queuing of up to one (1) vehicle;

4. All movements exiting the Project site driveway intersection with Worcester Street are expected to operate at LOS D during the peak hours with negligible vehicle queueing predicted;

[12] Ibid 1.

5. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections, with all of the study intersections found to have a motor vehicle crash rate that was below the MassDOT average crash rate; and

6. Lines of sight to and from the Project site driveway intersection with Worcester Street were found to exceed the required minimum distance for the intersection to function in a safe and efficient manner.

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

RECOMMENDATIONS

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

Project Access

Access to the Project will be provided by way of a new driveway that will intersect the south side of Worcester Street approximately 400 feet west of Francis Road. The following recommendations are offered with respect to Project access and internal circulation, many of which have been incorporated into the site plans:

- The Project site driveway will be 24-feet wide and designed to accommodate life safety access as defined by the Wellesley Fire Department.

- A STOP-sign and marked STOP-line have been provided for vehicles exiting the Project site to Worcester Street. As requested by MassDOT, a supplemental sign indicating "BACKING ONTO RTE 9 PROHIBITED" will be installed within the Project site to accompany the STOP-sign.

- All signs and pavement markings to be installed within the Project site will conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[13]

- A sidewalk has been provided to link the proposed building to the sidewalk infrastructure along Worcester Street.

- A school bus waiting area will be provided at an appropriate location defined in consultation with the Town to the extent that school buses will be stopping at the Project site.

- Signs and landscaping to be installed as a part of the Project within intersection sight triangle areas will be designed and maintained so as not to restrict lines of sight.

[13]Ibid 2.

- Snow windrows within sight triangle areas will be promptly removed where such accumulations would impede sight lines.

- Consideration will be given to installing electric vehicle charging stations or the associated infrastructure capacity within the Project site.

Sidewalk Improvements

As documented as a part of this assessment, sidewalk conditions along the Project site frontage and within 600 feet of the Project site were found to be in fair to poor condition, with non-compliant ADA wheelchair ramps located at crossing locations. In addition, a sidewalk is not currently provided along the south side of Worcester Street west of the Project site. The Project proponent has consulted with MassDOT and has agreed to construct a cement concrete sidewalk along the Project site frontage to include the installation of ADA compliant wheelchair ramps for crossing the Project site driveway. MassDOT indicated that they will be installing granite curb and sidewalks along both sides of Worcester Street within the study area as a part of a future roadway improvement project.

Transportation Demand Management

Public transportation services are not provided within the immediate study area; however, public transportation services are provided to the Town of Wellesley by the MBTA (Wellesley Square Station on the Framingham/Worcester Line of the commuter rail system) and the Metro-West Regional Transit Authority (MWRTA) (bus Route 8 which provides service along Linden Street with a stop at Linden Square). In addition, the MWRTA also operates Paratransit Services for passengers who meet ADA requirements and provides transportation services for seniors and the disabled through the Wellesley Council on Aging. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- The owner or property manager will contact MassRIDES to obtain information on facilitating and encouraging healthy transportation options for residents of the Project;

- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents;

- A "welcome packet" will be provided to new residents detailing available public transportation services, bicycle and walking alternatives, and commuter options available through MassRIDES' and their NuRide program which rewards individuals that choose to walk, bicycle, carpool, vanpool or that use public transportation to travel to and from work;

- Residents will be made aware of the Emergency Ride Home (ERH) program available through MassRIDES, which reimburses employees of a participating MassRIDES employer partner worksite that is registered for ERH and that carpool, take transit, bicycle, walk or vanpool to work;

- Pedestrian accommodations have been incorporated within the Project site and link the proposed building to the sidewalk infrastructure along Worcester Street, which will be improved as a part of the Project;

- A mail drop will be provided in a central location; and

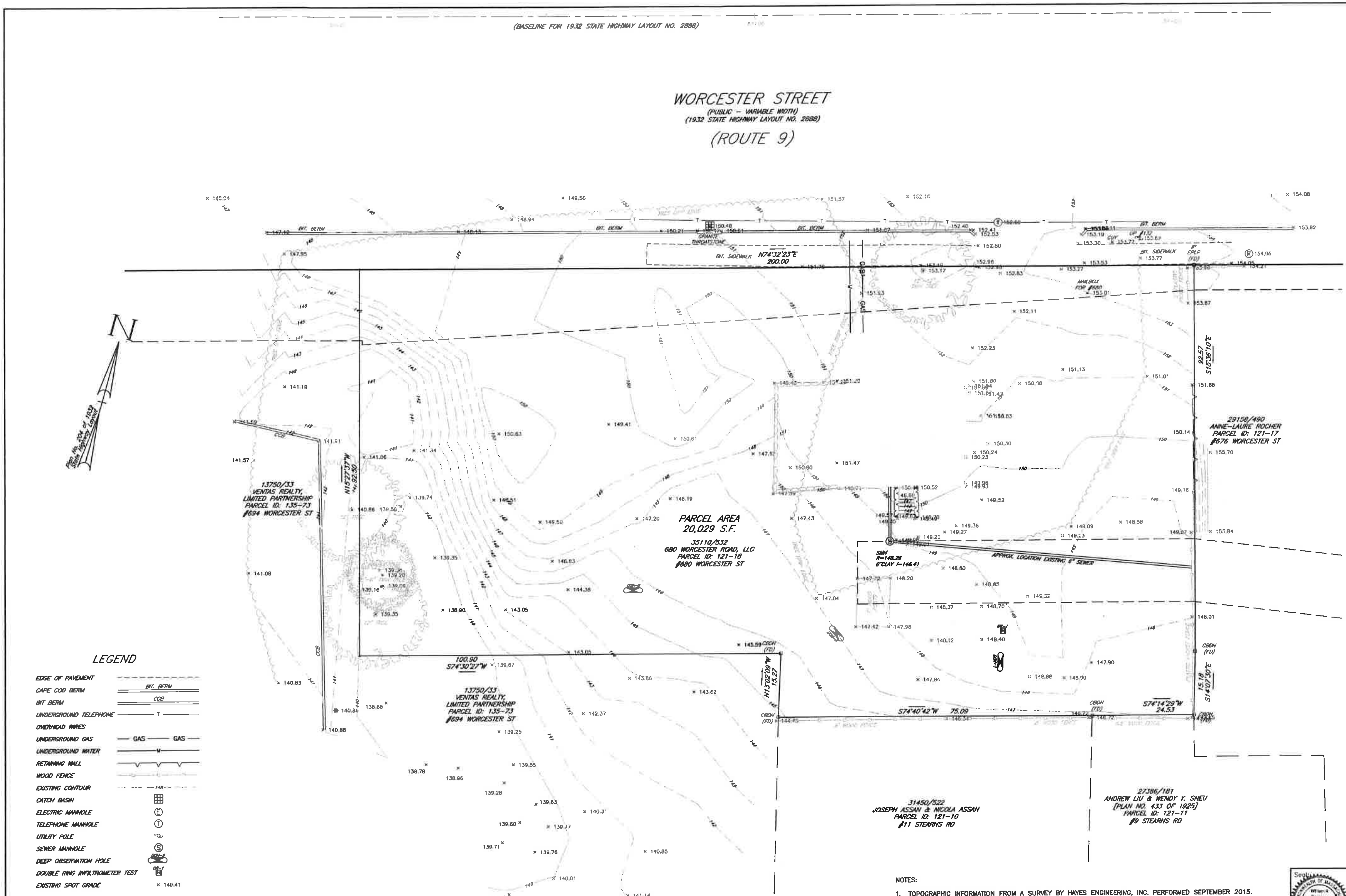
- Secure bicycle parking will be provided consisting of: i) exterior bicycle parking; and ii) weather protected bicycle parking located in a secure area within the building.

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

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
PUBLIC TRANSPORTATION SCHEDULES
VEHICLE TRAVEL SPEED DATA
MASSDOT CRASH RATE WORKSHEETS
GENERAL BACKGROUND TRAFFIC GROWTH
BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS
TRIP-GENERATION CALCULATIONS
JOURNEY TO WORK TRIP DISTRIBUTION
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN



NOTES:

1. TOPOGRAPHIC INFORMATION FROM A SURVEY BY HAYES ENGINEERING, INC. PERFORMED SEPTEMBER 2015.
2. ELEVATIONS SHOWN ARE REFERENCED TO NAVD 88.
3. THE PROPERTY SHOWN DOES NOT LIE WITHIN A FLOOD HAZARD AREA (ZONE A OR V) AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 25021C0016E; EFFECTIVE DATE: JULY 17, 2012.

Prepared For:
Owner / Applicant
680 Worcester Road, LLC
43 Charles Street
Needham, MA 02494

Prepared By:
Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781 246 2800
Fax: 781 246 7596
www.hayeseng.com

Design By:
Drawn By: EBL
Checked By: WRB
Project File: WEL-0011
Comp. No: WEL10

- [ ] Issued For Permit
- [ ] Issued For Review
- [ ] Issued For Bid
- [ ] Issued For Construction
- [ ] Not For Construction

No.	Revision	Date
1	MassDOT & Town Comments	11-14-2017

Scale: 1"=10'
0' 5' 10' 20'
Date: May 9, 2016

Drawing Title:
EXISTING CONDITIONS PLAN
#680 WORCESTER STREET
CHAPTER 40B COMPREHENSIVE PERMIT
WELLESLEY, MASS.

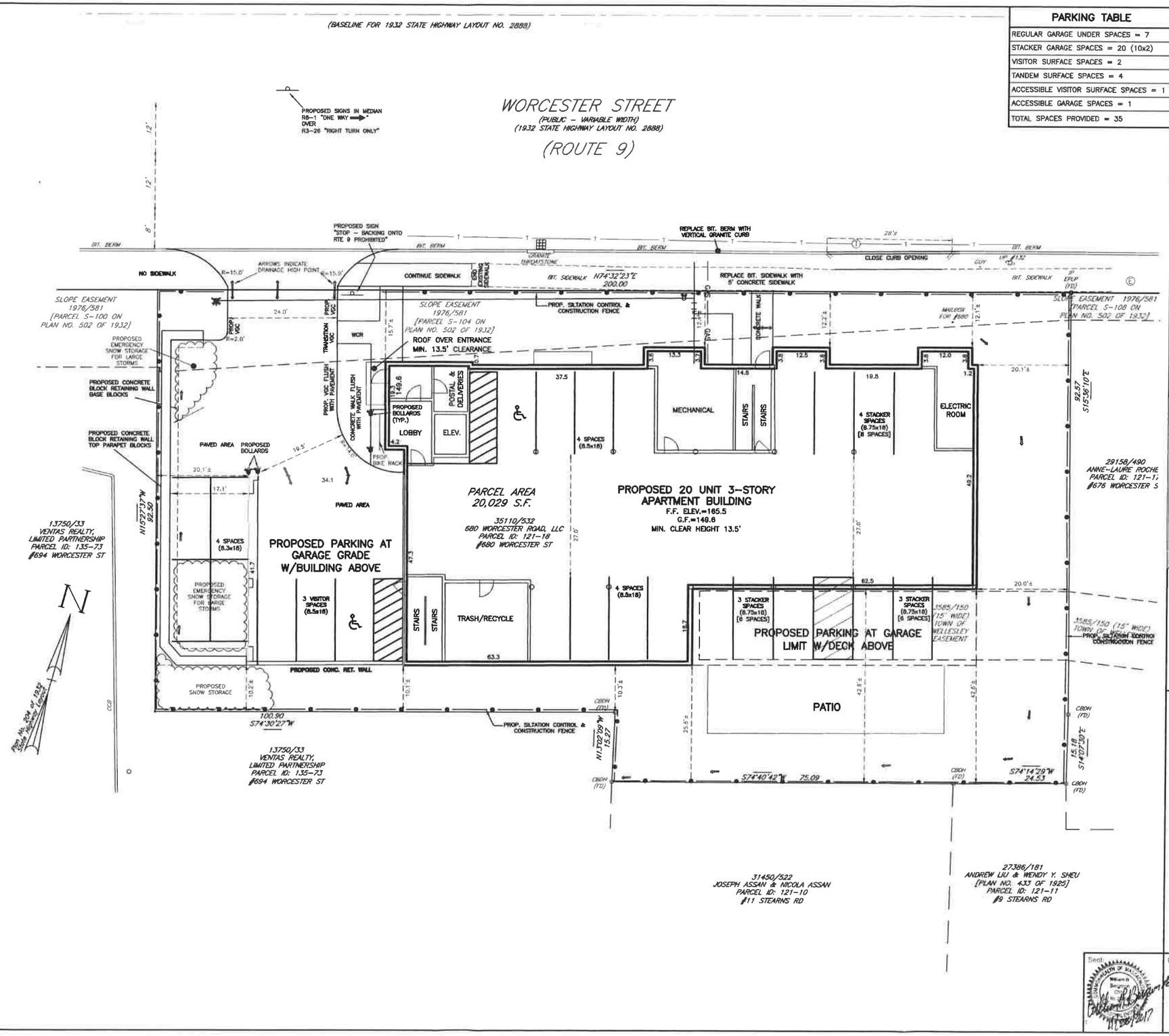
Drawing No.:
C2

SHEET 2 OF 9

R6-1

R3-26

CUSTOM
STOP SIGN



PARKING TABLE
REGULAR GARAGE UNDER SPACES = 7
STACKER GARAGE SPACES = 20 (10x2)
VISITOR SURFACE SPACES = 2
TANDEM SURFACE SPACES = 4
ACCESSIBLE VISITOR SURFACE SPACES = 1
ACCESSIBLE GARAGE SPACES = 1
TOTAL SPACES PROVIDED = 35

Prepared For:

Owner / Applicant
680 Worcester Road, LLC
43 Charles Street
Needham, MA 02494

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Phone: 781.246.3600
Fax: 781.246.7596
www.hayeseng.com

Design By:
Drawn By: EBL
Checked By: WRB
Project File: WEL-0011A
Comp. No: WEL10
☐ Issued For Permit
☐ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☐ Not For Construction

No.	Revision	Date
1	MassDOT & Town Comments	11-14-2017

Scale: 1"=10'
0' 5' 10' 20'
Date: May 9, 2016

Drawing Title:
LAYOUT PLAN
#680 WORCESTER STREET
CHAPTER 40B COMPREHENSIVE PERMIT
WELLESLEY, MASS.

Seal

Drawing No:
C3

SHEET 3 OF 9

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts

978-664-2565

Location : Route 9 EB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718VOLEB

Start Time	Tue 9/12/2017 A.M.	P.M.	Wed 9/13/2017 A.M.	P.M.	Thu 9/14/2017 A.M.	P.M.	Daily Average A.M.	P.M.
12:00	46	333	91	350	*	*	68	342
12:15	47	319	64	369	*	*	56	344
12:30	36	336	39	319	*	*	38	328
12:45	34	319	38	325	*	*	36	322
01:00	25	318	32	337	*	*	28	328
01:15	18	320	21	344	*	*	20	332
01:30	17	311	19	302	*	*	18	306
01:45	23	312	11	340	*	*	17	326
02:00	16	325	17	343	*	*	16	334
02:15	7	311	17	339	*	*	12	325
02:30	14	306	12	347	*	*	13	326
02:45	16	319	18	346	*	*	17	332
03:00	8	312	18	372	*	*	13	342
03:15	12	409	13	398	*	*	12	404
03:30	13	461	6	404	*	*	10	432
03:45	12	385	17	443	*	*	14	414
04:00	10	398	10	445	*	*	10	422
04:15	13	422	16	428	*	*	14	425
04:30	17	400	13	415	*	*	15	408
04:45	24	423	27	448	*	*	26	436
05:00	31	436	37	464	*	*	34	450
05:15	60	451	56	486	*	*	58	468
05:30	91	417	99	406	*	*	95	412
05:45	117	443	122	404	*	*	120	424
06:00	128	437	141	457	*	*	134	447
06:15	156	419	159	429	*	*	158	424
06:30	214	409	220	437	*	*	217	423
06:45	218	381	211	440	*	*	214	410
07:00	247	386	258	377	*	*	252	382
07:15	252	347	285	344	*	*	268	346
07:30	288	285	332	288	*	*	310	286
07:45	367	248	352	309	*	*	360	278
08:00	350	309	348	261	*	*	349	285
08:15	401	265	387	304	*	*	394	284
08:30	434	281	391	222	*	*	412	252
08:45	415	259	428	228	*	*	422	244
09:00	336	237	367	211	*	*	352	224
09:15	336	220	341	240	*	*	338	230
09:30	306	192	348	193	*	*	327	192
09:45	329	170	291	193	*	*	310	182
10:00	292	182	301	171	*	*	296	176
10:15	318	178	314	171	*	*	316	174
10:30	301	153	277	158	*	*	289	156
10:45	338	132	315	142	*	*	326	137
11:00	302	138	280	113	*	*	291	126
11:15	283	124	310	116	*	*	296	120
11:30	316	96	298	117	*	*	307	106
11:45	328	93	339	86	*	*	334	90
Total	7962	14727	8106	15181	0	0	8032	14956
Combined Total	22689		23287		0		22988	
Peak	08:00	05:15	08:15	04:30	-	-	08:15	04:45
Vol.	1600	1748	1573	1813	-	-	1580	1766
P.H.F.	0.922	0.969	0.919	0.933			0.936	0.943
ADT	ADT 22,988		AADT 22,988					

Accurate Counts

978-664-2565

Location : Route 9 EB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718VOLEB

Start Time	Mon 9/11/2017	Tue 9/12/2017	Wed 9/13/2017	Thu 9/14/2017	Fri 9/15/2017	Average Day	Sat 9/16/2017	Sun 9/17/2017	Week Average
12:00 AM	*	163	232	*	*	198	*	*	198
01:00	*	83	83	*	*	83	*	*	83
02:00	*	53	64	*	*	58	*	*	58
03:00	*	45	54	*	*	50	*	*	50
04:00	*	64	66	*	*	65	*	*	65
05:00	*	299	314	*	*	306	*	*	306
06:00	*	716	731	*	*	724	*	*	724
07:00	*	1154	1227	*	*	1190	*	*	1190
08:00	*	**1600**	**1554**	*	*	**1577**	*	*	**1577**
09:00	*	1307	1347	*	*	1327	*	*	1327
10:00	*	1249	1207	*	*	1228	*	*	1228
11:00	*	1229	1227	*	*	1228	*	*	1228
12:00 PM	*	1307	1363	*	*	1335	*	*	1335
01:00	*	1261	1323	*	*	1292	*	*	1292
02:00	*	1261	1375	*	*	1318	*	*	1318
03:00	*	1567	1617	*	*	1592	*	*	1592
04:00	*	1643	1736	*	*	1690	*	*	1690
05:00	*	**1747**	1760	*	*	**1754**	*	*	**1754**
06:00	*	1646	**1763**	*	*	1704	*	*	1704
07:00	*	1266	1318	*	*	1292	*	*	1292
08:00	*	1114	1015	*	*	1064	*	*	1064
09:00	*	819	837	*	*	828	*	*	828
10:00	*	645	642	*	*	644	*	*	644
11:00	*	451	432	*	*	442	*	*	442
Day Total	0	22689	23287	0	0	22989	0	0	22989
% Avg. WkDay	0.0%	98.7%	101.3%	0.0%	0.0%				
% Avg. Week	0.0%	98.7%	101.3%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	-	08:00	08:00	-	-	08:00	-	-	08:00
Vol.	-	1600	1554	-	-	1577	-	-	1577
PM Peak	-	17:00	18:00	-	-	17:00	-	-	17:00
Vol.	-	1747	1763	-	-	1754	-	-	1754
Grand Total	0	22689	23287	0	0	22989	0	0	22989

ADT ADT 22,988 AADT 22,988

Accurate Counts

978-664-2565

Location : Route 9 WB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718VOLWB

Start Time	Tue 9/12/2017 A.M.	P.M.	Wed 9/13/2017 A.M.	P.M.	Thu 9/14/2017 A.M.	P.M.	Daily Average A.M.	P.M.
12:00	18	312	28	369	*	*	23	340
12:15	20	324	30	313	*	*	25	318
12:30	12	314	22	352	*	*	17	333
12:45	17	319	12	340	*	*	14	330
01:00	15	311	15	307	*	*	15	309
01:15	16	312	22	321	*	*	19	316
01:30	10	313	9	329	*	*	10	321
01:45	13	321	12	329	*	*	12	325
02:00	12	309	15	331	*	*	14	320
02:15	12	318	10	377	*	*	11	348
02:30	11	340	12	316	*	*	12	328
02:45	10	324	11	318	*	*	10	321
03:00	9	348	9	355	*	*	9	352
03:15	16	376	11	347	*	*	14	362
03:30	6	285	12	389	*	*	9	337
03:45	23	334	21	377	*	*	22	356
04:00	21	350	19	362	*	*	20	356
04:15	34	**371**	23	385	*	*	28	**378**
04:30	53	**375**	40	**401**	*	*	46	**388**
04:45	47	**361**	52	**368**	*	*	50	**364**
05:00	70	**357**	61	**379**	*	*	66	**368**
05:15	97	342	108	**391**	*	*	102	366
05:30	149	263	148	370	*	*	148	316
05:45	216	242	222	367	*	*	219	304
06:00	258	354	255	407	*	*	256	380
06:15	**366**	298	337	355	*	*	**352**	326
06:30	**421**	357	417	326	*	*	**419**	342
06:45	**405**	332	348	353	*	*	**376**	342
07:00	**292**	307	289	274	*	*	**290**	290
07:15	271	276	269	274	*	*	270	275
07:30	195	243	238	248	*	*	216	246
07:45	258	210	210	220	*	*	234	215
08:00	321	209	253	208	*	*	287	208
08:15	342	198	257	216	*	*	300	207
08:30	277	203	248	204	*	*	262	204
08:45	257	202	292	212	*	*	274	207
09:00	247	173	270	194	*	*	258	184
09:15	293	174	**357**	219	*	*	325	196
09:30	380	170	**357**	185	*	*	368	178
09:45	323	156	**384**	171	*	*	354	164
10:00	321	115	**340**	103	*	*	330	109
10:15	311	94	319	86	*	*	315	90
10:30	309	73	344	98	*	*	326	86
10:45	330	75	310	80	*	*	320	78
11:00	99	71	302	60	*	*	200	66
11:15	211	65	348	57	*	*	280	61
11:30	263	50	329	53	*	*	296	52
11:45	324	34	351	40	*	*	338	37
Total	7981	12260	8348	13136	0	0	8161	12699
Combined Total	20241		21484		0		20860	
Peak	06:15	04:15	- 09:15	04:30	- -	- -	06:15	04:15
Vol.	1484	1464	- 1438	1539	- -	- -	1437	1498
P.H.F.	0.881	0.976	0.862	0.959			0.857	0.965
ADT	ADT 20,862		AADT 20,862					

Accurate Counts

978-664-2565

Location : Route 9 WB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718VOLWB

Start Time	Mon 9/11/2017	Tue 9/12/2017	Wed 9/13/2017	Thu 9/14/2017	Fri 9/15/2017	Average Day	Sat 9/16/2017	Sun 9/17/2017	Week Average
12:00 AM	*	67	92	*	*	80	*	*	80
01:00	*	54	58	*	*	56	*	*	56
02:00	*	45	48	*	*	46	*	*	46
03:00	*	54	53	*	*	54	*	*	54
04:00	*	155	134	*	*	144	*	*	144
05:00	*	532	539	*	*	536	*	*	536
06:00	*	**1450**	1357	*	*	**1404**	*	*	**1404**
07:00	*	1016	1006	*	*	1011	*	*	1011
08:00	*	1197	1050	*	*	1124	*	*	1124
09:00	*	1243	**1368**	*	*	1306	*	*	1306
10:00	*	1271	1313	*	*	1292	*	*	1292
11:00	*	897	1330	*	*	1114	*	*	1114
12:00 PM	*	1269	1374	*	*	1322	*	*	1322
01:00	*	1257	1286	*	*	1272	*	*	1272
02:00	*	1291	1342	*	*	1316	*	*	1316
03:00	*	1343	1468	*	*	1406	*	*	1406
04:00	*	**1457**	**1516**	*	*	**1486**	*	*	**1486**
05:00	*	1204	1507	*	*	1356	*	*	1356
06:00	*	1341	1441	*	*	1391	*	*	1391
07:00	*	1036	1016	*	*	1026	*	*	1026
08:00	*	812	840	*	*	826	*	*	826
09:00	*	673	769	*	*	721	*	*	721
10:00	*	357	367	*	*	362	*	*	362
11:00	*	220	210	*	*	215	*	*	215
Day Total	0	20241	21484	0	0	20866	0	0	20866
% Avg. WkDay	0.0%	97.0%	103.0%	0.0%	0.0%				
% Avg. Week	0.0%	97.0%	103.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	-	06:00	09:00	-	-	06:00	-	-	06:00
Vol.	-	1450	1368	-	-	1404	-	-	1404
PM Peak	-	16:00	16:00	-	-	16:00	-	-	16:00
Vol.	-	1457	1516	-	-	1486	-	-	1486
Grand Total	0	20241	21484	0	0	20866	0	0	20866

ADT ADT 20,862 AADT 20,862

MANUAL TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
07:00 AM	0	0	2	8	267	7	4	0	0	13	11	536	16	0	864
07:15 AM	0	0	6	16	290	11	7	0	0	19	17	449	6	0	821
07:30 AM	0	0	4	23	357	10	1	0	0	17	16	425	5	1	859
07:45 AM	0	0	5	20	402	9	3	0	0	14	22	523	16	5	1019
Total	0	0	17	67	1316	37	15	0	0	63	66	1933	43	6	3563
08:00 AM	0	0	2	28	450	8	4	0	0	17	22	513	10	1	1055
08:15 AM	0	0	7	37	447	14	7	0	0	14	18	507	16	2	1069
08:30 AM	0	0	8	34	458	8	2	0	0	15	32	484	8	2	1051
08:45 AM	0	0	5	28	446	6	1	0	0	16	13	463	15	1	994
Total	0	0	22	127	1801	36	14	0	0	62	85	1967	49	6	4169
Grand Total	0	0	39	194	3117	73	29	0	0	125	151	3900	92	12	7732
Apprch %	0	0	100	5.7	91.3	2.1	0.8	0	0	100	3.6	93.9	2.2	0.3	
Total %	0	0	0.5	2.5	40.3	0.9	0.4	0	0	1.6	2	50.4	1.2	0.2	
Cars	0	0	35	192	3081	69	29	0	0	125	146	3864	91	12	7644
% Cars	0	0	89.7	99	98.8	94.5	100	0	0	100	96.7	99.1	98.9	100	98.9
Trucks	0	0	4	2	36	4	0	0	0	0	5	36	1	0	88
% Trucks	0	0	10.3	1	1.2	5.5	0	0	0	0	3.3	0.9	1.1	0	1.1

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 2

	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45 AM																			
07:45 AM	0	0	5	5	20	402	9	3	434	0	0	14	14	22	**523**	**16**	**5**	**566**	1019
08:00 AM	0	0	2	2	28	450	8	4	490	0	0	**17**	**17**	22	513	10	1	546	1055
08:15 AM	0	0	7	7	37	447	**14**	**7**	**505**	0	0	14	14	18	507	16	2	543	**1069**
08:30 AM	0	0	**8**	**8**	34	**458**	8	2	502	0	0	15	15	**32**	484	8	2	526	1051
Total Volume	0	0	22	22	119	1757	39	16	1931	0	0	60	60	94	2027	50	10	2181	4194
% App. Total	0	0	100		6.2	91	2	0.8		0	0	100		4.3	92.9	2.3	0.5		
PHF	.000	.000	.688	.688	.804	.959	.696	.571	.956	.000	.000	.882	.882	.734	.969	.781	.500	.963	.981
Cars	0	0	19	19	118	1744	39	16	1917	0	0	60	60	91	2009	49	10	2159	4155
% Cars	0	0	86.4	86.4	99.2	99.3	100	100	99.3	0	0	100	100	96.8	99.1	98.0	100	99.0	99.1
Trucks	0	0	3	3	1	13	0	0	14	0	0	0	0	3	18	1	0	22	39
% Trucks	0	0	13.6	13.6	0.8	0.7	0	0	0.7	0	0	0	0	3.2	0.9	2.0	0	1.0	0.9

Accurate Counts
978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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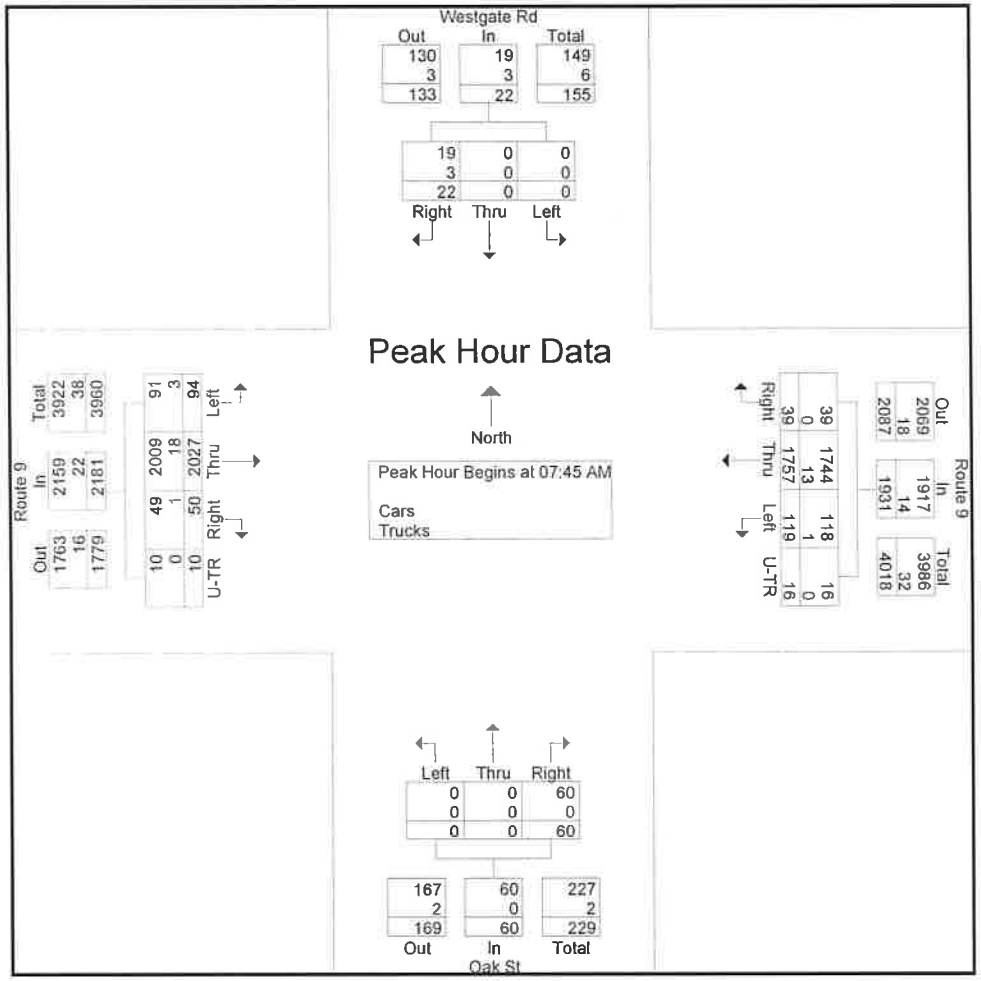

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM					07:15 AM				07:45 AM				
+0 mins.	0	0	5	5	28	450	8	4	490	0	0	**19**	**19**	22	**523**	**16**	**5**	**566**
+15 mins.	0	0	2	2	**37**	447	**14**	**7**	**505**	0	0	17	17	22	513	10	1	546
+30 mins.	0	0	7	7	34	**458**	8	2	502	0	0	14	14	18	507	16	2	543
+45 mins.	0	0	**8**	**8**	28	446	6	1	481	0	0	17	17	**32**	484	8	2	526
Total Volume	0	0	22	22	127	1801	36	14	1978	0	0	67	67	94	2027	50	10	2181
% App. Total	0	0	100		6.4	91.1	1.8	0.7		0	0	100		4.3	92.9	2.3	0.5	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
07:00 AM	0	0	2	8	257	7	4	0	0	13	10	531	16	0	848
07:15 AM	0	0	5	16	288	8	7	0	0	19	17	444	6	0	810
07:30 AM	0	0	4	22	352	10	1	0	0	17	16	423	5	1	851
07:45 AM	0	0	4	20	399	9	3	0	0	14	21	519	16	5	1010
Total	0	0	15	66	1296	34	15	0	0	63	64	1917	43	6	3519
08:00 AM	0	0	2	28	449	8	4	0	0	17	22	510	10	1	1051
08:15 AM	0	0	7	36	444	14	7	0	0	14	17	499	15	2	1055
08:30 AM	0	0	6	34	452	8	2	0	0	15	31	481	8	2	1039
08:45 AM	0	0	5	28	440	5	1	0	0	16	12	457	15	1	980
Total	0	0	20	126	1785	35	14	0	0	62	82	1947	48	6	4125
Grand Total	0	0	35	192	3081	69	29	0	0	125	146	3864	91	12	7644
Apprch %	0	0	100	5.7	91.4	2	0.9	0	0	100	3.5	93.9	2.2	0.3	
Total %	0	0	0.5	2.5	40.3	0.9	0.4	0	0	1.6	1.9	50.5	1.2	0.2	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45 AM																			
07:45 AM	0	0	4	4	20	399	9	3	431	0	0	14	14	21	**519**	**16**	**5**	**561**	1010
08:00 AM	0	0	2	2	28	449	8	4	489	0	0	**17**	**17**	22	510	10	1	543	1051
08:15 AM	0	0	**7**	**7**	**36**	444	**14**	**7**	**501**	0	0	14	14	17	499	15	2	533	**1055**
08:30 AM	0	0	6	6	34	**452**	8	2	496	0	0	15	15	**31**	481	8	2	522	1039
Total Volume	0	0	19	19	118	1744	39	16	1917	0	0	60	60	91	2009	49	10	2159	4155
% App. Total	0	0	100		6.2	91	2	0.8		0	0	100		4.2	93.1	2.3	0.5		
PHF	.000	.000	.679	.679	.819	.965	.696	.571	.957	.000	.000	.882	.882	.734	.968	.766	.500	.962	.985

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
07:00 AM	0	0	0	0	10	0	0	0	0	0	1	5	0	0	16
07:15 AM	0	0	1	0	2	3	0	0	0	0	0	5	0	0	11
07:30 AM	0	0	0	1	5	0	0	0	0	0	0	2	0	0	8
07:45 AM	0	0	1	0	3	0	0	0	0	0	1	4	0	0	9
Total	0	0	2	1	20	3	0	0	0	0	2	16	0	0	44
08:00 AM	0	0	0	0	1	0	0	0	0	0	0	3	0	0	4
08:15 AM	0	0	0	1	3	0	0	0	0	0	1	8	1	0	14
08:30 AM	0	0	2	0	6	0	0	0	0	0	1	3	0	0	12
08:45 AM	0	0	0	0	6	1	0	0	0	0	1	6	0	0	14
Total	0	0	2	1	16	1	0	0	0	0	3	20	1	0	44
Grand Total	0	0	4	2	36	4	0	0	0	0	5	36	1	0	88
Apprch %	0	0	100	4.8	85.7	9.5	0	0	0	0	11.9	85.7	2.4	0	
Total %	0	0	4.5	2.3	40.9	4.5	0	0	0	0	5.7	40.9	1.1	0	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:00 AM																			
07:00 AM	0	0	0	0	0	**10**	0	0	**10**	0	0	0	0	**1**	**5**	0	0	**6**	**16**
07:15 AM	0	0	**1**	**1**	0	2	**3**	0	5	0	0	0	0	0	5	0	0	5	11
07:30 AM	0	0	0	0	**1**	5	0	0	6	0	0	0	0	0	2	0	0	2	8
07:45 AM	0	0	1	1	0	3	0	0	3	0	0	0	0	1	4	0	0	5	9
Total Volume	0	0	2	2	1	20	3	0	24	0	0	0	0	2	16	0	0	18	44
% App. Total	0	0	100		4.2	83.3	12.5	0		0	0	0		11.1	88.9	0	0		
PHF	.000	.000	.500	.500	.250	.500	.250	.000	.600	.000	.000	.000	.000	.500	.800	.000	.000	.750	.688

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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Groups Printed- Bikes Peds

	Westgate Rd From North				Route 9 From East				Oak St From South				Route 9 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017

	Westgate Rd From North				Route 9 From East				Oak St From South				Route 9 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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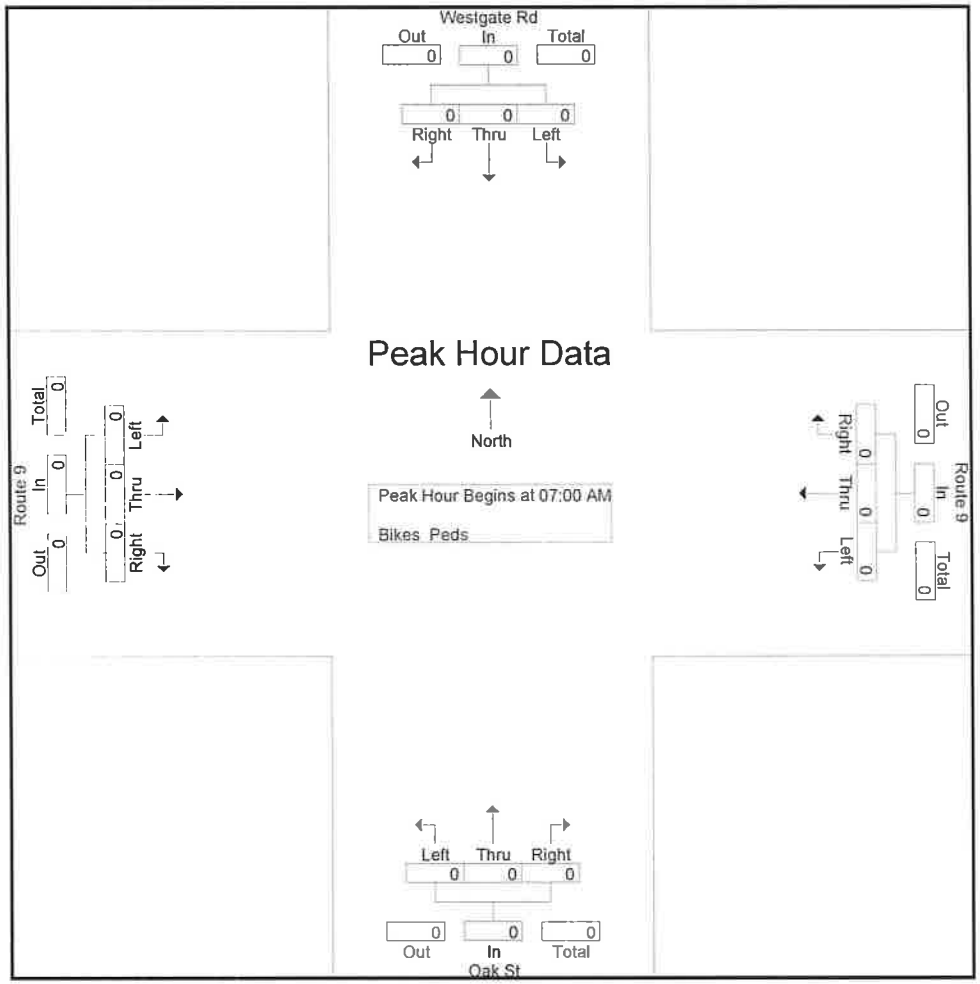

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

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

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017

Groups Printed- Cars - Trucks

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
04:00 PM	0	0	6	31	422	7	0	0	0	7	4	381	16	2	876
04:15 PM	0	0	10	40	497	8	6	0	0	14	6	512	22	0	1115
04:30 PM	0	0	1	46	459	7	3	0	0	5	9	492	14	7	1043
04:45 PM	0	0	4	51	496	11	2	0	0	13	7	478	18	0	1080
Total	0	0	21	168	1874	33	11	0	0	39	26	1863	70	9	4114
05:00 PM	0	0	6	50	478	11	3	0	0	10	9	463	25	1	1056
05:15 PM	0	0	3	50	447	13	5	0	0	8	4	541	18	1	1090
05:30 PM	0	0	3	62	469	6	1	0	0	4	9	515	30	2	1101
05:45 PM	0	0	6	66	478	14	6	0	0	4	6	484	32	1	1097
Total	0	0	18	228	1872	44	15	0	0	26	28	2003	105	5	4344
Grand Total	0	0	39	396	3746	77	26	0	0	65	54	3866	175	14	8458
Apprch %	0	0	100	9.3	88.2	1.8	0.6	0	0	100	1.3	94.1	4.3	0.3	
Total %	0	0	0.5	4.7	44.3	0.9	0.3	0	0	0.8	0.6	45.7	2.1	0.2	
Cars	0	0	39	395	3729	76	26	0	0	65	54	3850	175	14	8423
% Cars	0	0	100	99.7	99.5	98.7	100	0	0	100	100	99.6	100	100	99.6
Trucks	0	0	0	1	17	1	0	0	0	0	0	16	0	0	35
% Trucks	0	0	0	0.3	0.5	1.3	0	0	0	0	0	0.4	0	0	0.4

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
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	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	0	0	**6**	6	50	**478**	11	3	542	0	0	**10**	**10**	**9**	463	25	1	498	1056
05:15 PM	0	0	3	3	50	447	13	5	515	0	0	8	8	4	**541**	18	1	**564**	1090
05:30 PM	0	0	3	3	62	469	6	1	538	0	0	4	4	9	515	30	**2**	556	**1101**
05:45 PM	0	0	6	6	**66**	478	**14**	**6**	**564**	0	0	4	4	6	484	**32**	1	523	1097
Total Volume	0	0	18	18	228	1872	44	15	2159	0	0	26	26	28	2003	105	5	2141	4344
% App. Total	0	0	100		10.6	86.7	2	0.7		0	0	100		1.3	93.6	4.9	0.2		
PHF	.000	.000	.750	.750	.864	.979	.786	.625	.957	.000	.000	.650	.650	.778	.926	.820	.625	.949	.986
Cars	0	0	18	18	228	1863	43	15	2149	0	0	26	26	28	1995	105	5	2133	4326
% Cars	0	0	100	100	100	99.5	97.7	100	99.5	0	0	100	100	100	99.6	100	100	99.6	99.6
Trucks	0	0	0	0	0	9	1	0	10	0	0	0	0	0	8	0	0	8	18
% Trucks	0	0	0	0	0	0.5	2.3	0	0.5	0	0	0	0	0	0.4	0	0	0.4	0.4

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
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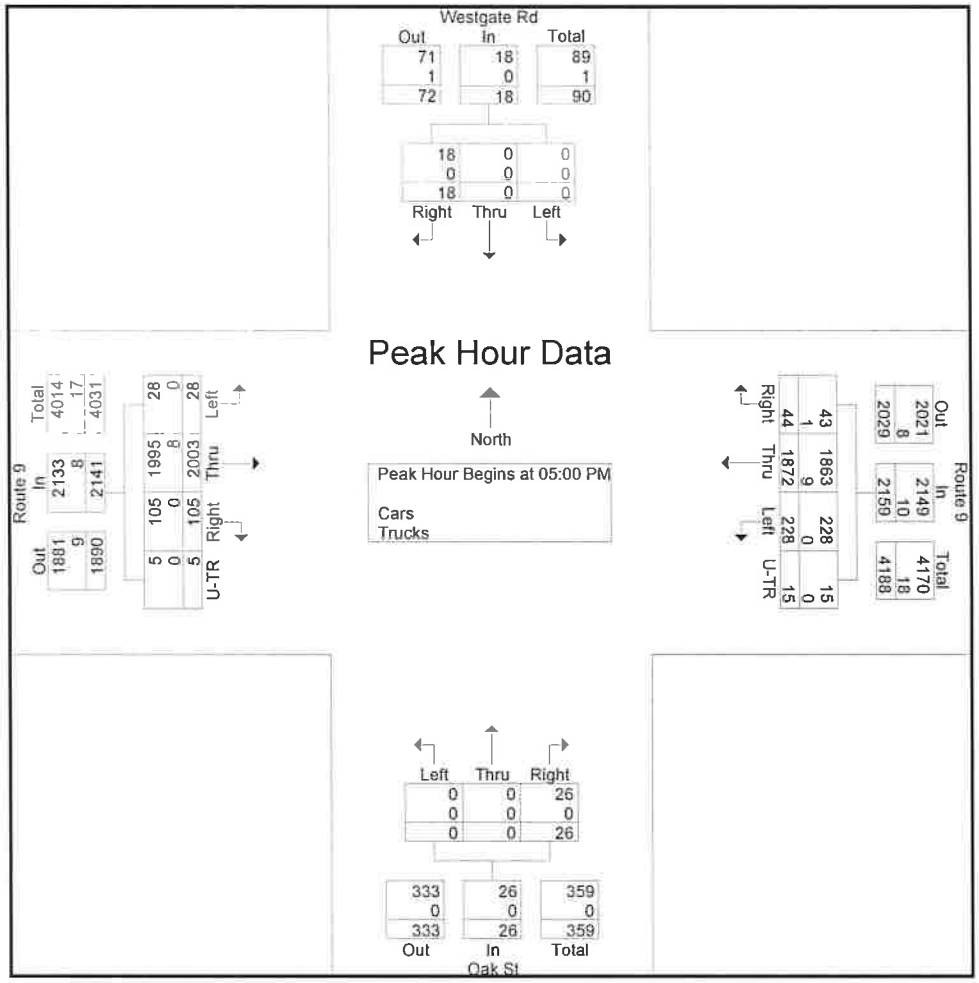


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM					04:15 PM				05:00 PM				
+0 mins.	0	0	6	6	40	**497**	8	**6**	551	0	0	**14**	**14**	**9**	463	25	1	498
+15 mins.	0	0	**10**	**10**	46	459	7	3	515	0	0	5	5	4	**541**	18	1	**564**
+30 mins.	0	0	1	1	**51**	496	**11**	2	**560**	0	0	13	13	9	515	30	**2**	556
+45 mins.	0	0	4	4	50	478	11	3	542	0	0	10	10	6	484	**32**	1	523
Total Volume	0	0	21	21	187	1930	37	14	2168	0	0	42	42	28	2003	105	5	2141
% App. Total	0	0	100		8.6	89	1.7	0.6		0	0	100		1.3	93.6	4.9	0.2	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
04:00 PM	0	0	6	31	421	7	0	0	0	7	4	377	16	2	871
04:15 PM	0	0	10	40	496	8	6	0	0	14	6	510	22	0	1112
04:30 PM	0	0	1	45	458	7	3	0	0	5	9	492	14	7	1041
04:45 PM	0	0	4	51	491	11	2	0	0	13	7	476	18	0	1073
Total	0	0	21	167	1866	33	11	0	0	39	26	1855	70	9	4097
05:00 PM	0	0	6	50	474	11	3	0	0	10	9	462	25	1	1051
05:15 PM	0	0	3	50	444	12	5	0	0	8	4	537	18	1	1082
05:30 PM	0	0	3	62	467	6	1	0	0	4	9	514	30	2	1098
05:45 PM	0	0	6	66	478	14	6	0	0	4	6	482	32	1	1095
Total	0	0	18	228	1863	43	15	0	0	26	28	1995	105	5	4326
Grand Total	0	0	39	395	3729	76	26	0	0	65	54	3850	175	14	8423
Apprch %	0	0	100	9.3	88.2	1.8	0.6	0	0	100	1.3	94.1	4.3	0.3	
Total %	0	0	0.5	4.7	44.3	0.9	0.3	0	0	0.8	0.6	45.7	2.1	0.2	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 2

	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	0	0	**6**	**6**	50	474	11	3	538	0	0	**10**	**10**	**9**	462	25	**1**	497	1051
05:15 PM	0	0	3	3	50	444	12	5	511	0	0	8	8	4	**537**	18	1	**560**	1082
05:30 PM	0	0	3	3	62	467	6	1	536	0	0	**4**	**4**	9	514	30	**2**	555	**1098**
05:45 PM	0	0	6	6	**66**	**478**	**14**	**6**	**564**	0	0	4	4	6	482	**32**	1	521	1095
Total Volume	0	0	18	18	228	1863	43	15	2149	0	0	26	26	28	1995	105	5	2133	4326
% App. Total	0	0	100		10.6	86.7	2	0.7		0	0	100		1.3	93.5	4.9	0.2		
PHF	.000	.000	.750	.750	.864	.974	.768	.625	.953	.000	.000	.650	.650	.778	.929	.820	.625	.952	.985

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Westgate Rd From North			Route 9 From East				Oak St From South			Route 9 From West				
Start Time	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Int. Total
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	4	0	0	5
04:15 PM	0	0	0	0	1	0	0	0	0	0	0	2	0	0	3
04:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	5	0	0	0	0	0	0	2	0	0	7
Total	0	0	0	1	8	0	0	0	0	0	0	8	0	0	17
05:00 PM	0	0	0	0	4	0	0	0	0	0	0	1	0	0	5
05:15 PM	0	0	0	0	3	1	0	0	0	0	0	4	0	0	8
05:30 PM	0	0	0	0	2	0	0	0	0	0	0	1	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Total	0	0	0	0	9	1	0	0	0	0	0	8	0	0	18
Grand Total	0	0	0	1	17	1	0	0	0	0	0	16	0	0	35
Apprch %	0	0	0	5.3	89.5	5.3	0	0	0	0	0	100	0	0	
Total %	0	0	0	2.9	48.6	2.9	0	0	0	0	0	45.7	0	0	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 2

	Westgate Rd From North				Route 9 From East					Oak St From South				Route 9 From West					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:45 PM																			
04:45 PM	0	0	0	0	0	**5**	0	0	**5**	0	0	0	0	0	2	0	0	2	7
05:00 PM	0	0	0	0	0	4	0	0	4	0	0	0	0	0	1	0	0	1	5
05:15 PM	0	0	0	0	0	3	**1**	0	4	0	0	0	0	0	**4**	0	0	**4**	**8**
05:30 PM	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	0	0	0	14	1	0	15	0	0	0	0	0	8	0	0	8	23
% App. Total	0	0	0		0	93.3	6.7	0		0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.700	.250	.000	.750	.000	.000	.000	.000	.000	.500	.000	.000	.500	.719

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 1

Groups Printed- Bikes Peds

	Westgate Rd From North				Route 9 From East				Oak St From South				Route 9 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Grand Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0				
Total %	0	0	0		0	100	0		0	0	0		0	0	0		0	100	

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 2

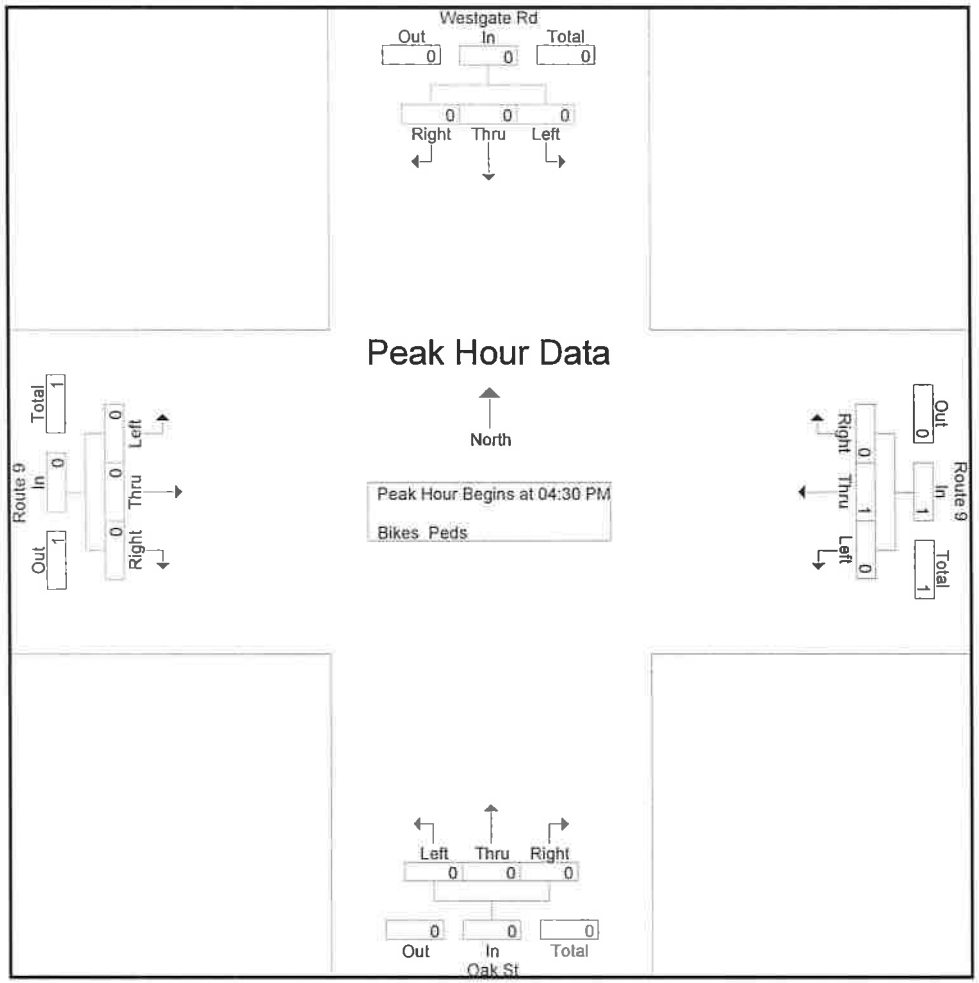
	Westgate Rd From North				Route 9 From East				Oak St From South				Route 9 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Westgate / Oak Street
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180001
Site Code : 77180001
Start Date : 9/12/2017
Page No : 3



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

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	

Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	0	1	554	0	555
07:15 AM	0	0	0	1	470	2	473
07:30 AM	0	0	0	4	500	1	505
07:45 AM	0	0	0	3	548	1	552
Total	0	0	0	9	2072	4	2085
08:00 AM	0	0	0	4	569	2	575
08:15 AM	0	0	0	1	520	0	521
08:30 AM	0	0	0	5	560	2	567
08:45 AM	0	0	0	1	488	2	491
Total	0	0	0	11	2137	6	2154
Grand Total	0	0	0	20	4209	10	4239
Apprch %	0	0	0	100	99.8	0.2	
Total %	0	0	0	0.5	99.3	0.2	
Cars	0	0	0	20	4155	10	4185
% Cars	0	0	0	100	98.7	100	98.7
Trucks	0	0	0	0	54	0	54
% Trucks	0	0	0	0	1.3	0	1.3

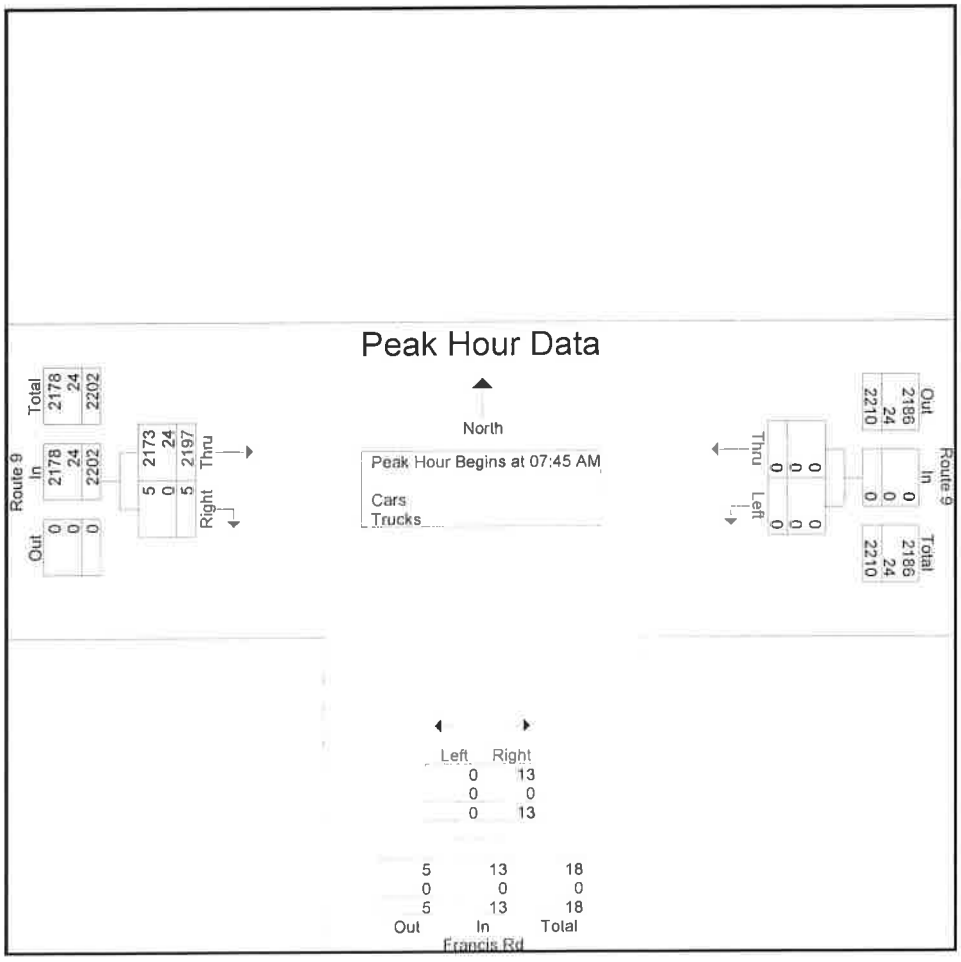
Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 2

	Route 9 From East			Francis Rd From South			Route 9 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	0	3	3	548	1	549	552
08:00 AM	0	0	0	0	4	4	**569**	**2**	**571**	**575**
08:15 AM	0	0	0	0	1	1	520	0	520	521
08:30 AM	0	0	0	0	**5**	**5**	560	2	562	567
Total Volume	0	0	0	0	13	13	2197	5	2202	2215
% App. Total	0	0		0	100		99.8	0.2		
PHF	.000	.000	.000	.000	.650	.650	.965	.625	.964	.963
Cars	0	0	0	0	13	13	2173	5	2178	2191
% Cars	0	0	0	0	100	100	98.9	100	98.9	98.9
Trucks	0	0	0	0	0	0	24	0	24	24
% Trucks	0	0	0	0	0	0	1.1	0	1.1	1.1



Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 4

Groups Printed- Cars

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	0	1	545	0	546
07:15 AM	0	0	0	1	464	2	467
07:30 AM	0	0	0	4	492	1	497
07:45 AM	0	0	0	3	543	1	547
Total	0	0	0	9	2044	4	2057
08:00 AM	0	0	0	4	564	2	570
08:15 AM	0	0	0	1	513	0	514
08:30 AM	0	0	0	5	553	2	560
08:45 AM	0	0	0	1	481	2	484
Total	0	0	0	11	2111	6	2128
Grand Total	0	0	0	20	4155	10	4185
Apprch %	0	0	0	100	99.8	0.2	
Total %	0	0	0	0.5	99.3	0.2	

Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 7

Groups Printed- Trucks

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	0	0	0	0	9	0	9
07:15 AM	0	0	0	0	6	0	6
07:30 AM	0	0	0	0	8	0	8
07:45 AM	0	0	0	0	5	0	5
Total	0	0	0	0	28	0	28
08:00 AM	0	0	0	0	5	0	5
08:15 AM	0	0	0	0	7	0	7
08:30 AM	0	0	0	0	7	0	7
08:45 AM	0	0	0	0	7	0	7
Total	0	0	0	0	26	0	26
Grand Total	0	0	0	0	54	0	54
Apprch %	0	0	0	0	100	0	
Total %	0	0	0	0	100	0	

Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017

Groups Printed- Bikes Peds

	Route 9 From East			Francis Rd From South			Route 9 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	0	0	0	1	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	0	0	0	0	1	0	0	0	1	1
Apprch %	0	0		0	0		100	0				
Total %	0	0		0	0		100	0		0	100	

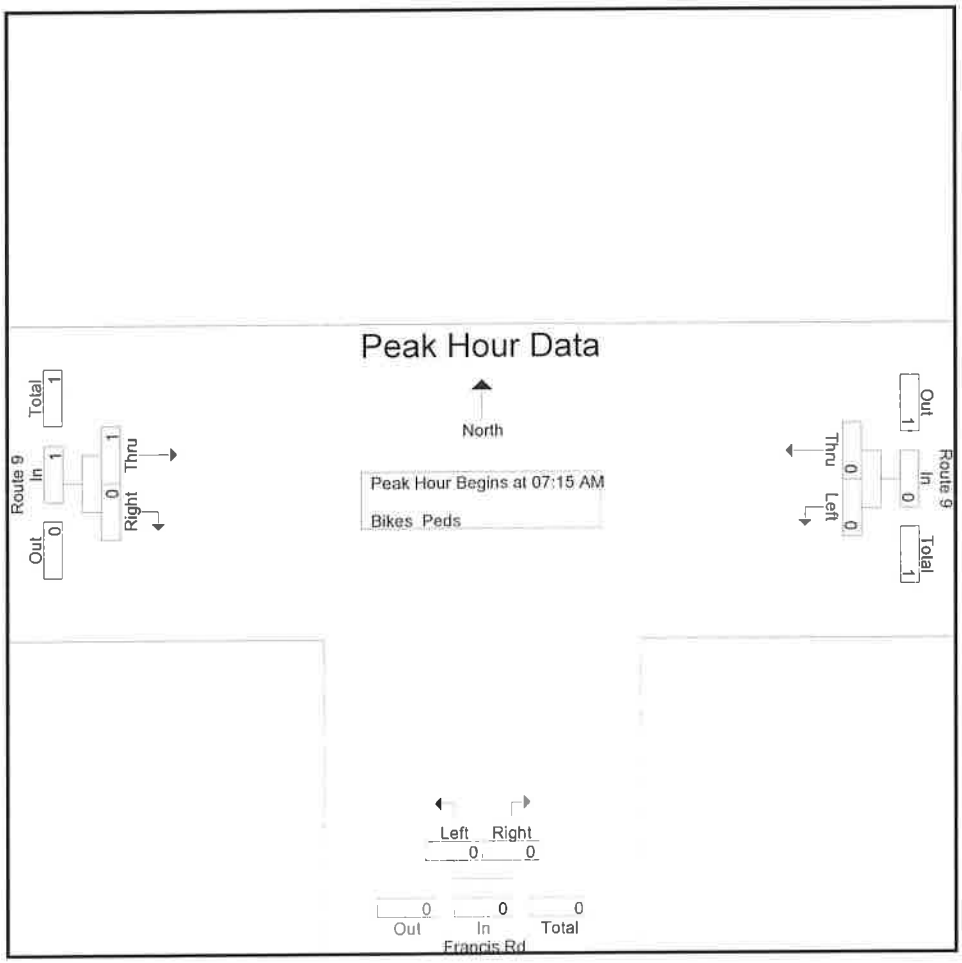
Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 11

	Route 9 From East			Francis Rd From South			Route 9 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250



Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	0	0	0	412	1	413
04:15 PM	0	0	0	2	537	0	539
04:30 PM	0	0	0	1	523	4	528
04:45 PM	0	0	0	0	507	2	509
Total	0	0	0	3	1979	7	1989
05:00 PM	0	0	0	3	469	1	473
05:15 PM	0	0	0	1	533	4	538
05:30 PM	0	0	0	4	522	0	526
05:45 PM	0	1	0	1	560	4	566
Total	0	1	0	9	2084	9	2103
Grand Total	0	1	0	12	4063	16	4092
Apprch %	0	100	0	100	99.6	0.4	
Total %	0	0	0	0.3	99.3	0.4	
Cars	0	1	0	12	4037	16	4066
% Cars	0	100	0	100	99.4	100	99.4
Trucks	0	0	0	0	26	0	26
% Trucks	0	0	0	0	0.6	0	0.6

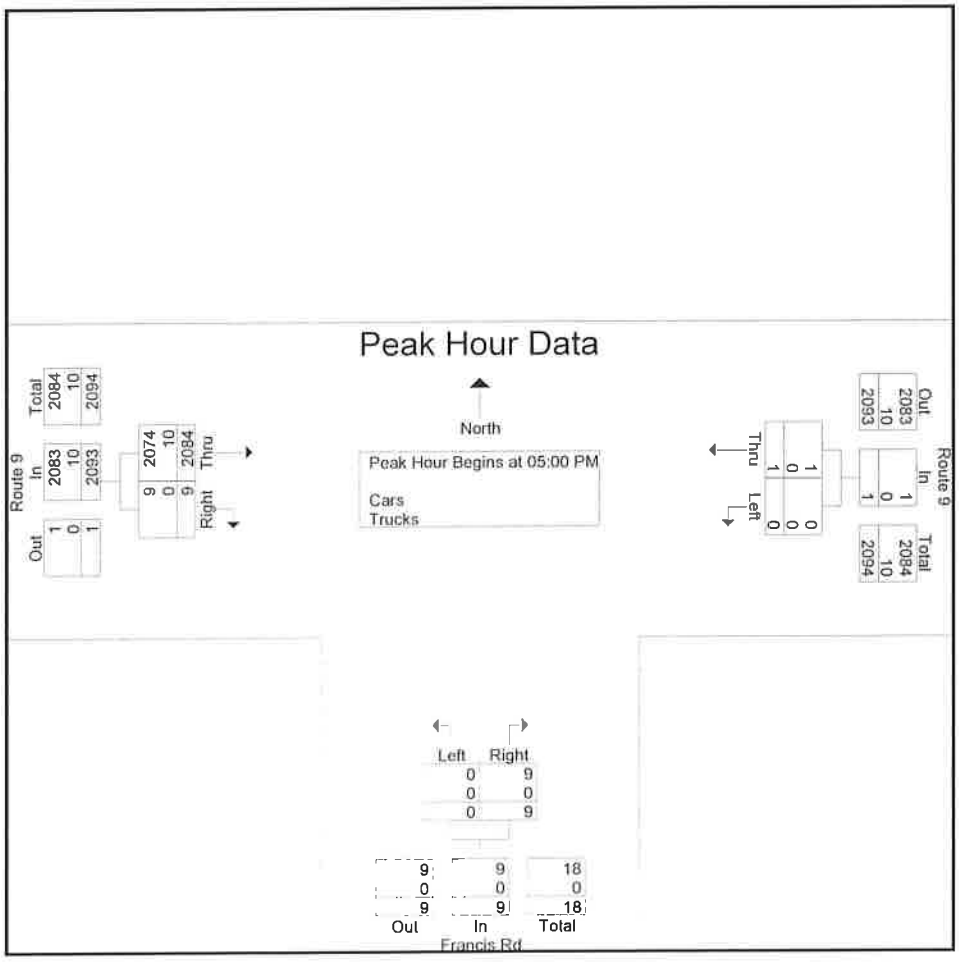
Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 2

	Route 9 From East			Francis Rd From South			Route 9 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	3	3	469	1	470	473
05:15 PM	0	0	0	0	1	1	533	4	537	538
05:30 PM	0	0	0	0	4	4	522	0	522	526
05:45 PM	0	1	1	0	1	1	560	4	564	566
Total Volume	0	1	1	0	9	9	2084	9	2093	2103
% App. Total	0	100		0	100		99.6	0.4		
PHF	.000	.250	.250	.000	.563	.563	.930	.563	.928	.929
Cars	0	1	1	0	9	9	2074	9	2083	2093
% Cars	0	100	100	0	100	100	99.5	100	99.5	99.5
Trucks	0	0	0	0	0	0	10	0	10	10
% Trucks	0	0	0	0	0	0	0.5	0	0.5	0.5



Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 4

Groups Printed- Cars

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	0	0	0	406	1	407
04:15 PM	0	0	0	2	533	0	535
04:30 PM	0	0	0	1	519	4	524
04:45 PM	0	0	0	0	505	2	507
Total	0	0	0	3	1963	7	1973
05:00 PM	0	0	0	3	467	1	471
05:15 PM	0	0	0	1	528	4	533
05:30 PM	0	0	0	4	521	0	525
05:45 PM	0	1	0	1	558	4	564
Total	0	1	0	9	2074	9	2093
Grand Total	0	1	0	12	4037	16	4066
Apprch %	0	100	0	100	99.6	0.4	
Total %	0	0	0	0.3	99.3	0.4	

Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017

Groups Printed- Trucks

	Route 9 From East		Francis Rd From South		Route 9 From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	0	0	0	0	6	0	6
04:15 PM	0	0	0	0	4	0	4
04:30 PM	0	0	0	0	4	0	4
04:45 PM	0	0	0	0	2	0	2
Total	0	0	0	0	16	0	16
05:00 PM	0	0	0	0	2	0	2
05:15 PM	0	0	0	0	5	0	5
05:30 PM	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	2	0	2
Total	0	0	0	0	10	0	10
Grand Total	0	0	0	0	26	0	26
Apprch %	0	0	0	0	100	0	
Total %	0	0	0	0	100	0	

Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 10

Groups Printed- Bikes Peds

	Route 9 From East			Francis Rd From South			Route 9 From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	0	0	0	0	1	0	0	0	1	1
Apprch %	0	0		0	0		100	0				
Total %	0	0		0	0		100	0		0	100	

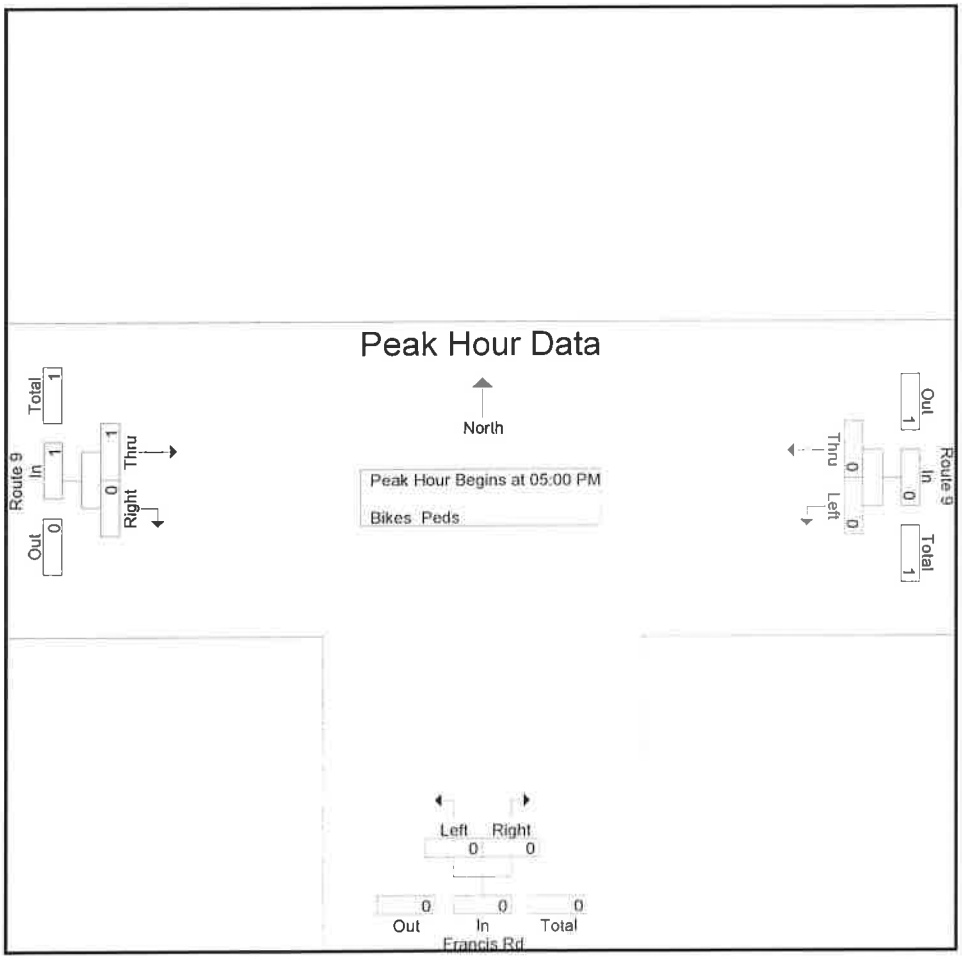
Accurate Counts

978-664-2565

N/S Street : Francis Road
E/W Street: Route 9
City/State : Wellesley, MA
Weather : Clear

File Name : 77180004
Site Code : 77180004
Start Date : 9/12/2017
Page No : 11

	Route 9 From East			Francis Rd From South			Route 9 From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
07:00 AM	273	41	533	847
07:15 AM	309	62	419	790
07:30 AM	416	52	484	952
07:45 AM	436	30	550	1016
Total	1434	185	1986	3605
08:00 AM	487	23	553	1063
08:15 AM	490	42	506	1038
08:30 AM	489	38	528	1055
08:45 AM	436	37	495	968
Total	1902	140	2082	4124
Grand Total	3336	325	4068	7729
Apprch %	91.1	8.9	100	
Total %	43.2	4.2	52.6	
Cars	3283	323	4020	7626
% Cars	98.4	99.4	98.8	98.7
Trucks	53	2	48	103
% Trucks	1.6	0.6	1.2	1.3

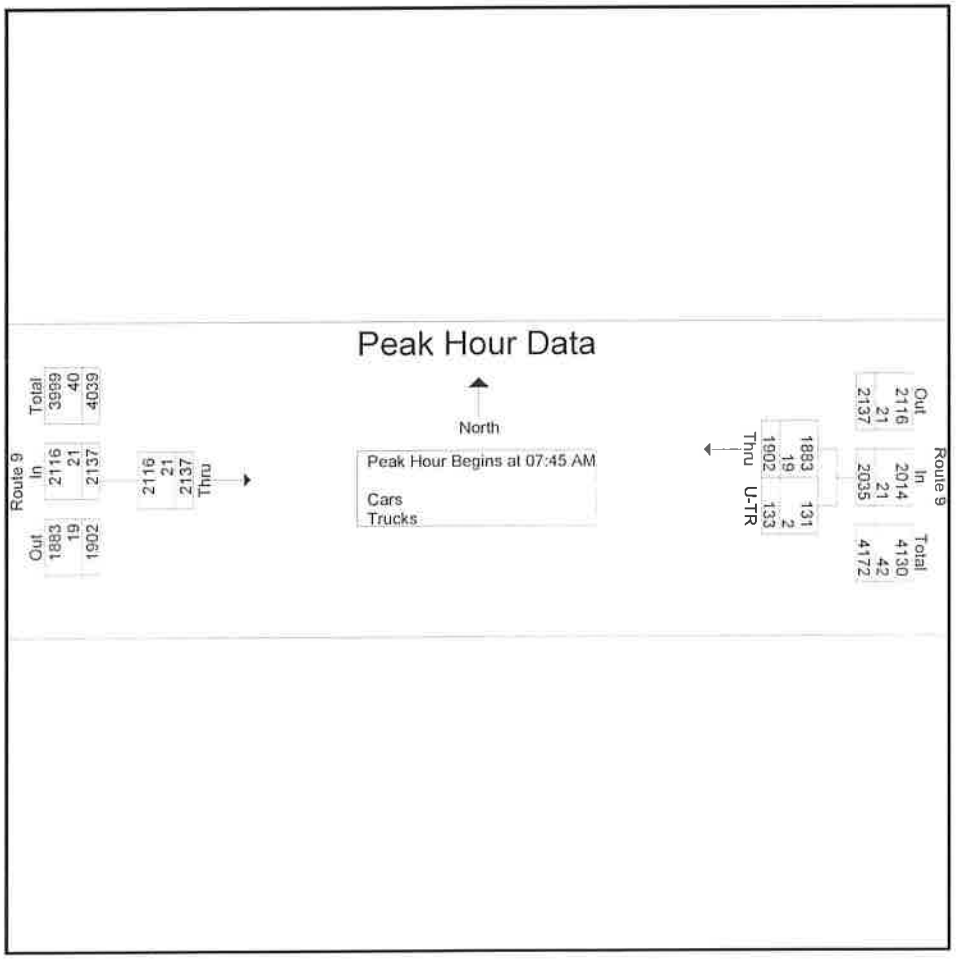
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 2

	Route 9 From East			Route 9 From West		
Start Time	Thru	U-TR	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 07:45 AM						
07:45 AM	436	30	466	550	550	1016
08:00 AM	487	23	510	**553**	**553**	**1063**
08:15 AM	**490**	**42**	**532**	506	506	1038
08:30 AM	489	38	527	528	528	1055
Total Volume	1902	133	2035	2137	2137	4172
% App. Total	93.5	6.5		100		
PHF	.970	.792	.956	.966	.966	.981
Cars	1883	131	2014	2116	2116	4130
% Cars	99.0	98.5	99.0	99.0	99.0	99.0
Trucks	19	2	21	21	21	42
% Trucks	1.0	1.5	1.0	1.0	1.0	1.0



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
07:00 AM	264	41	525	830
07:15 AM	299	62	414	775
07:30 AM	410	52	476	938
07:45 AM	432	29	545	1006
Total	1405	184	1960	3549
08:00 AM	484	23	549	1056
08:15 AM	487	42	499	1028
08:30 AM	480	37	523	1040
08:45 AM	427	37	489	953
Total	1878	139	2060	4077
Grand Total	3283	323	4020	7626
Apprch %	91	9	100	
Total %	43.1	4.2	52.7	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
07:00 AM	9	0	8	17
07:15 AM	10	0	5	15
07:30 AM	6	0	8	14
07:45 AM	4	1	5	10
Total	29	1	26	56
08:00 AM	3	0	4	7
08:15 AM	3	0	7	10
08:30 AM	9	1	5	15
08:45 AM	9	0	6	15
Total	24	1	22	47
Grand Total	53	2	48	103
Apprch %	96.4	3.6	100	
Total %	51.5	1.9	46.6	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Bikes Peds

	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
08:00 AM	0	0	1	0	0	1	1
08:15 AM	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0
Total	0	0	1	0	0	1	1
Grand Total	0	0	1	0	0	1	1
Apprch %	0		100				
Total %	0		100		0	100	

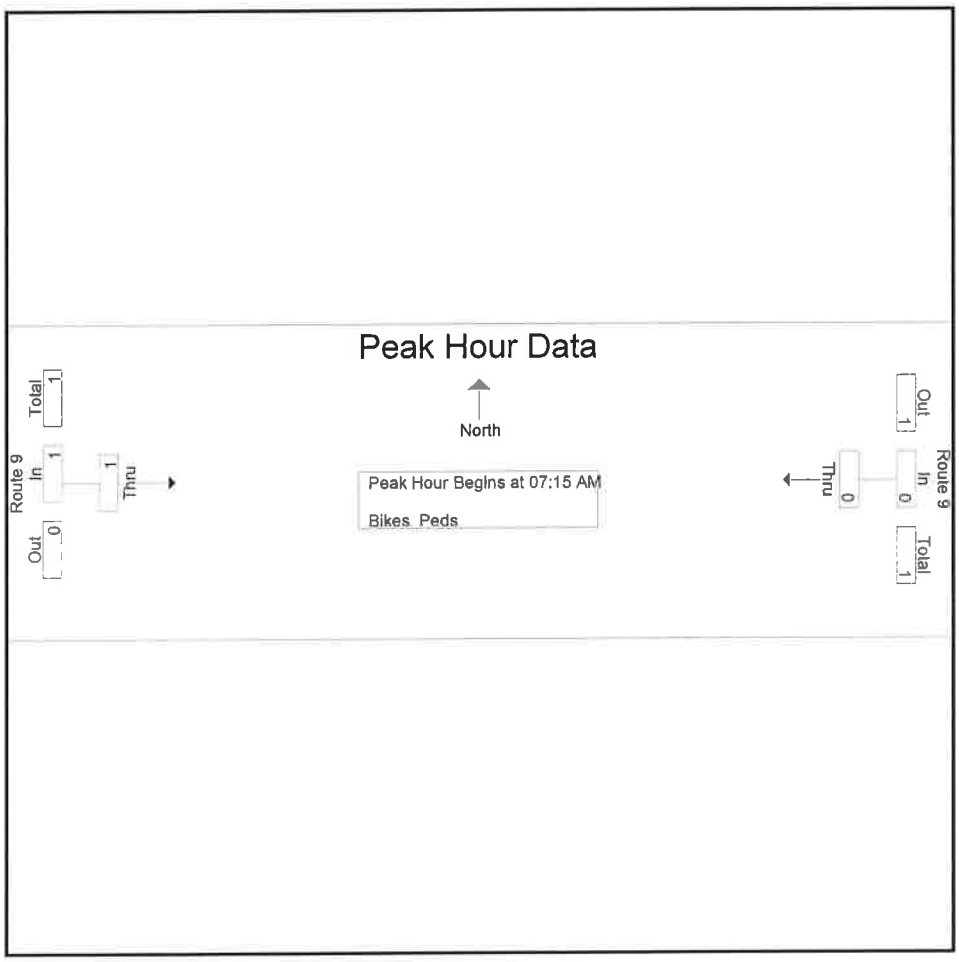
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:15 AM					
07:15 AM	0	0	0	0	0
07:30 AM	0	0	0	0	0
07:45 AM	0	0	0	0	0
08:00 AM	0	0	1	1	1
Total Volume	0	0	1	1	1
% App. Total	0		100		
PHF	.000	.000	.250	.250	.250



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
04:00 PM	482	32	425	939
04:15 PM	513	37	529	1079
04:30 PM	543	48	514	1105
04:45 PM	557	53	485	1095
Total	2095	170	1953	4218
05:00 PM	545	71	467	1083
05:15 PM	505	69	497	1071
05:30 PM	528	62	529	1119
05:45 PM	535	70	549	1154
Total	2113	272	2042	4427
Grand Total	4208	442	3995	8645
Apprch %	90.5	9.5	100	
Total %	48.7	5.1	46.2	
Cars	4180	441	3974	8595
% Cars	99.3	99.8	99.5	99.4
Trucks	28	1	21	50
% Trucks	0.7	0.2	0.5	0.6

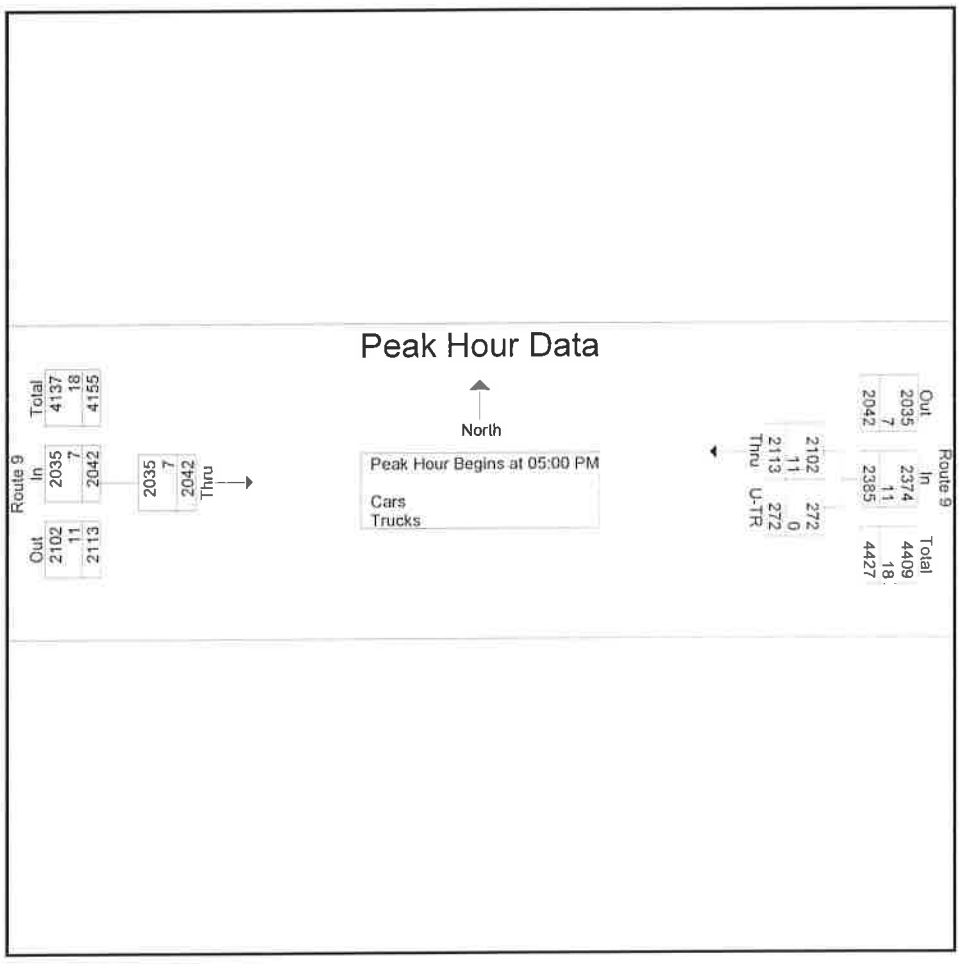
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 2

	Route 9 From East			Route 9 From West		
Start Time	Thru	U-TR	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 05:00 PM						
05:00 PM	**545**	**71**	**616**	467	467	1083
05:15 PM	505	69	574	497	497	1071
05:30 PM	528	62	590	529	529	1119
05:45 PM	535	70	605	**549**	**549**	**1154**
Total Volume	2113	272	2385	2042	2042	4427
% App. Total	88.6	11.4		100		
PHF	.969	.958	.968	.930	.930	.959
Cars	2102	272	2374	2035	2035	4409
% Cars	99.5	100	99.5	99.7	99.7	99.6
Trucks	11	0	11	7	7	18
% Trucks	0.5	0	0.5	0.3	0.3	0.4



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
04:00 PM	479	32	419	930
04:15 PM	507	37	527	1071
04:30 PM	538	47	510	1095
04:45 PM	554	53	483	1090
Total	2078	169	1939	4186
05:00 PM	540	71	466	1077
05:15 PM	502	69	493	1064
05:30 PM	525	62	529	1116
05:45 PM	535	70	547	1152
Total	2102	272	2035	4409
Grand Total	4180	441	3974	8595
Apprch %	90.5	9.5	100	
Total %	48.6	5.1	46.2	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Route 9 From East		Route 9 From West	
Start Time	Thru	U-TR	Thru	Int. Total
04:00 PM	3	0	6	9
04:15 PM	6	0	2	8
04:30 PM	5	1	4	10
04:45 PM	3	0	2	5
Total	17	1	14	32
05:00 PM	5	0	1	6
05:15 PM	3	0	4	7
05:30 PM	3	0	0	3
05:45 PM	0	0	2	2
Total	11	0	7	18
Grand Total	28	1	21	50
Apprch %	96.6	3.4	100	
Total %	56	2	42	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 1

Groups Printed- Bikes Peds

	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	1	0	0	1	1
05:15 PM	1	0	0	0	0	1	1
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	1	0	1	0	0	2	2
Grand Total	1	0	1	0	0	2	2
Apprch %	100		100				
Total %	50		50		0	100	

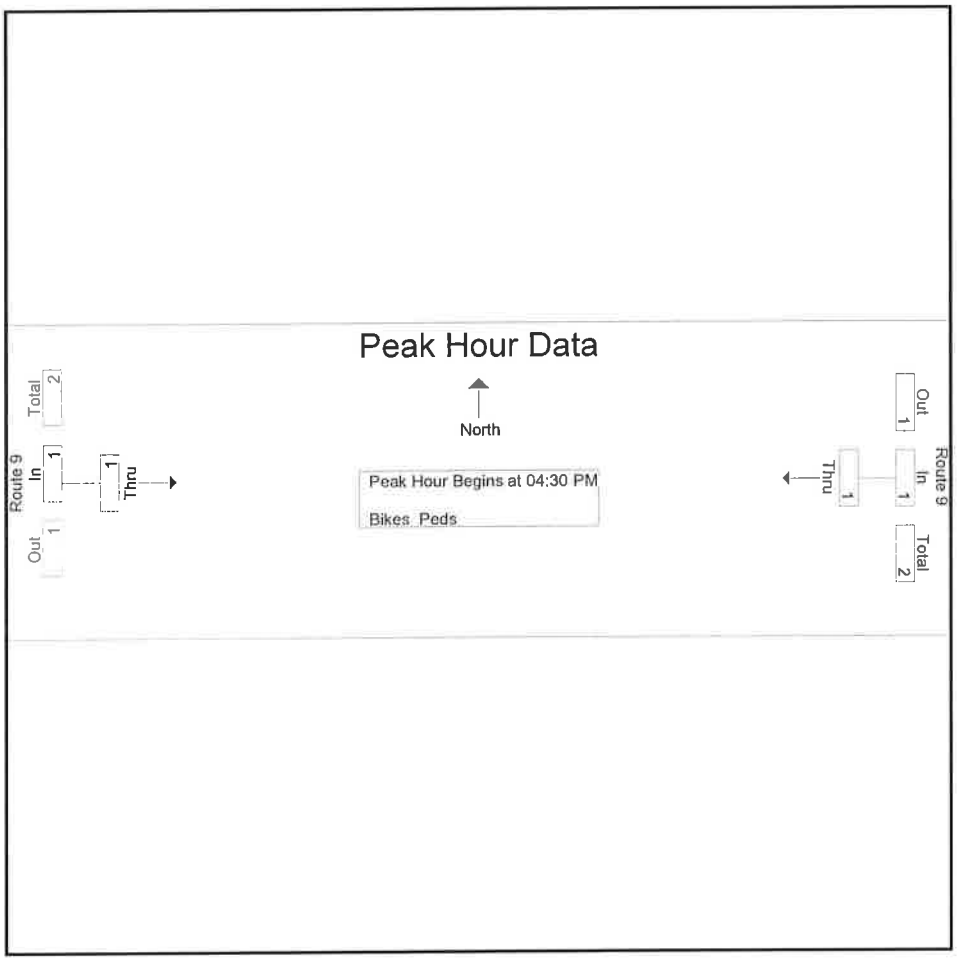
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street : at WB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180002
Site Code : 77180002
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:30 PM					
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
05:00 PM	0	0	**1**	**1**	**1**
05:15 PM	**1**	**1**	0	0	1
Total Volume	1	1	1	1	2
% App. Total	100		100		
PHF	.250	.250	.250	.250	.500



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

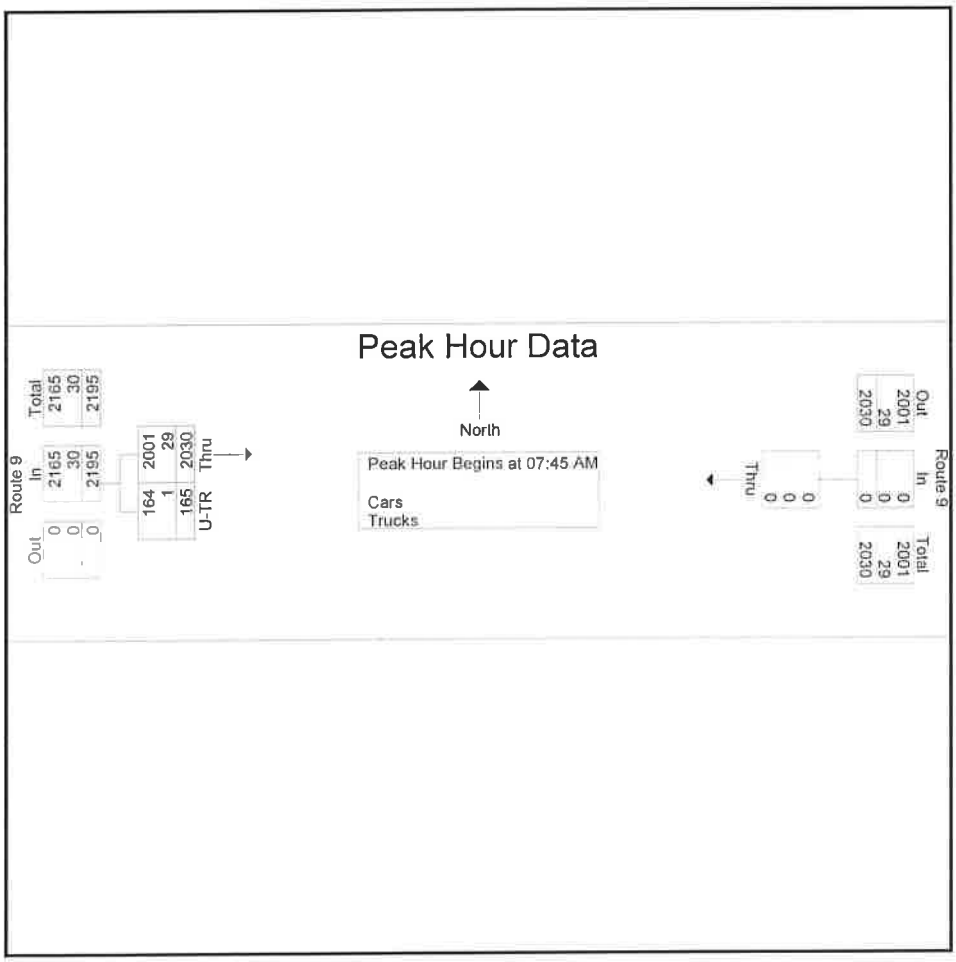
	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
07:00 AM	0	523	14	537
07:15 AM	0	416	23	439
07:30 AM	0	458	52	510
07:45 AM	0	520	34	554
Total	0	1917	123	2040
08:00 AM	0	521	42	563
08:15 AM	0	474	47	521
08:30 AM	0	515	42	557
08:45 AM	0	470	35	505
Total	0	1980	166	2146
Grand Total	0	3897	289	4186
Apprch %	0	93.1	6.9	
Total %	0	93.1	6.9	
Cars	0	3826	287	4113
% Cars	0	98.2	99.3	98.3
Trucks	0	71	2	73
% Trucks	0	1.8	0.7	1.7

Accurate Counts
978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West			
Start Time	Thru	App. Total	Thru	U-TR	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 07:45 AM						
07:45 AM	0	0	520	34	554	554
08:00 AM	0	0	**521**	42	**563**	**563**
08:15 AM	0	0	474	**47**	521	521
08:30 AM	0	0	515	42	557	557
Total Volume	0	0	2030	165	2195	2195
% App. Total	0		92.5	7.5		
PHF	.000	.000	.974	.878	.975	.975
Cars	0	0	2001	164	2165	2165
% Cars	0	0	98.6	99.4	98.6	98.6
Trucks	0	0	29	1	30	30
% Trucks	0	0	1.4	0.6	1.4	1.4



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
07:00 AM	0	506	14	520
07:15 AM	0	410	23	433
07:30 AM	0	449	52	501
07:45 AM	0	516	34	550
Total	0	1881	123	2004
08:00 AM	0	512	42	554
08:15 AM	0	465	46	511
08:30 AM	0	508	42	550
08:45 AM	0	460	34	494
Total	0	1945	164	2109
Grand Total	0	3826	287	4113
Apprch %	0	93	7	
Total %	0	93	7	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
07:00 AM	0	17	0	17
07:15 AM	0	6	0	6
07:30 AM	0	9	0	9
07:45 AM	0	4	0	4
Total	0	36	0	36
08:00 AM	0	9	0	9
08:15 AM	0	9	1	10
08:30 AM	0	7	0	7
08:45 AM	0	10	1	11
Total	0	35	2	37
Grand Total	0	71	2	73
Apprch %	0	97.3	2.7	
Total %	0	97.3	2.7	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Bikes Peds

	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0		0				
Total %					0	0	

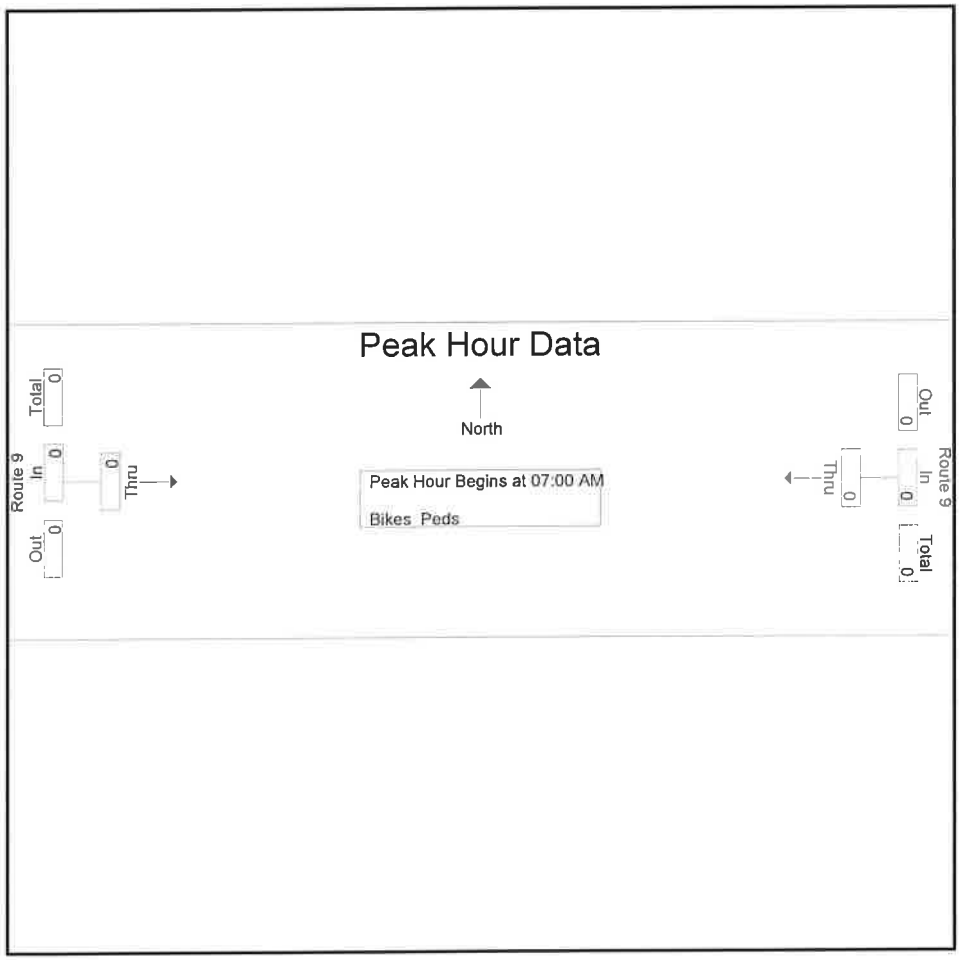
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:00 AM					
07:00 AM	0	0	0	0	0
07:15 AM	0	0	0	0	0
07:30 AM	0	0	0	0	0
07:45 AM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
04:00 PM	0	398	44	442
04:15 PM	0	469	36	505
04:30 PM	0	491	52	543
04:45 PM	0	437	43	480
Total	0	1795	175	1970
05:00 PM	0	445	32	477
05:15 PM	0	482	39	521
05:30 PM	0	494	23	517
05:45 PM	0	526	27	553
Total	0	1947	121	2068
Grand Total	0	3742	296	4038
Apprch %	0	92.7	7.3	
Total %	0	92.7	7.3	
Cars	0	3714	296	4010
% Cars	0	99.3	100	99.3
Trucks	0	28	0	28
% Trucks	0	0.7	0	0.7

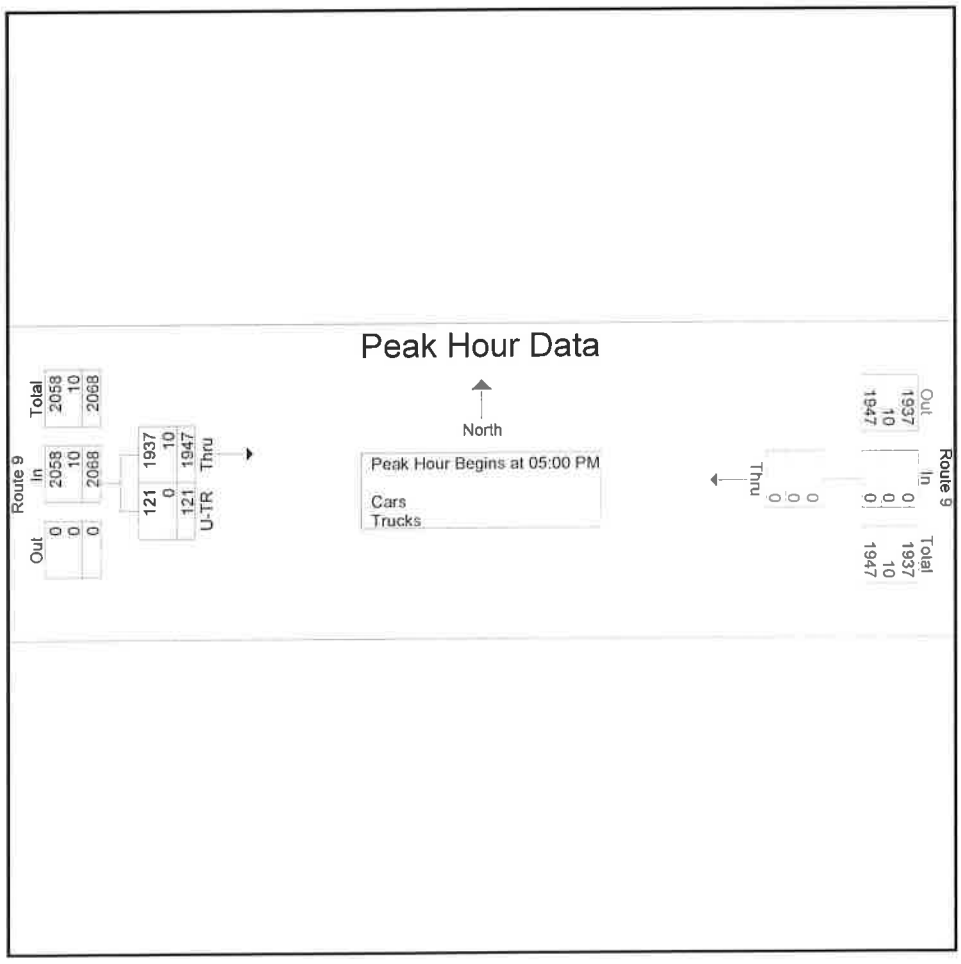
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West			
Start Time	Thru	App. Total	Thru	U-TR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 05:00 PM						
05:00 PM	0	0	445	32	477	477
05:15 PM	0	0	482	39	521	521
05:30 PM	0	0	494	23	517	517
05:45 PM	0	0	526	27	553	553
Total Volume	0	0	1947	121	2068	2068
% App. Total	0		94.1	5.9		
PHF	.000	.000	.925	.776	.935	.935
Cars	0	0	1937	121	2058	2058
% Cars	0	0	99.5	100	99.5	99.5
Trucks	0	0	10	0	10	10
% Trucks	0	0	0.5	0	0.5	0.5



Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Cars

	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
04:00 PM	0	390	44	434
04:15 PM	0	466	36	502
04:30 PM	0	487	52	539
04:45 PM	0	434	43	477
Total	0	1777	175	1952
05:00 PM	0	444	32	476
05:15 PM	0	479	39	518
05:30 PM	0	491	23	514
05:45 PM	0	523	27	550
Total	0	1937	121	2058
Grand Total	0	3714	296	4010
Apprch %	0	92.6	7.4	
Total %	0	92.6	7.4	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Trucks

	Route 9 From East	Route 9 From West		
Start Time	Thru	Thru	U-TR	Int. Total
04:00 PM	0	8	0	8
04:15 PM	0	3	0	3
04:30 PM	0	4	0	4
04:45 PM	0	3	0	3
Total	0	18	0	18
05:00 PM	0	1	0	1
05:15 PM	0	3	0	3
05:30 PM	0	3	0	3
05:45 PM	0	3	0	3
Total	0	10	0	10
Grand Total	0	28	0	28
Apprch %	0	100	0	
Total %	0	100	0	

Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 1

Groups Printed- Bikes Peds

	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0		0				
Total %					0	0	

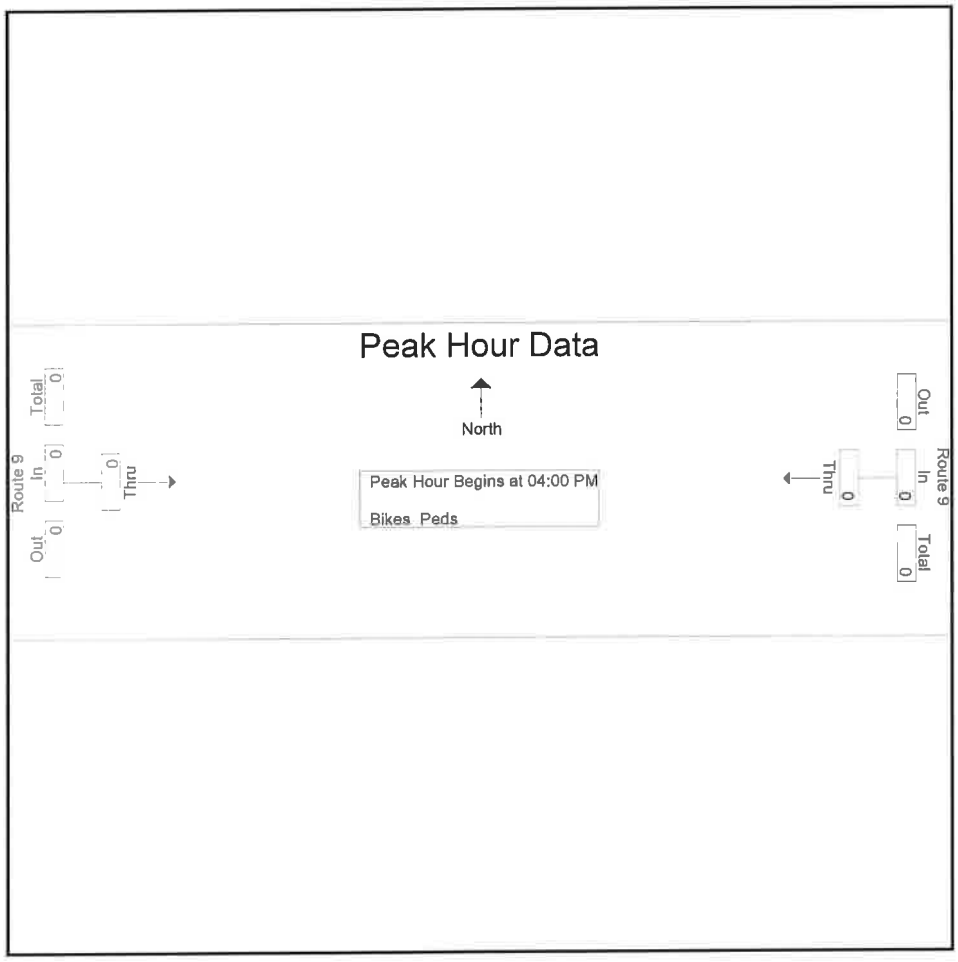
Accurate Counts

978-664-2565

N/S Street : Route 9
E/W Street: at EB U-TR
City/State : Wellesley, MA
Weather : Clear

File Name : 77180003
Site Code : 77180003
Start Date : 9/12/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:00 PM					
04:00 PM	0	0	0	0	0
04:15 PM	0	0	0	0	0
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
07:00 AM	315	0	315
07:15 AM	378	0	378
07:30 AM	452	0	452
07:45 AM	466	0	466
Total	1611	0	1611
08:00 AM	471	0	471
08:15 AM	406	0	406
08:30 AM	448	0	448
08:45 AM	441	0	441
Total	1766	0	1766
Grand Total	3377	0	3377
Apprch %	100	0	
Total %	100	0	
Cars	3333	0	3333
% Cars	98.7	0	98.7
Trucks	44	0	44
% Trucks	1.3	0	1.3

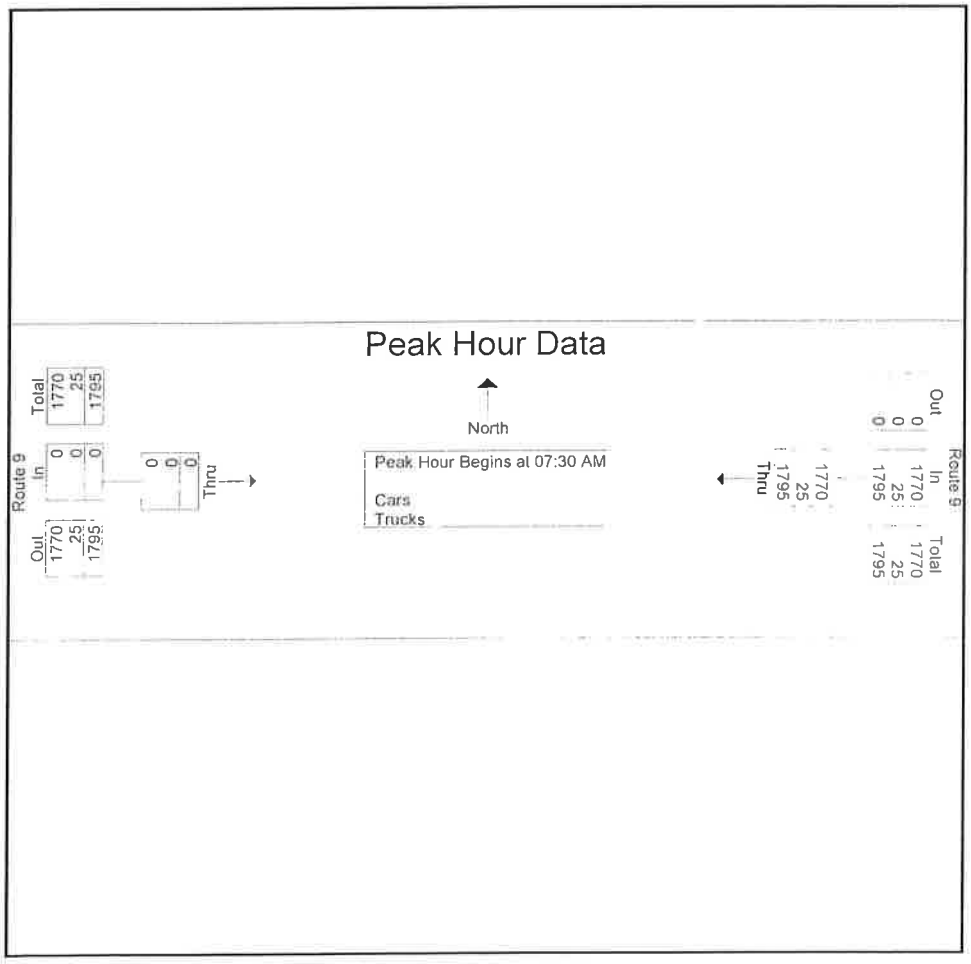
Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:30 AM					
07:30 AM	452	452	0	0	452
07:45 AM	466	466	0	0	466
08:00 AM	**471**	**471**	0	0	**471**
08:15 AM	406	406	0	0	406
Total Volume	1795	1795	0	0	1795
% App. Total	100		0		
PHF	.953	.953	.000	.000	.953
Cars	1770	1770	0	0	1770
% Cars	98.6	98.6	0	0	98.6
Trucks	25	25	0	0	25
% Trucks	1.4	1.4	0	0	1.4



Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 4

Groups Printed- Cars

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
07:00 AM	311	0	311
07:15 AM	373	0	373
07:30 AM	446	0	446
07:45 AM	458	0	458
Total	1588	0	1588
08:00 AM	465	0	465
08:15 AM	401	0	401
08:30 AM	441	0	441
08:45 AM	438	0	438
Total	1745	0	1745
Grand Total	3333	0	3333
Apprch %	100	0	
Total %	100	0	

Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 7

Groups Printed- Trucks

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
07:00 AM	4	0	4
07:15 AM	5	0	5
07:30 AM	6	0	6
07:45 AM	8	0	8
Total	23	0	23
08:00 AM	6	0	6
08:15 AM	5	0	5
08:30 AM	7	0	7
08:45 AM	3	0	3
Total	21	0	21
Grand Total	44	0	44
Apprch %	100	0	
Total %	100	0	

Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 10

Groups Printed- Bikes Peds

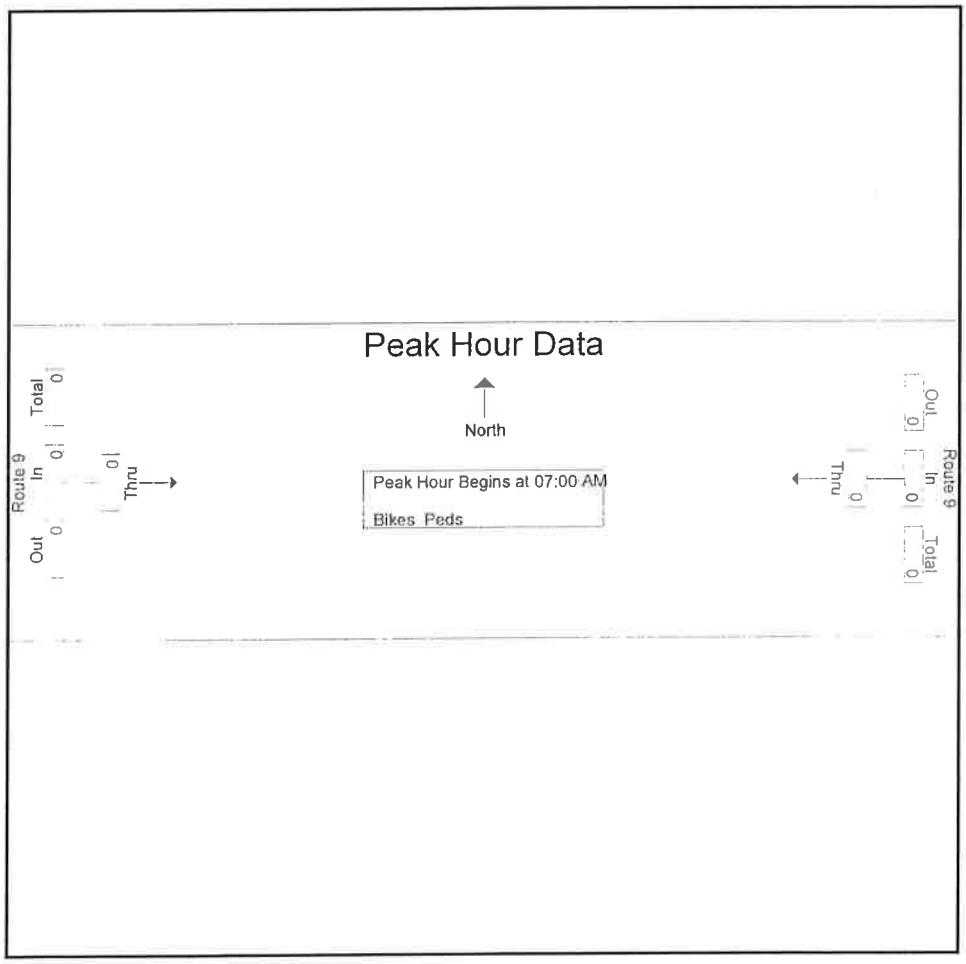
	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0		0				
Total %					0	0	

Accurate Counts
978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 11

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:00 AM					
07:00 AM	0	0	0	0	0
07:15 AM	0	0	0	0	0
07:30 AM	0	0	0	0	0
07:45 AM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 1

Groups Printed- Cars - Trucks

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
04:00 PM	527	0	527
04:15 PM	554	0	554
04:30 PM	576	0	576
04:45 PM	542	0	542
Total	2199	0	2199
05:00 PM	569	0	569
05:15 PM	587	0	587
05:30 PM	549	0	549
05:45 PM	513	0	513
Total	2218	0	2218
Grand Total	4417	0	4417
Apprch %	100	0	
Total %	100	0	
Cars	4399	0	4399
% Cars	99.6	0	99.6
Trucks	18	0	18
% Trucks	0.4	0	0.4

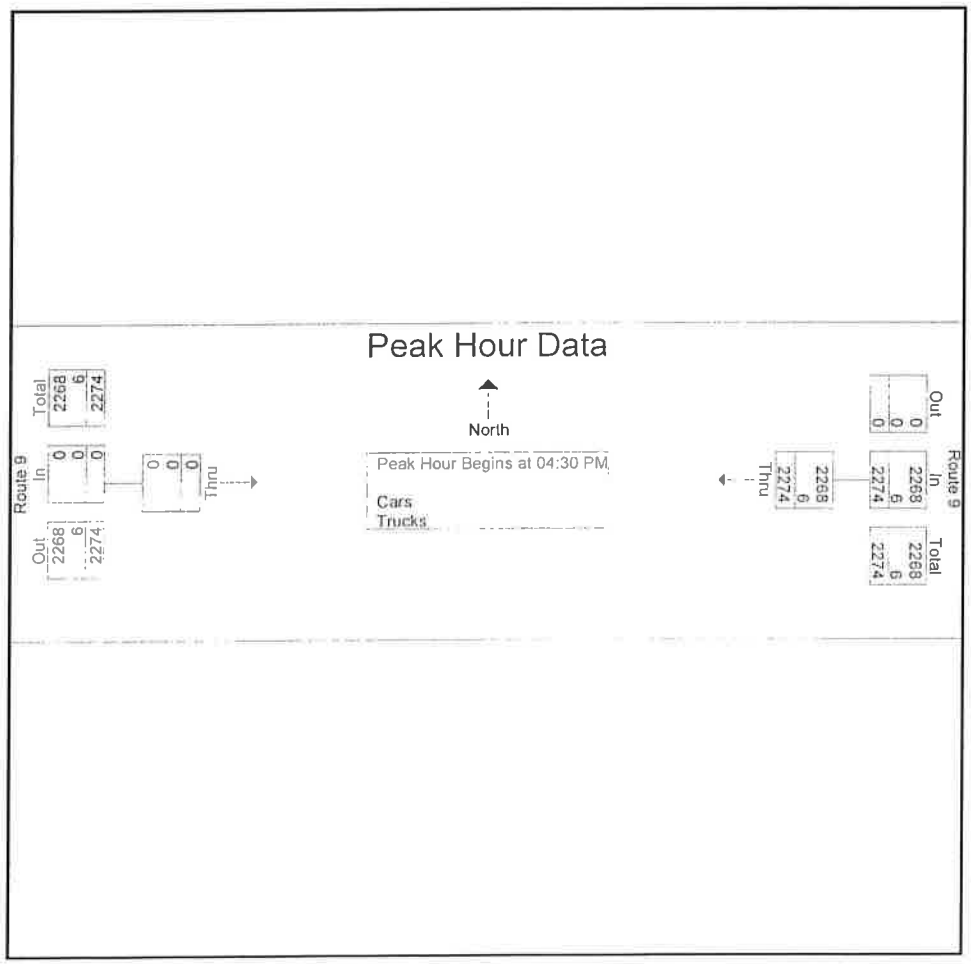
Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 2

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:30 PM					
04:30 PM	576	576	0	0	576
04:45 PM	542	542	0	0	542
05:00 PM	569	569	0	0	569
05:15 PM	**587**	**587**	0	0	**587**
Total Volume	2274	2274	0	0	2274
% App. Total	100		0		
PHF	.968	.968	.000	.000	.968
Cars	2268	2268	0	0	2268
% Cars	99.7	99.7	0	0	99.7
Trucks	6	6	0	0	6
% Trucks	0.3	0.3	0	0	0.3



Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 4

Groups Printed- Cars

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
04:00 PM	521	0	521
04:15 PM	552	0	552
04:30 PM	574	0	574
04:45 PM	540	0	540
Total	2187	0	2187
05:00 PM	567	0	567
05:15 PM	587	0	587
05:30 PM	545	0	545
05:45 PM	513	0	513
Total	2212	0	2212
Grand Total	4399	0	4399
Apprch %	100	0	
Total %	100	0	

Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 7

Groups Printed- Trucks

	Route 9 From East	Route 9 From West	
Start Time	Thru	Thru	Int. Total
04:00 PM	6	0	6
04:15 PM	2	0	2
04:30 PM	2	0	2
04:45 PM	2	0	2
Total	12	0	12
05:00 PM	2	0	2
05:15 PM	0	0	0
05:30 PM	4	0	4
05:45 PM	0	0	0
Total	6	0	6
Grand Total	18	0	18
Apprch %	100	0	
Total %	100	0	

Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 10

Groups Printed- Bikes Peds

	Route 9 From East		Route 9 From West				
Start Time	Thru	Peds	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0
Apprch %	0		0				
Total %					0	0	

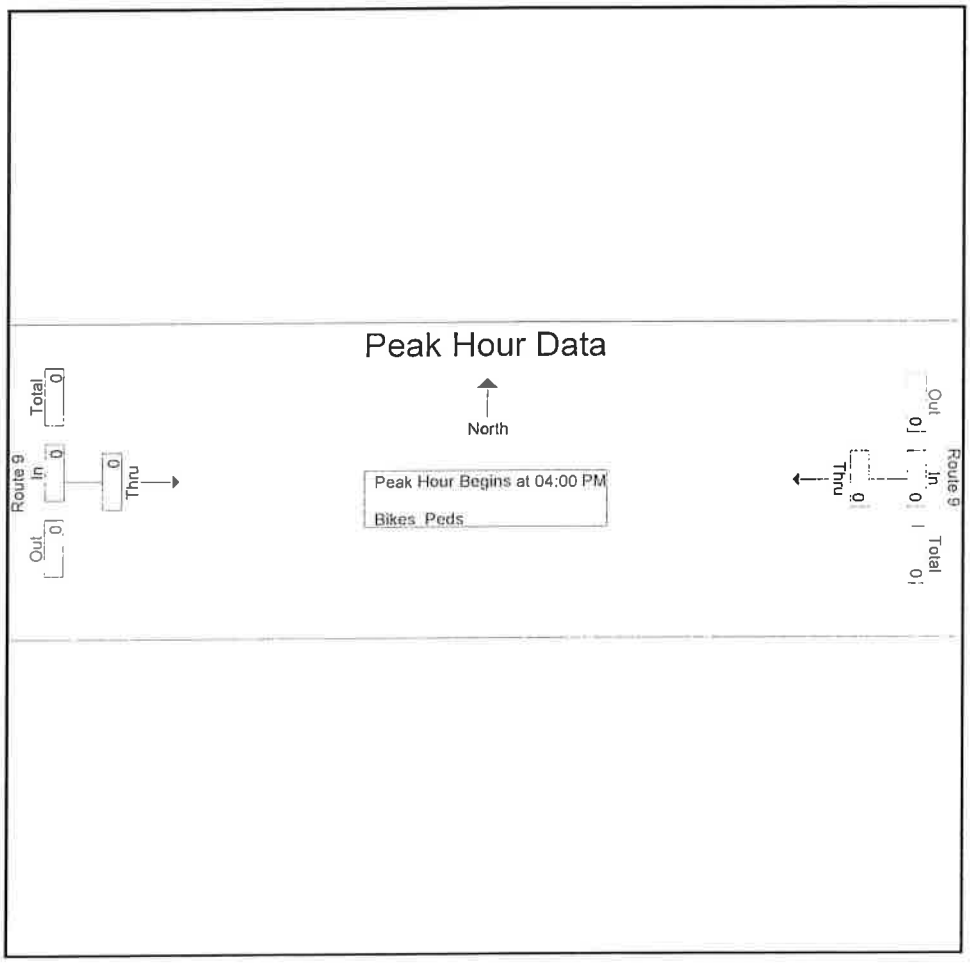
Accurate Counts

978-664-2565

N/S Street : Route 9 WB
E/W Street : at EB U-TR
City/State : Wellesley, MA
Weather : Cloudy

File Name : 77180WB3
Site Code : 77180003
Start Date : 9/19/2017
Page No : 11

	Route 9 From East		Route 9 From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:00 PM					
04:00 PM	0	0	0	0	0
04:15 PM	0	0	0	0	0
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000



SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department

32: Monthly Hourly Volume for September 2016

Location ID:	**32**	**Seasonal Factor Group:**	**U1-Boston**
County:	**MIDDLESEX**	**Daily Factor Group:**	
Funcationl Class	**1**	**Axle Factor Group:**	**U1-Boston**
Location:	**YANKEE DIVISION HIGHWAY**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL
1	933	532	462	555	1154	5204	11793	14049	13315	11789	10543	10545	10632	11275	11694	10549	10992	11516	11417	9165	6389	4529	3335	2053	184420
2	1049	717	490	568	1186	4805	12000	12859	11991	10852	11164	10785	12412	12011	10968	11024	10957	10332	9130	8071	6106	4609	3666	2516	180268
3	1399	887	568	495	653	1374	3228	5314	6828	8976	10585	11388	11038	10460	9989	9650	9458	9116	8093	6686	5870	5061	4264	2748	144128
4	1519	813	587	422	344	650	1703	2791	4181	6390	8706	10158	10609	10545	9880	9758	9758	9052	8725	7636	6530	5253	3731	2548	132289
5	1304	641	412	324	417	794	1737	2532	3576	5319	7140	8310	9003	9125	9629	9605	9011	8252	7618	6377	5133	3554	2351	1276	113440
6	680	436	314	442	1142	5003	11121	11753	11786	11613	11219	9887	10080	10065	11858	12113	12584	13663	12214	7647	5041	3854	2536	1539	178590
7	829	531	453	490	1248	5290	11002	13075	12271	12600	11576	10469	10381	10630	12377	11648	12096	13143	12340	8605	5444	4110	2864	1663	185135
8	812	512	423	530	1230	5869	13925	12014	12126	13184	11054	10187	10517	10704	12504	11621	12033	11510	12514	8989	5803	4438	3106	1741	187346
9	1095	628	455	546	1174	5059	11574	14003	13424	12007	10817	10620	11352	11601	11354	10724	11291	12621	11635	9002	5952	4538	3875	3067	188414
10	1541	836	863	1313	2292	3355	4191	5772	8267	9972	11179	11943	12358	11962	12108	12139	11778	11439	9757	7476	6001	5262	4993	3509	170306
11	1740	985	614	453	432	866	5635	4971	5019	6852	8947	10912	11931	11500	11252	11309	11167	10506	9332	7719	6038	3743	2522	1470	145915
12	960	482	1247	2442	2383	3396	6323	9935	12532	12205	10650	9509	9544	9929	11931	11455	11682	13537	12419	8496	5454	4085	2665	1485	174746
13	786	506	415	509	1303	5493	12170	13851	12624	12409	11363	10057	9784	10226	12072	10300	10493	12556	12639	8813	5950	4301	3027	1904	183551
14	876	501	449	537	1212	5469	12322	13953	12546	11605	11609	10173	10075	11073	11327	9729	10153	10780	10567	9195	6038	4336	3188	2202	179915
15	1683	1582	651	580	1202	5547	12122	13904	12824	12698	11681	10775	10459	11118	12324	10565	11223	13105	12420	9135	6412	5123	3441	2262	192836
16	1201	622	526	558	1138	5196	12040	14584	13588	11461	10773	11074	11403	12495	11710	10749	11715	12226	11839	9085	6010	4849	4133	3011	191986
17	1671	858	640	514	639	1679	3524	5783	7983	10025	11215	12458	12595	12344	12413	11762	12024	11367	10574	8172	6586	5421	4660	3504	168411
18	1986	1022	646	458	429	817	1825	3745	6405	8917	10774	12044	12568	11912	11055	11101	11676	11553	10682	8299	5783	3916	2542	1619	151774
19	1079	573	360	464	1222	5427	12002	13191	11216	11320	10827	9390	9298	9468	11059	10740	12197	13513	11602	7351	4804	3842	3019	2662	176626
20	2752	1769	1608	861	1991	3663	6417	7470	8572	12469	10690	9841	9951	10224	12212	11533	11913	12479	12318	8913	5764	4475	2760	2686	173331
21																									
22	909	569	470	566	1193	5539	12037	14105	12409	11675	11648	10459	10395	11248	11704	10011	9593	10224	11540	9628	6325	4523	3126	2704	182600
23	2564	1705	626	595	1157	5105	11508	14389	13610	11544	10833	10925	11528	12137	12639	10774	11316	12954	11402	8635	5918	4526	3637	2580	192607
24	1453	808	596	483	645	1640	3832	6745	8064	10054	11698	12817	12306	12442	12572	12146	11736	11517	10377	8171	6469	5500	4963	3318	170352
25	1982	1034	654	488	442	873	1864	3658	5814	8053	10226	11775	12566	12613	12874	11678	12586	11545	10733	8514	6429	4500	2636	1646	155183
26	966	495	431	532	1248	5560	12223	13877	12283	11817	10157	9628	9574	9822	12217	11577	12670	13785	12313	7866	5297	3447	2264	1524	181573
27	755	495	378	500	1200	5083	10987	12318	11842	12039	10569	9856	8874	10405	11212	10458	12091	13501	12329	8289	5636	4362	2730	1542	177451
28	820	509	391	512	1206	5591	12264	13960	12656	12469	10686	10210	10161	10309	11647	10145	11008	12259	12404	8721	5728	4647	2873	2490	183666
29	2766	2143	1896	853	2414	3349	6222	7973	13113	12757	11114	10295	10430	10894	12412	11775	12582	12959	12304	8751	5882	4981	3428	2083	183376
30	1156	698	516	673	2573	4970	7310	7936	8969	11295	10903	10756	11237	12064	11836	10762	12208	12355	11296	8430	6040	4822	4102	2959	175866

Average = 172624.2

Yearly Average = 165476

172624/165476 = 1.04

PUBLIC TRANSPORTATION SCHEDULES

FRAMINGHAM/WORCESTER LINE effective May 21, 2018

Massachusetts Bay Transportation Authority

Keolis

Monday to Friday

Inbound to Boston

		AM												PM														AM
TRAIN #		500	502	582	504	584	506	586	508	588	510	552	590	512	514	516	518	520	592	522	594	524	596	526	528	530	532	534	536
Bikes Allowed																													
8	Worcester	4:45	5:15		5:50		6:22		6:57		7:24	8:00		8:50	10:35	12:05	1:55	3:50		5:20		6:05		7:20	8:30	9:00	9:35	11:20	12:20
8	Grafton	4:58	5:28		6:03		6:35		7:10		7:37			9:03	10:48	12:18	2:08	4:03		5:33		6:18		7:33	8:43	9:13	9:48	f 11:33	f 12:33
7	Westborough	5:02	5:32		6:07		6:39		7:14		7:41			9:07	10:52	12:22	2:12	4:07		5:37		6:22		7:37	8:47	9:17	9:52	f 11:37	f 12:37
6	Southborough	5:11	5:41		6:17		6:48		7:23		7:50			9:16	11:01	12:31	2:21	4:16		5:46		6:31		7:46	8:56	9:26	10:01	f 11:46	f 12:46
6	Ashland	5:15	5:45		6:22		6:52		7:27		7:54		8:34	9:20	11:05	12:35	2:25	4:20		5:50		6:35		7:50	9:00	9:30	10:05	f 11:50	f 12:50
5	Framingham	5:26	5:55	6:04	6:31	6:39	7:02	7:15	7:37	7:49	8:04		8:45	9:31	11:16	12:46	2:36	4:31	5:40	6:01	6:20	6:46	7:05	8:01	9:11	9:41	10:16	f 12:01	f 1:01
4	West Natick	5:31	6:01	6:09	6:36	6:44	7:08	7:20	7:43	7:54	8:10		8:50	9:36	11:21	12:51	2:41	4:36	5:45	6:06	6:25	6:51	7:10	8:06	9:16	9:46	10:21	f 12:06	f 1:06
4	Natick Center	5:36	6:05	6:14		6:49		7:25		7:59	8:15		8:55	9:41	11:26	12:56	2:46	4:41	5:50		6:30		7:15	8:11	9:21	9:51	10:26	f 12:11	f 1:11
3	Wellesley Square	5:41		6:19		6:54		7:30		8:04	8:20		9:00	9:46	11:30	1:00	2:50	4:45	5:54		6:34		7:19	8:15	9:25	9:55	10:30	f 12:15	f 1:15
3	Wellesley Hills	5:45		6:23		6:58		7:34		8:08	8:24		9:04	9:50	11:34	1:04	2:54	4:49	5:58		6:38		7:23	8:19	9:29	9:59	10:34	f 12:19	f 1:19
3	Wellesley Farms	5:48		6:26		7:01		7:37		8:11	8:27		9:07	9:53	11:37	1:07	2:57	4:52	6:01		6:41		7:26	8:22	9:32	10:02	10:37	f 12:22	f 1:22
2	Auburndale	5:53		6:31		7:06		7:42		8:16			9:12	f 9:58	f 11:42	f 1:12							f 7:31					f 12:27	f 1:27
2	West Newton	5:56		6:34		7:09		7:45		8:19			9:15	f 10:01	f 11:45	f 1:15							f 7:34					f 12:30	f 1:30
1	Newtonville	5:59		6:37		7:12		7:48		8:22			9:18	f 10:04	f 11:48	f 1:18							f 7:37					f 12:33	f 1:33
1A	Boston Landing	L 6:04		L 6:42		L 7:17		L 7:54		L 8:28	L 8:39		L 9:23	L 10:09			L 3:07	L 5:04	L 6:13	L 6:24	L 6:53	L 7:09	L 7:42	L 8:32	L 9:42	L 10:12	L 10:47	L 12:38	
1A	Yawkey	L 6:09	L 6:24	L 6:47	L 6:59	L 7:22	L 7:34	L 7:59	L 8:09	L 8:33	L 8:44	L 8:55	L 9:28	L 10:14	L 11:56	L 1:26	L 3:12	L 5:09	L 6:18	L 6:29	L 6:58	L 7:14	L 7:47	L 8:37	L 9:47	L 10:17	L 10:52	L 12:43	L 1:41
1A	Back Bay	L 6:14	L 6:29	L 6:52	L 7:04	L 7:27	L 7:39	L 8:04	L 8:14	L 8:38	L 8:49	L 9:00	L 9:33	L 10:19	L 12:01	L 1:31	L 3:17	L 5:14	L 6:23	L 6:34	L 7:03	L 7:19	L 7:52	L 8:42	L 9:52	L 10:22	L 10:57	L 12:48	L 1:46
1A	South Station	6:20	6:35	6:58	7:10	7:33	7:45	8:10	8:20	8:44	8:55	9:06	9:39	10:24	12:06	1:36	3:22	5:19	6:28	6:39	7:08	7:24	7:57	8:47	9:57	10:27	11:02	12:53	1:51

Trains in purple box indicate peak period trains.

Saturday & Sunday

Inbound to Boston

		AM								PM									
SATURDAY TRAIN #		1500	1502	1504	1506	1508	1510	1512	1514	1516									
ZONE STATION SUNDAY TRAIN #		2500	2502	2504	2506	2508	2510	2512	2514	2516									
Bikes Allowed																			
8	Worcester	7:00	8:50	10:50	12:50	2:30	4:30	6:30	8:30	11:00									
8	Grafton	7:13	9:03	11:03	1:03	2:43	4:43	6:43	8:43	f 11:13									
7	Westborough	7:17	9:07	11:07	1:07	2:47	4:47	6:47	8:47	f 11:17									
6	Southborough	7:25	9:15	11:15	1:15	2:55	4:55	6:55	8:55	f 11:25									
6	Ashland	7:30	9:20	11:20	1:20	3:00	5:00	7:00	9:00	f 11:30									
5	Framingham	7:40	9:30	11:30	1:30	3:10	5:10	7:10	9:10	f 11:40									
4	West Natick	7:44	9:34	11:34	1:34	3:14	5:14	7:14	9:14	f 11:44									
4	Natick Center	7:49	9:39	11:39	1:39	3:19	5:19	7:19	9:19	f 11:49									
3	Wellesley Square	7:54	9:44	11:44	1:44	3:24	5:24	7:24	9:24	f 11:54									
3	Wellesley Hills	7:57	9:47	11:47	1:47	3:27	5:27	7:27	9:27	f 11:57									
3	Wellesley Farms	8:00	9:50	11:50	1:50	3:30	5:30	7:30	9:30	f 12:00									
2	Auburndale	f 8:04	f 9:54	f 11:54	f 1:54	f 3:34	f 5:34	f 7:34	f 9:34	f 12:04									
2	West Newton	f 8:07	f 9:57	f 11:57	f 1:57	f 3:37	f 5:37	f 7:37	f 9:37	f 12:07									
1	Newtonville	f 8:10	f 10:00	f 12:00	f 2:00	f 3:40	f 5:40	f 7:40	f 9:40	f 12:10									
1A	Boston Landing	L 8:16	L 10:06	L 12:06	L 2:06	L 3:46	L 5:46	L 7:46	L 9:46	L 12:16									
1A	Yawkey	L 8:21	L 10:11	L 12:11	L 2:11	L 3:51	L 5:51	L 7:51	L 9:51	L 12:21									
1A	Back Bay	L 8:25	L 10:15	L 12:15	L 2:15	L 3:55	L 5:55	L 7:55	L 9:55	L 12:25									
1A	South Station	8:30	10:20	12:20	2:20	4:00	6:00	8:00	10:00	12:30									

Monday to Friday

Outbound from Boston

		AM											PM														
TRAIN #		501	581	583	503	505	587	507	589	509	511	513	515	517	519	591	521	593	523	595	525	527	551	529	531	533	535	537
Bikes Allowed																												
1A	South Station	4:50	4:57	5:30	5:55	6:10	6:48	7:20	7:30	8:50	10:15	11:55	2:00	3:30	4:20	4:30	5:00	5:10	5:40	5:50	6:15	6:45	7:35	7:45	8:35	9:35	10:30	11:30
1A	Back Bay	4:55	5:02	5:35	6:00	6:15	6:53	7:25	7:35	8:56	10:21	12:01	2:06	3:36	4:26	4:36	5:06	5:16	5:46	5:56	6:21	6:51	7:41	7:51	8:41	9:41	10:36	11:36
1A	Yawkey	5:00	5:07	5:40	6:05	6:20	6:58	7:30	7:40	9:01	10:26	12:06	2:11	3:41	4:31	4:41	5:11	5:21	5:51	6:01	6:26	6:56	7:46	7:56	8:46	9:46	10:41	11:41
1A	Boston Landing						7:03	7:35	7:45	9:06	f 10:31	f 12:11	f 2:16	3:46		4:46		5:26		6:06	6:31	7:01		8:01	f 8:51	f 9:51	f 10:46	f 11:46
1	Newtonville		f 5:16								f 10:36	f 12:16	f 2:21	3:51		4:51		5:31		6:11		7:06		f 8:06	f 8:56	f 9:56	f 10:51	f 11:51
2	West Newton		f 5:20								f 10:40	f 12:20	f 2:25	3:55		4:55		5:35		6:15		7:10		f 8:10	f 9:00	f 10:00	f 10:55	f 11:55
2	Auburndale		f 5:23								f 10:43	f 12:23	f 2:28	3:58		4:58		5:38		6:18		7:13		f 8:13	f 9:03	f 10:03	f 10:58	f 11:58
3	Wellesley Farms		5:26	5:53		6:33	7:12		7:54	9:15	10:46	12:26	2:31	4:02		5:01		5:42		6:22	6:43	7:16		8:16	9:06	10:06	11:01	12:01
3	Wellesley Hills		5:29	5:56		6:36	7:15		7:57	9:18	10:49	12:29	2:34	4:05		5:04		5:45		6:25	6:46	7:19		8:19	9:09	10:09	11:04	12:04
3	Wellesley Square		5:33	6:00		6:40	7:19		8:01	9:22	10:52	12:32	2:37	4:09		5:08		5:49		6:29	6:50	7:23		8:22	9:12	10:12	11:07	12:07
4	Natick Center		5:37	6:05		6:44	7:23		8:05	9:26	10:56	12:36	2:41	4:14	4:54	5:12		5:53		6:33	6:54	7:27		8:26	9:16	10:16	11:11	12:11
4	West Natick	5:21	5:42	6:10	6:24	6:49	7:28		8:10	9:30	11:01	12:41	2:46	4:19	5:00	5:17	5:35	5:59	6:15	6:38	6:59	7:32		8:31	9:21	10:21	11:16	12:16
5	Framingham	5:25	5:47	6:15	6:29	6:54	7:33	7:53	8:15	9:35	11:06	12:46	2:51	4:25	5:06	5:23	5:43	6:05	6:22	6:44	7:05	7:37		8:36	9:26	10:26	11:21	12:21
6	Ashland	5:31			6:35	7:00		7:59	8:21	9:41	11:12	12:52	2:57	4:32	5:12		5:50		6:29		7:11	7:43		8:42	9:32	10:32	11:27	12:27
6	Southborough	5:36			6:40	7:05		8:04		9:46	11:17	12:57	3:02	4:37	5:17		5:55		6:34		7:16	7:48		8:47	9:37	10:37	11:32	12:32
7	Westborough	5:44			6:49	7:14		8:13		9:55	11:26	1:06	3:11	4:46	5:26		6:05		6:43		7:25	7:57		8:56	9:46	10:46	11:41	12:41
8	Grafton	5:48			6:54	7:19		8:18		10:00	11:31	1:11	3:16	4:51	5:31		6:11		6:49		7:30	8:02		9:01	9:51	10:51	11:46	12:46
8	Worcester	6:01			7:07	7:32		8:31		10:13	11:45	1:24	3:30	5:04	5:45		6:25		7:03		7:44	8:15	8:45	9:15	10:05	11:05	12:00	1:00

Trains in purple box indicate peak period trains.

Saturday & Sunday

Outbound from Boston

		AM								PM									
SATURDAY TRAIN #		1501	1503	1505	1507	1509	1511	1513	1515	1517									
ZONE STATION SUNDAY TRAIN #		2501	2503	2505	2507	2509	2511	2513	2515	2517									
Bikes Allowed																			
1A	South Station	6:40	8:40	10:40	12:40	2:20	4:20	6:20	8:20	10:40									
1A	Back Bay	6:46	8:46	10:46	12:46	2:26	4:26	6:26	8:26	10:46									
1A	Yawkey	6:49	8:49	10:49	12:49	2:29	4:29	6:29	8:29	10:49									
1A	Boston Landing	f 6:54	f 8:54	f 10:54	f 12:54	f 2:34	f 4:34	f 6:34	f 8:34	f 10:54									
1	Newtonville	f 7:01	f 9:01	f 11:01	f 1:01	f 2:41	f 4:41	f 6:41	f 8:41	f 11:01									
2	West Newton	f 7:04	f 9:04	f 11:04	f 1:04	f 2:44	f 4:44	f 6:44	f 8:44	f 11:04									
2	Auburndale	f 7:07	f 9:07	f 11:07	f 1:07	f 2:47	f 4:47	f 6:47	f 8:47	f 11:07									
3	Wellesley Farms	7:11	9:11	11:11	1:11	2:51	4:51	6:51	8:51	11:11									
3	Wellesley Hills	7:14	9:14	11:14	1:14	2:54	4:54	6:54	8:54	11:14									
3	Wellesley Square	7:17	9:17	11:17	1:17	2:57	4:57	6:57	8:57	11:17									
4	Natick Center	7:22	9:22	11:22	1:22	3:02	5:02	7:02	9:02	11:22									
4	West Natick	7:26	9:26	11:26	1:26	3:06	5:06	7:06	9:06	11:26									
5	Framingham	7:31	9:31	11:31	1:31	3:11	5:11	7:11	9:11	11:31									
6	Ashland	7:37	9:37	11:37	1:37	3:17	5:17	7:17	9:17	11:37									
6	Southborough	7:41	9:41	11:41	1:41	3:21	5:21	7:21	9:21	11:41									
7	Westborough	7:49	9:49	11:49	1:49	3:29	5:29	7:29	9:29	11:49									
8	Grafton	7:55	9:55	11:55	1:55	3:35	5:35	7:35	9:35	11:55									
8	Worcester	8:10	10:10	12:10	2:10	3:50	5:50	7:50	9:50	12:10									

Keep in Mind:

This schedule will be effective from May 21, 2018 and will replace the schedule of November 20, 2017.

Times listed are departure times. To ensure you make your train, please be on the platform ready to board prior to departure time.

Presidents' Day and 4th of July operate on a **Saturday service schedule.**

New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, and Christmas Day operate on a **Sunday service schedule.**

For all other holiday schedules, please check MBTA.com or call 617-222-3200.

Times in purple with "f" indicate a flag stop: Passengers must tell the conductor that they wish to leave. Passengers waiting to board must be visible on the platform for the train to stop.

Times in blue with "L" indicate an early departure: The train may leave ahead of schedule at these stops.

Bikes: Bicycles are allowed on trains with the bicycle symbol shown below the train number.

High level platform and bridge plate available.
Visit **mbta.com/accessibility** for more information.

Wellesley Square

1 Grove St Wellesley, MA 02482-7714

For train information at Wellesley Square Station tune to 1640 AM

Parking

Parking Spaces: 224

Average Weekday Availability:

Parking Rate: $4.50

Accessible Spaces: 2

Bike Spaces: N/A

Managed By: Town of Wellesley
Website

Comments:
City of Wellesley is responsible for parking lot snow removal, maintenance and fee collection. Please contact MBTA Customer Service regarding station and platform snow removal, cleanliness and maintenance issues.

Commuter Rail Lines

Framingham/Worcester Line

Enlarge Map and Get Driving Directions

MBTA Services Nearby

Plan your trip

From Wellesley Square to:

(Address or intersection)

Preferences: Minimize Time

Using: All services

Trip must be accessible

Plan your trip

Service Alerts

Framingham/Worcester Line:
1 Current 3 Upcoming

Track Change: Normal boarding has resumed at Grafton and Westborough.

Click here for all service alerts

Fare Information

Travel anywhere on the MBTA system for the same price.
See all Fares & Passes information.

Transit Mode	Passes / Tickets
Rail	**$2.25 - $12.50** Zones 1A - 10 **$84.50 - $398.25** Monthly Pass, unlimited travel to and from your zone plus travel on all bus, subway and Inner Harbor Ferry. **50%** Seniors and Persons with Disabilities

Accessibility Key (Back to Top)

- Elevator
- Escalator
- Mini-high
- Mobile Lift

Massachusetts Bay Transportation Authority

Commuter Rail Fares and Passes

Commuter Rail fares are based on a "Zone" and "Interzone" system, with Zone 1A servicing core stations within the City of Boston and immediate area and Zones 1 through 10 servicing communities in and around Greater Boston. Each Commuter Rail station's zone is identified in the chart below.

Zone Fares

"Zone fares" are based on direct travel from any outer Commuter Rail station (Zones 1 through 10) to a Zone 1A station, including North Station, South Station and Back Bay. Your fare or pass is based on the Zone you boarded.

For example, if your commute includes boarding the Lowell Line at Lowell Station (Zone 6) and getting off the train at North Station (Zone 1A), you would buy one single ride Zone 6 ticket.

Interzone Fares

"Interzone fares" are based on travel between Commuter Rail stations outside of Zone 1A. Interzone fares and passes are not valid for travel to Zone 1A stations, including North Station, South Station and Back Bay Station. Interzone monthly pass and ticket fares are based on TOTAL zones "travelled" in.

For example, if your commute includes boarding the Lowell Line at Lowell Station (Zone 6) and getting off the train at Anderson/Woburn Station (Zone 2), you would pass through three zones and would buy one single ride Interzone 5 ticket.

ZONE	RIDE FARE	MONTHLY PASS	10-RIDE PASS[1]	CASH-ON-BOARD	
1A	$2.25[2]	$84.50[3]	$22.50	$5.25	Buy Now
1	$6.25[2]	$200.25[4]	$62.50	$9.25	Buy Now
Interzone 1 [7]	$2.75	$90.25[6]			Buy Now
2	$6.75[2]	$217.75[4]	$67.50	$9.75	Buy Now
Interzone 2 [7]	$3.25	$110.25[6]			Buy Now
3	$7.50[2]	$244.25[4]	$75.00	$10.50	Buy Now
Interzone 3 [7]	$3.50	$119.75[6]			Buy Now
4	$8.25[2]	$263.00[4]	$82.50	$11.25	Buy Now
Interzone 4 [7]	$4.00	$130.25[6]			Buy Now
5	$9.25[2]	$291.50[4]	$92.50	$12.25	Buy Now
Interzone 5 [7]	$4.50	$148.00[6]			Buy Now
6	$10.00[2]	$318.00[5]	$100.00	$13.00	Buy Now
Interzone 6 [7]	$5.00	$167.00[6]			Buy Now
7	$10.50[2]	$336.50[5]	$105.00	$13.50	Buy Now
Interzone 7 [7]	$5.50	$183.75[6]			Buy Now
8	$11.50[2]	$363.00[5]	$115.00	$13.50	Buy Now
Interzone 8 [7]	$6.00	$202.75[6]			Buy Now
9	$12.00[2]	$363.00[5]	$120.00	$15.00	Buy Now
Interzone 9 [7]	$6.50	$202.75[6]			Buy Now

10	$12.50[2]	$363.00[5]	$125.00	$15.50	Buy Now
Interzone 10 [7]	$6.50	$202.75[6]			Buy Now

Seniors and Persons with Disabilities **50% Off Rides**

(Blind persons ride for free) Percentage off based on Commuter Rail single-ride fares noted above.
Requires a Senior/TAP ID or Mass Commission for the Blind ID.
10-Ride Tickets available based on 10 half fares.

Children 11 years old and under **Free**

Children 11 years old and under ride free when accompanied by an adult with a limit of two children for each adult.

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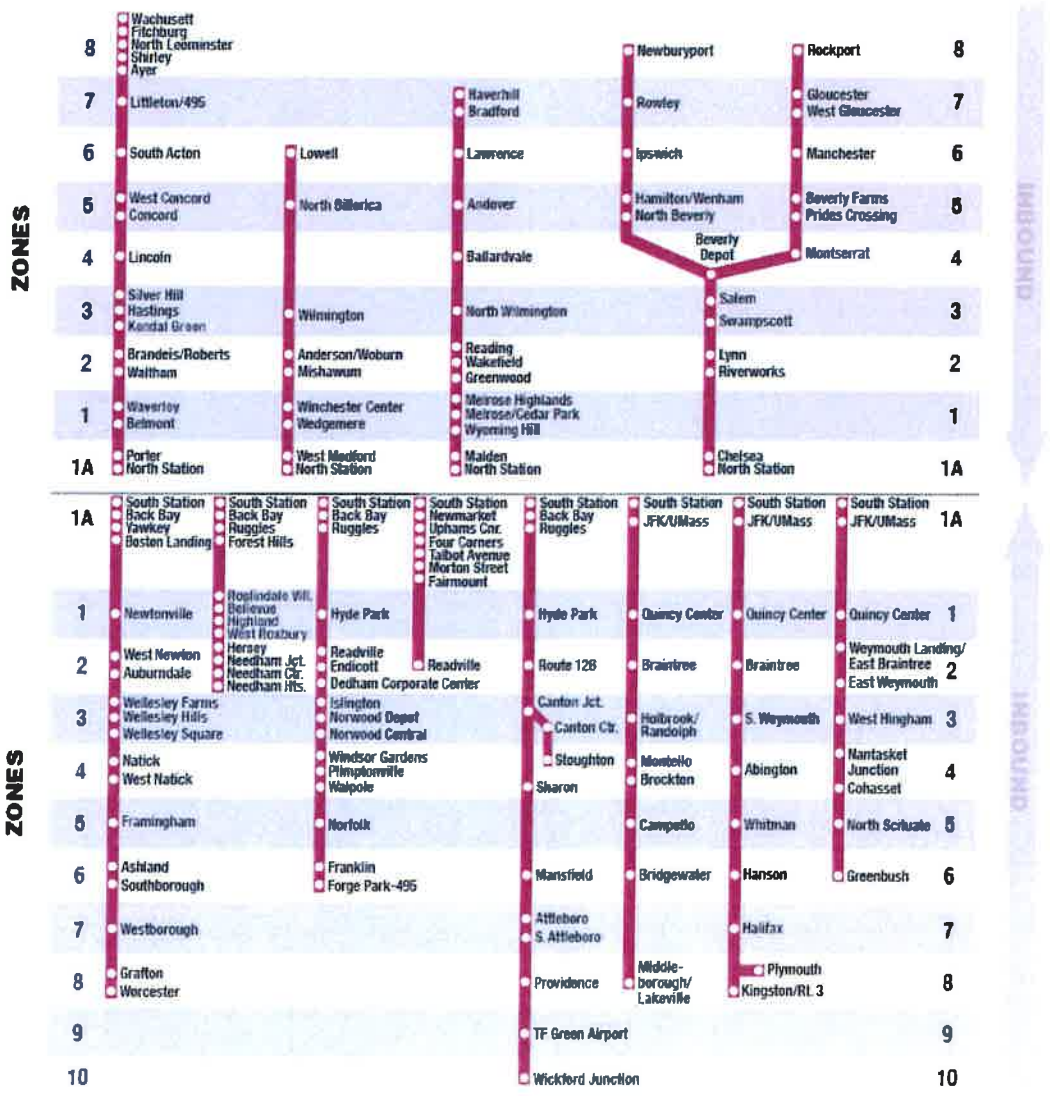
Commuter Rail Zone Chart



North Side Station Fare Zones

Zone	Fitchburg	Lowell	Haverhill	Newburyport/ Rockport
1A	North Station, Porter	North Station, West Medford	North Station, Malden	North Station, Chelsea
1	Waverley, Belmont	Winchester Center, Wedgemere	Wyoming Hill, Melrose/Ceder Park, Melrose Highlands	

2	Waltham, Brandeis/Roberts	Mishawum, Anderson/ Woburn	Greenwood, Wakefield, Reading	Riverworks. Lynn
3	Kendal Green, Hastings, Silver Hill	Wilmington	North Wilmington	Swampscott, Salem
4	Lincoln		Ballardvale	Beverly Depot Montserrat
5	Concord, West Concord	North Billerica	Andover	North Beverly, Hamilton/ Wenham Beverly Farms
6	South Acton	Lowell	Lawrence	Ipswich Manchester
7	Littleton/495		Bradford, Haverhill	Rowley West Gloucester, Gloucester
8	Ayer, Shirley, North Leominster, Fitchburg, Wachusett			Newburyport Rockport

South Side Station Fare Zones

Zone	Framingham	Needham	Franklin	Fairmount	Providence/ Stoughton	Middleborough/ Lakeville	Plymouth/ Kingston	Greenbush
1A	South Station, Back Bay, Yawkey, Boston Landing	South Station, Back Bay, Ruggles, Forest Hills	South Station, Back Bay, Ruggles	South Station, Newmarket, Uphams Corner, Four Corners, Talbot Avenue, Morton Street, Fairmount	South Station, Back Bay, Ruggles	South Station, JFK/UMass	South Station, JFK/ UMass	South Station, JFK/UMass
1	Newtonville	Roslindale Village, Vellevue, Highland, West Roxbury	Hyde Park		Hyde Park	Quincy Center	Quincy Center	Quincy Center
2	West Newton, Auburndale	Hersey, Needham Junction, Needham Center, Heedham Heights	Readville, Endicott, Dedham Corperate Center	Readville	Route 128	Braintree	Braintree	Weymouth Landing/ East Braintree, East Wymouth
3	Wellesley Farms, Wellesley Hills, Wellesley Square		Islington, Norwood Depot, Norwood Central		Canton Junction Canton Center	Holbrook/ Randolph	South Weymouth	West Hingham
4	Natick, West Natick		Windsor Gardens, Plimptonville, Walpole		Sharon Stoughton	Montello, Brockton	Abington	Nantasket Junction, Cohasset
5	Framingham		Norfolk			Campello	Whitman	North Scituate
6	Ashland, Southborough		Franklin, Forge Park-495		Mansfield	Bridgewater	Hanson	Greenbush
7	Westborough				Attleboro, South Attleboro		Halifax	
8	Grafton, Worcester				Providence	Middleborough/ Lakeville	Plymouth Kingston	
9					TF Green Airport			
10					Wickford Junction			

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[1] 10-Ride Ticket is available only on the mTicket mobile app.

[2] A $3.00 surcharge will be added to tickets purchased onboard all trains departing from North Station, South Station and Back Bay Station. Customers boarding Mondays through Fridays at a commuter rail station with an MBTA ticket vending machine or an accessible ticket vendor will be charged a $3.00 surcharge when purchasing tickets onboard. For a list of these stations, click here.

[3] Zone passes valid on Local Bus, Subway, and Inner Harbor Ferry.

[4] Zone passes valid on Local Bus, Subway, Express Bus, and Inner Harbor Ferry.

[5] Zone passes valid on Local Bus, Subway, Express Bus, and Ferries.

[6] Interzone passes valid on Local bus.

[7] Interzone tickets and passes are not available on our automated ticket vending machines. Interzone tickets and passes are sold on our mTicketing app, at ticket sales offices, and at retail sales outlets. For a list of sales locations, click here.

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ROUTE 8: Wellesley

MetroWest Regional Transportation Authority

ROUTE 8 (Monday-Friday Service)

Cash Fare Information

Adult fare: $1.50 / $1.25 with a Charlie Card
Student fare:$1.00 with valid Student ID.
Children under 6 ride free when accompanied by an adult.
Children under 12 may not ride unaccompanied.
Elderly (65 years of age or older)- $0.75 with photo ID indicating date of birth or a MWRTA senior TAP Pass or $0.70 with a Charlie Card
Individuals with disabilities- Valid MBTA Access Card, Medicare Card or MWRTA Disabled TAP Pass are accepted as proof of eligibility for the MWRTA reduced fare program.
Charlie Cards are available free of charge at the Central Hub or on the bus. Value can be added to existing cards onboard, online at mbta.com, or at an MBTA kiosk.

No service provided on the following Holidays:
New Year's Day
Patriot's Day
Memorial Day
Independence Day
Thanksgiving Day
Christmas Day

Transfer/Connections

Transfer coupons are available on all buses and are good for transfers within the MWRTA system only. Transfers are not compatable within the MBTA system. Riders wishing to transfer, (free of charge), from one route to another (in the same direction), must ask the driver for a transfer coupon and present it to the next driver within 90 minutes.

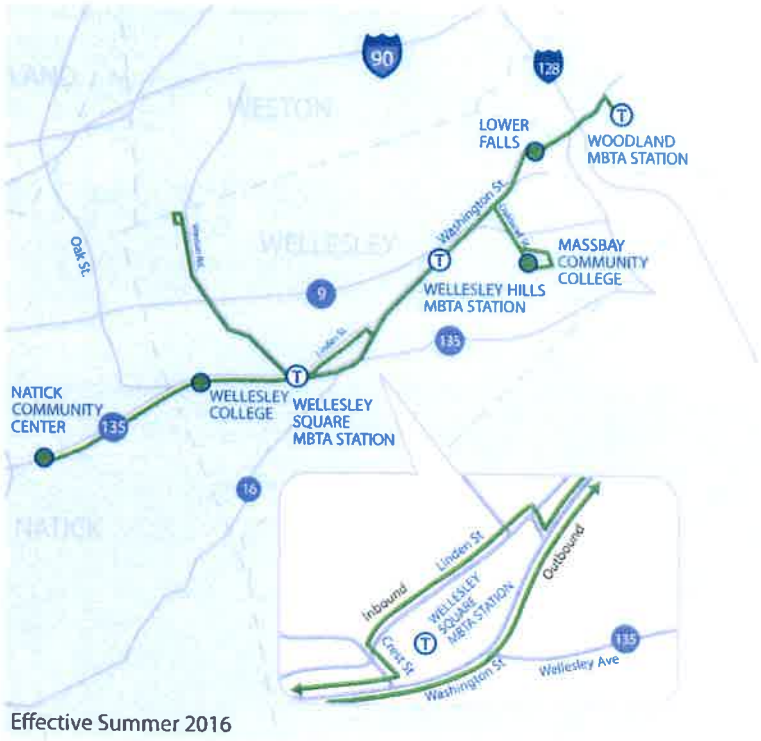
Riders can access MBTA Commuter Rail Service in Downtown Framingham, at the West Natick Commuter Rail Station, Downtown Natick as well as Wellesley Square and Wellesley Hills. For MBTA schedule and service information call 617.222.3200.

Schedule Times

Scheduled times are only approximate; please wait for the MWRTA ten minutes in advance of scheduled times to assure not missing the bus.

The MWRTA uses the Flag Down System which allows buses to stop anywhere along their routes to pick up passengers, where it is safe to do so. Passengers can hail MWRTA buses by waving.

Route 8 (Monday-Friday Service)



Effective Summer 2016

Please visit our website: www.mwrta.com
MWRTA Customer Service: (508) 935-2222
Follow Us: @mwrta

MetroWest Regional Transit Authority
Public Transportation System

ROUTE 8 Weekday (Monday-Friday Service)

8 8

v 7.16

Commuter Schedule

EASTBOUND	AM
Blandin Hub	6:20A
Natick Community Center	6:30A
Wellesley College	6:33A
Weston Rd. / Manor Ave.	6:39A
Fells Market	6:40A
Crest Rd. (MBTA)	6:43A
Wellesley Hills (MBTA)	6:48A
Lower Falls	6:52A
Newton-Wellesley Hosp.	6:55A
Woodland (MBTA Green Line)	6:59A
WESTBOUND	
Lower Falls	7:05A
MassBay Community College	7:11A
Wellesley Hills (MBTA)	7:17A
Crest Rd. (MBTA)	7:20A
Weston Rd. at Manor Ave.	7:27A
Fells Market	7:28A
Crest Rd. (MBTA)	7:32A
EASTBOUND	
Wellesley Hills (MBTA)	7:37A
MassBay Community College	7:44A
Lower Falls	7:47A
Newton-Wellesley Hosp.	7:50A
Woodland (MBTA Green Line)	7:54A
WESTBOUND	
Lower Falls	8:04A
MassBay Community College	8:14A
Wellesley Community Center	R
Wellesley Hills (MBTA)	8:19A
Linden St.	8:21A
Crest Rd. (MBTA)	8:25A
Wellesley College	8:34A
Natick Community Center	8:40A

EASTBOUND	PM
Natick Community Center	4:58P
Wellesley College	5:03P
Weston Rd. / Manor Ave.	5:10P
Fells Market	5:13P
Crest Rd. (MBTA)	5:25P
Wellesley Hills (MBTA)	5:33P
MassBay Community College	5:38P
Lower Falls	5:45P
Newton-Wellesley Hospital	5:47P
Woodland (MBTA Green Line)	5:50P
WESTBOUND	
Lower Falls	5:58P
MassBay Community College	6:05P
Wellesley Community Center	R
Wellesley Hills (MBTA)	6:11P
Linden St.	6:18P
Crest Rd. (MBTA)	6:24P
Wellesley College	6:30P
Natick Community Center	6:35P
EASTBOUND	
Wellesley College	6:40P
Weston Rd. / Manor Ave.	6:46P
Fells Market	6:47P
Cross St.	6:53P
Cameron St.	6:56P
Crest Rd. (MBTA)	6:58P
Linden St.	7:00P
Whole Foods	7:03P
Wellesley Hills	7:05P
MassBay Community College	7:10P
Lower Falls	7:15P
Newton-Wellesley Hosp.	7:18P
Woodland (MBTA Green Line)	7:20P
WESTBOUND	
Lower Falls	7:23P
MassBay Community College	7:29P
Wellesley Community Center	R
Wellesley Hills	7:33P
Linden Street	7:37P
Crest Rd. (MBTA)	7:40P
Wellesley College	7:46P
Natick Community Center	7:48P
Blandin Hub	7:58P

MetroWest Regional Transit Authority
Public Transportation System

Local Schedule

EASTBOUND	AM			PM	
Blandin Hub	--	10:05A	--	--	--
Natick Community Center	8:45A	10:10A	11:34A	1:10P	3:23P
Wellesley College	8:48A	10:13A	11:37A	1:14P	3:27P
Weston Rd. / Manor Ave.	8:54A	10:20A	11:44A	1:22P	3:35P
Fells Market	8:55A	10:22A	11:46A	1:23P	3:36P
Cross St.	9:01A	10:28A	11:49A	1:29P	3:38P
Cameron St.	9:04A	10:31A	11:52A	1:33P	3:40P
Crest Rd. (MBTA)	9:06A	10:33A	11:54A	1:36P	3:43P
Linden St.	9:08A	10:35A	11:56A	1:38P	3:45P
Whole Foods	9:11A	10:37A	11:58A	1:41P	3:49P
Wellesley Hills (MBTA)	9:13A	10:39A	12:00P	1:44P	3:51P
MassBay Community College	9:20A	10:46A	12:05P	1:52P	3:58P
Lower Falls	9:26A	10:52A	12:11P	1:59P	4:05P
Newton-Wellesley Hosp.	9:29A	10:55A	12:14P	2:04P	4:08P
Woodland (MBTA Green Line)	9:33A	10:59A	12:20P	2:06P	4:10P
WESTBOUND					
Lower Falls	9:40A	11:08A	12:30P	2:15P	4:20P
MassBay Community College	9:47A	11:15A	12:37P	2:25P	4:30P
Wellesley Community Center	R	R	R	R	R
Wellesley Hills (MBTA)	9:53A	11:18A	12:45P	2:37P	4:33P
Linden St.	9:55A	11:20A	12:50P	2:39P	4:37P
Crest Rd. (MBTA)	9:57A	11:23A	12:55P	2:44P	4:40P
Wellesley College	10:03A	11:29A	1:00P	2:51P	4:48P
Natick Community Center	10:06A	11:33A	1:07P	2:58P	4:53P

Key

R: By Request Only
A- AM & P- PM

**MWRTA will deviate (D) from its Route 8 fixed route service for ADA Certified riders. Please call 508-935-2222 for more information.

For up to the minute bus information call the MWRTA at 508.935.2222 or 888.996.9782, or visit www.mwrta.com for GPS tracking.

Hub Info: Blandin Hub-15 Blandin Ave.

Scan the QR code below with your smartphone to be directed to the MWRTA Routes and Schedules website.

VEHICLE TRAVEL SPEED DATA

Accurate Counts

978-664-2565

Location : Route 9 EB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718SPDEB

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
09/12/17	0	2	3	5	44	64	36	8	1	0	0	0	0	0	163
01:00	0	0	11	11	19	25	15	2	0	0	0	0	0	0	83
02:00	3	1	2	7	13	15	8	3	1	0	0	0	0	0	53
03:00	1	1	1	2	13	10	13	2	2	0	0	0	0	0	45
04:00	0	0	0	0	6	13	23	12	8	1	0	1	0	0	64
05:00	0	0	0	0	4	53	108	88	41	4	1	0	0	0	299
06:00	2	0	1	2	7	46	173	251	170	46	14	4	0	0	716
07:00	0	1	0	1	33	269	439	269	116	20	3	3	0	0	1154
08:00	2	0	2	5	61	374	691	349	89	22	4	1	0	0	1600
09:00	0	0	0	2	27	239	551	336	124	20	8	0	0	0	1307
10:00	0	0	0	4	93	410	539	154	33	12	4	0	0	0	1249
11:00	1	0	2	10	67	332	561	207	41	7	1	0	0	0	1229
12 PM	0	0	0	2	34	294	613	286	68	8	2	0	0	0	1307
13:00	0	0	0	7	36	270	576	275	79	15	3	0	0	0	1261
14:00	0	0	0	8	58	296	496	283	90	21	6	3	0	0	1261
15:00	1	0	0	12	152	525	595	217	51	7	6	0	1	0	1567
16:00	0	0	0	17	125	569	657	205	64	5	1	0	0	0	1643
17:00	0	1	0	30	352	749	493	101	20	1	0	0	0	0	1747
18:00	0	0	0	7	148	566	691	181	43	9	1	0	0	0	1646
19:00	0	1	3	13	93	476	480	160	39	1	0	0	0	0	1266
20:00	0	0	7	131	432	429	93	21	1	0	0	0	0	0	1114
21:00	0	0	9	66	261	344	120	18	1	0	0	0	0	0	819
22:00	0	1	0	29	217	282	102	12	2	0	0	0	0	0	645
23:00	0	1	4	31	112	187	96	19	1	0	0	0	0	0	451
Total	10	9	45	402	2407	6837	8169	3459	1085	199	54	12	1	0	22689

Daily

15th Percentile :	35 MPH
50th Percentile :	41 MPH
85th Percentile :	47 MPH
95th Percentile :	50 MPH
Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	36-45 MPH
Number in Pace :	15006
Percent in Pace :	66.1%
Number of Vehicles > 40 MPH :	12979
Percent of Vehicles > 40 MPH :	57.2%

Accurate Counts

978-664-2565

Location : Route 9 EB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718SPDEB

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
09/13/17	0	0	0	5	36	93	77	18	3	0	0	0	0	0	232
01:00	0	0	0	8	13	24	24	13	1	0	0	0	0	0	83
02:00	0	1	0	2	8	21	23	9	0	0	0	0	0	0	64
03:00	0	0	1	1	8	16	12	9	3	4	0	0	0	0	54
04:00	0	0	0	0	3	9	24	18	9	1	2	0	0	0	66
05:00	0	0	0	1	10	29	102	108	54	8	1	1	0	0	314
06:00	0	0	0	2	14	52	183	246	173	41	13	7	0	0	731
07:00	0	0	0	7	40	231	479	320	123	19	8	0	0	0	1227
08:00	0	0	0	3	65	346	634	354	125	21	4	2	0	0	1554
09:00	1	0	0	4	69	278	613	285	83	10	3	1	0	0	1347
10:00	0	0	0	5	63	353	486	227	61	11	1	0	0	0	1207
11:00	1	0	0	4	89	338	520	215	51	7	2	0	0	0	1227
12 PM	1	1	7	18	111	453	519	194	50	5	3	1	0	0	1363
13:00	0	1	4	4	71	363	559	242	68	8	3	0	0	0	1323
14:00	0	0	0	3	82	421	607	201	53	6	2	0	0	0	1375
15:00	0	0	0	1	96	553	659	235	61	12	0	0	0	0	1617
16:00	0	0	2	9	133	546	743	245	44	12	2	0	0	0	1736
17:00	3	1	11	42	258	650	607	152	29	6	1	0	0	0	1760
18:00	0	0	0	11	176	662	658	206	39	10	1	0	0	0	1763
19:00	0	0	0	0	103	405	552	198	53	5	1	1	0	0	1318
20:00	0	0	1	27	163	429	311	67	14	2	1	0	0	0	1015
21:00	1	4	11	20	117	339	274	63	6	2	0	0	0	0	837
22:00	0	0	0	8	64	255	251	56	6	2	0	0	0	0	642
23:00	0	0	0	6	23	132	184	64	21	2	0	0	0	0	432
Total	7	8	37	191	1815	6998	9101	3745	1130	194	48	13	0	0	23287

Daily

15th Percentile :	36 MPH
50th Percentile :	41 MPH
85th Percentile :	47 MPH
95th Percentile :	50 MPH
Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	36-45 MPH
Number in Pace :	16099
Percent in Pace :	69.1%
Number of Vehicles > 40 MPH :	14231
Percent of Vehicles > 40 MPH :	61.1%

Grand Total	17	17	82	593	4222	13835	17270	7204	2215	393	102	25	1	0	45976

Overall

15th Percentile :	35 MPH
50th Percentile :	41 MPH
85th Percentile :	47 MPH
95th Percentile :	50 MPH
Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	36-45 MPH
Number in Pace :	31105
Percent in Pace :	67.7%
Number of Vehicles > 40 MPH :	27210
Percent of Vehicles > 40 MPH :	59.2%

Accurate Counts

978-664-2565

Location : Route 9 WB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718SPDWB

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
09/12/17	0	1	6	21	24	8	5	1	1	0	0	0	0	0	67
01:00	0	0	2	7	15	17	8	4	1	0	0	0	0	0	54
02:00	2	5	2	14	13	6	2	1	0	0	0	0	0	0	45
03:00	6	2	6	8	8	12	7	3	1	1	0	0	0	0	54
04:00	0	0	0	3	9	27	47	38	24	5	1	1	0	0	155
05:00	0	3	8	9	13	84	173	164	66	11	1	0	0	0	532
06:00	18	28	84	138	217	416	341	159	41	7	1	0	0	0	1450
07:00	339	306	291	78	2	0	0	0	0	0	0	0	0	0	1016
08:00	246	292	333	187	99	34	6	0	0	0	0	0	0	0	1197
09:00	126	162	118	130	217	258	176	50	5	1	0	0	0	0	1243
10:00	0	9	7	81	274	410	336	128	22	3	1	0	0	0	1271
11:00	158	49	41	61	219	218	124	21	6	0	0	0	0	0	897
12 PM	0	1	5	86	311	471	302	81	10	2	0	0	0	0	1269
13:00	1	4	26	121	360	431	252	54	7	1	0	0	0	0	1257
14:00	39	35	53	159	338	375	220	59	13	0	0	0	0	0	1291
15:00	89	74	128	196	301	312	178	49	16	0	0	0	0	0	1343
16:00	43	74	134	209	334	337	240	69	16	1	0	0	0	0	1457
17:00	244	220	226	120	109	174	84	24	3	0	0	0	0	0	1204
18:00	104	125	137	159	265	306	172	64	7	2	0	0	0	0	1341
19:00	65	71	85	73	220	292	177	48	5	0	0	0	0	0	1036
20:00	21	30	216	294	179	58	13	1	0	0	0	0	0	0	812
21:00	3	16	136	230	173	97	16	2	0	0	0	0	0	0	673
22:00	0	4	39	128	127	54	5	0	0	0	0	0	0	0	357
23:00	0	4	29	67	83	26	11	0	0	0	0	0	0	0	220
Total	1504	1515	2112	2579	3910	4423	2895	1020	244	34	4	1	0	0	20241

Daily

15th Percentile :	20 MPH
50th Percentile :	33 MPH
85th Percentile :	42 MPH
95th Percentile :	46 MPH
Mean Speed(Average) :	32 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	8333
Percent in Pace :	41.2%
Number of Vehicles > 35 MPH :	8621
Percent of Vehicles > 35 MPH :	42.6%

Accurate Counts

978-664-2565

Location : Route 9 WB
Location : Near 680 Worcester Street
City/State: Wellesley, MA

7718SPDWB

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
09/13/17	0	3	10	26	35	15	1	1	1	0	0	0	0	0	92
01:00	0	2	7	20	20	6	3	0	0	0	0	0	0	0	58
02:00	1	1	8	12	16	7	2	1	0	0	0	0	0	0	48
03:00	3	1	1	2	8	12	15	7	4	0	0	0	0	0	53
04:00	1	0	0	2	5	24	45	37	17	3	0	0	0	0	134
05:00	0	1	2	0	23	117	190	154	44	8	0	0	0	0	539
06:00	86	92	235	232	219	233	163	76	17	4	0	0	0	0	1357
07:00	280	348	319	59	0	0	0	0	0	0	0	0	0	0	1006
08:00	350	353	301	46	0	0	0	0	0	0	0	0	0	0	1050
09:00	144	171	139	190	295	256	145	23	3	2	0	0	0	0	1368
10:00	8	15	69	124	340	429	259	61	8	0	0	0	0	0	1313
11:00	4	8	28	126	343	443	288	78	11	0	0	1	0	0	1330
12 PM	17	18	68	199	428	396	193	40	14	1	0	0	0	0	1374
13:00	5	8	30	154	316	420	259	80	14	0	0	0	0	0	1286
14:00	37	77	131	213	345	317	174	41	7	0	0	0	0	0	1342
15:00	15	34	47	146	373	523	254	63	10	2	1	0	0	0	1468
16:00	27	59	100	218	325	453	258	59	13	3	1	0	0	0	1516
17:00	64	136	179	283	330	287	175	44	7	2	0	0	0	0	1507
18:00	10	16	44	108	315	509	338	85	14	2	0	0	0	0	1441
19:00	36	41	64	84	218	314	191	57	8	3	0	0	0	0	1016
20:00	78	116	218	235	141	40	11	1	0	0	0	0	0	0	840
21:00	4	14	148	284	213	89	16	1	0	0	0	0	0	0	769
22:00	2	7	42	129	124	54	8	1	0	0	0	0	0	0	367
23:00	0	4	16	61	80	43	6	0	0	0	0	0	0	0	210
Total	1172	1525	2206	2953	4512	4987	2994	910	192	30	2	1	0	0	21484

Daily

15th Percentile :	21 MPH
50th Percentile :	33 MPH
85th Percentile :	41 MPH
95th Percentile :	45 MPH
Mean Speed(Average) :	32 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	9499
Percent in Pace :	44.2%
Number of Vehicles > 35 MPH :	9116
Percent of Vehicles > 35 MPH :	42.4%

Grand Total	2676	3040	4318	5532	8422	9410	5889	1930	436	64	6	2	0	0	41725

Overall

15th Percentile :	20 MPH
50th Percentile :	33 MPH
85th Percentile :	41 MPH
95th Percentile :	45 MPH
Mean Speed(Average) :	32 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	17832
Percent in Pace :	42.7%
Number of Vehicles > 35 MPH :	17737
Percent of Vehicles > 35 MPH :	42.5%

MASSDOT CRASH RATE WORKSHEETS

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Wellesley | COUNT DATE : Sep-17

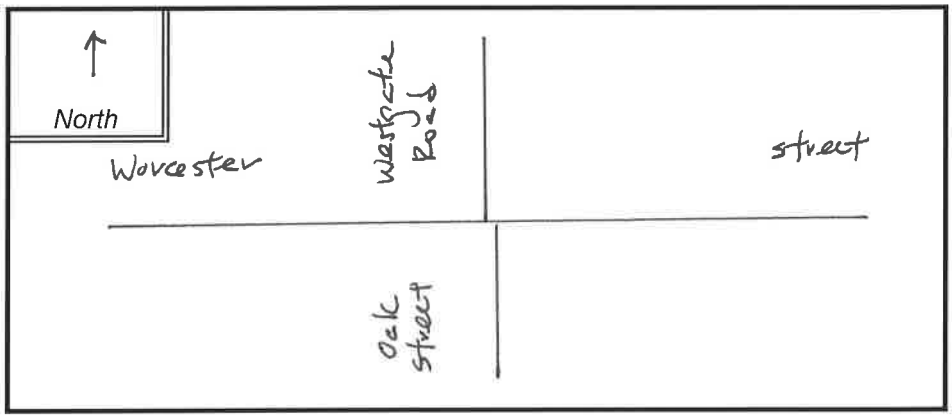
DISTRICT : 6 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Worcester Street

MINOR STREET(S) : Oak Street/Westgate Road

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 (PM) :	2,180	2,159	26	18		**4,383**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **48,700**

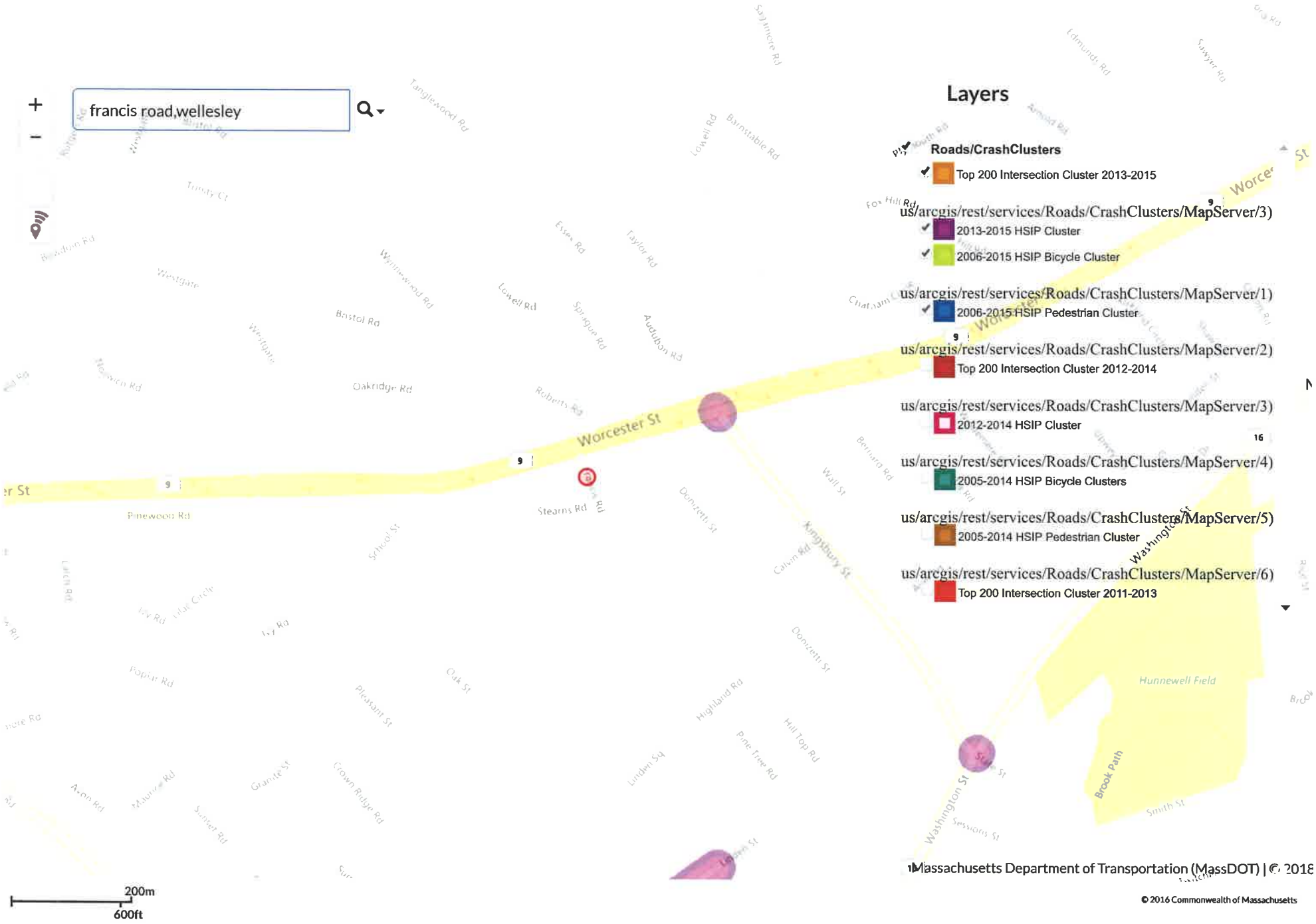
TOTAL # OF CRASHES : 20 | # OF YEARS : 5 | AVERAGE # OF CRASHES PER YEAR (**A**) : **4.00**

CRASH RATE CALCULATION : 0.23

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

Comments : Below MassDOT District 6 crash rate

Project Title & Date: Proposed Residential Development June 2018


francis road,wellesley
Layers
Roads/CrashClusters
Top 200 Intersection Cluster 2013-2015
us/arcgis/rest/services/Roads/CrashClusters/MapServer/3)
2013-2015 HSIP Cluster
2006-2015 HSIP Bicycle Cluster
us/arcgis/rest/services/Roads/CrashClusters/MapServer/1)
2006-2015 HSIP Pedestrian Cluster
us/arcgis/rest/services/Roads/CrashClusters/MapServer/2)
Top 200 Intersection Cluster 2012-2014
us/arcgis/rest/services/Roads/CrashClusters/MapServer/3)
2012-2014 HSIP Cluster
us/arcgis/rest/services/Roads/CrashClusters/MapServer/4)
2005-2014 HSIP Bicycle Clusters
us/arcgis/rest/services/Roads/CrashClusters/MapServer/5)
2005-2014 HSIP Pedestrian Cluster
us/arcgis/rest/services/Roads/CrashClusters/MapServer/6)
Top 200 Intersection Cluster 2011-2013
Worcester St
Pinewood Rd
Stearns Rd
Oakridge Rd
Bristol Rd
Hunnewell Field
Brook Path
Washington St
Massachusetts Department of Transportation (MassDOT) | © 2018
© 2016 Commonwealth of Massachusetts
200m
600ft

(/MapTer

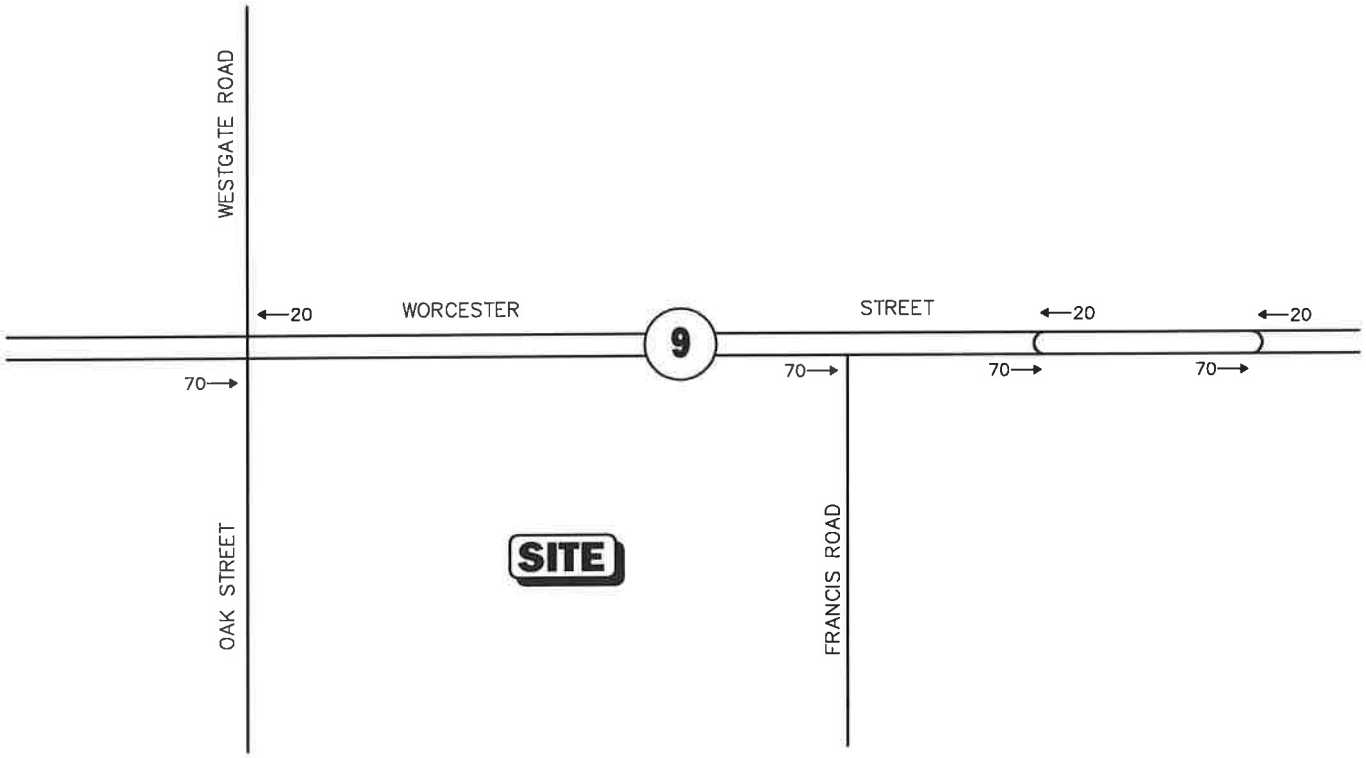
GENERAL BACKGROUND TRAFFIC GROWTH

General Background Traffic Growth - Daily Traffic Volumes

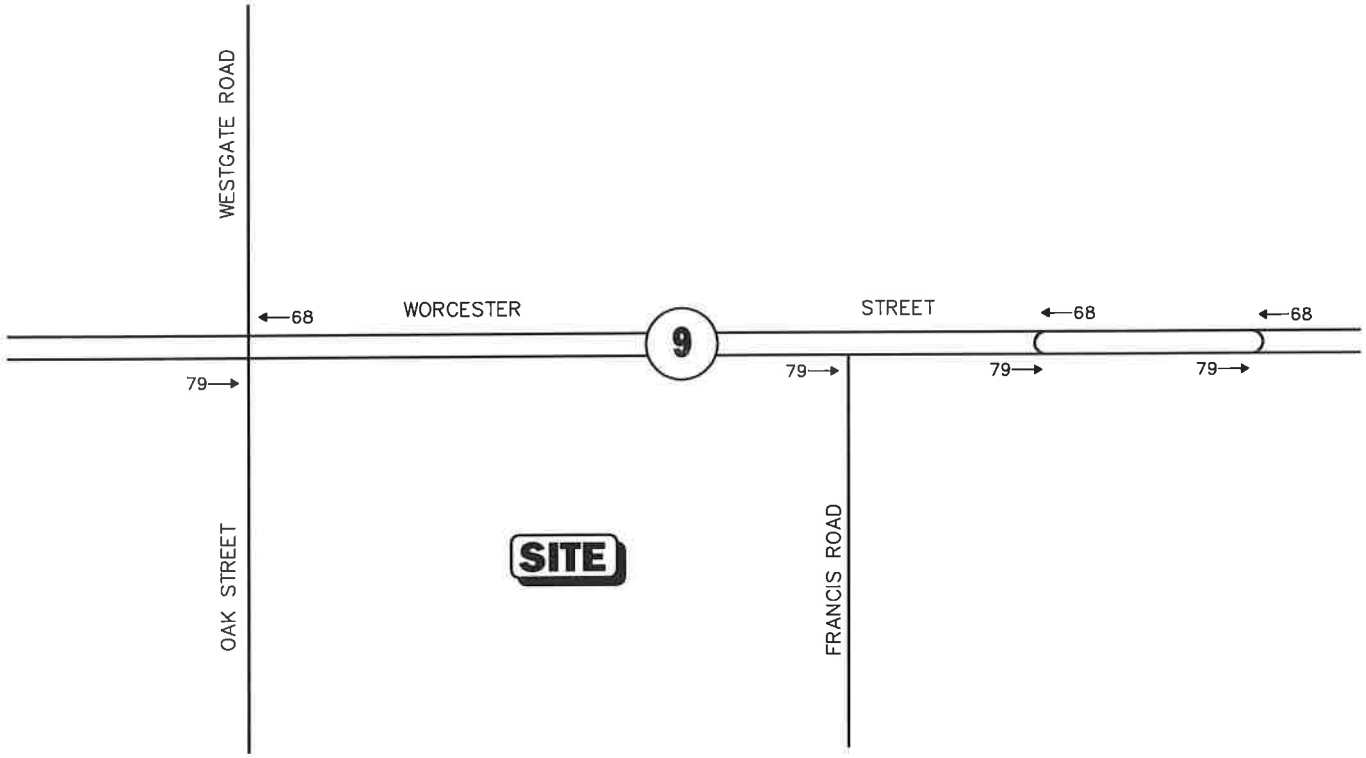
CITY/TOWN	ROUTE/STREET	LOCATION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual
Weston	I-95	South of Route 20	169,066	166,700	165,404				154,800	163,302	165552	156,519	165,476	-0.26%

BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS

WEEKDAY MORNING PEAK HOUR



WEEKDAY EVENING PEAK HOUR



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

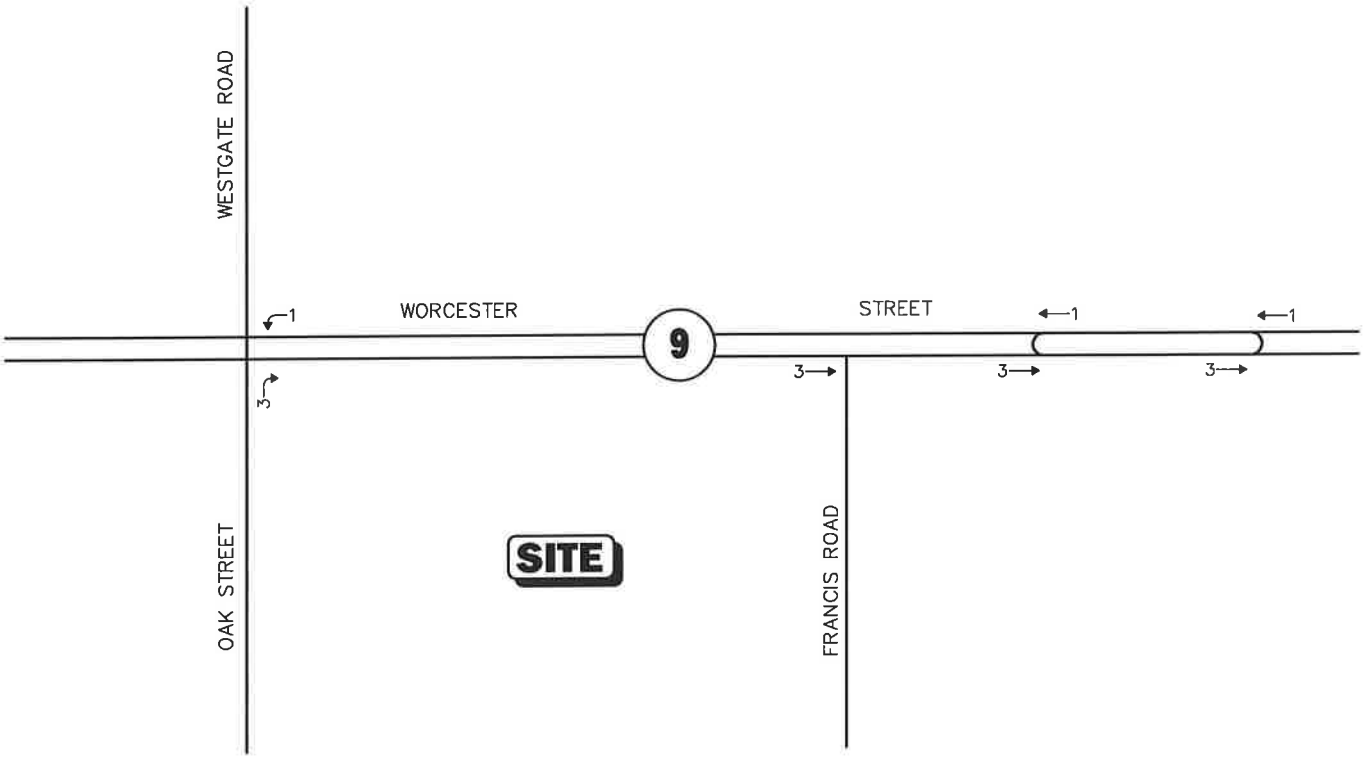
Not To Scale

Figure A-1

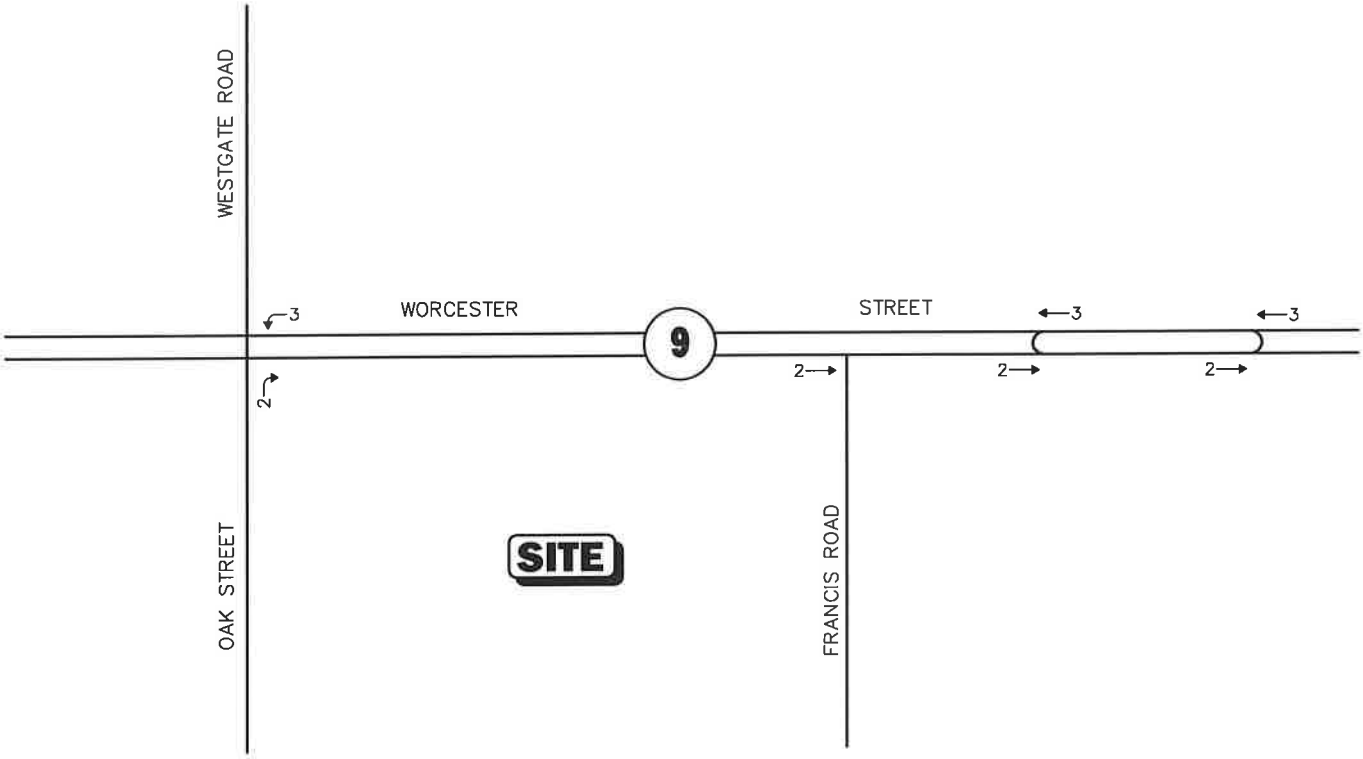
Vanasse & Associates, Inc.
Transportation Engineers & Planners

Proposed Sport Complex
900 Worcester Street
Weekday
Peak Hour Traffic Volumes

WEEKDAY MORNING PEAK HOUR



WEEKDAY EVENING PEAK HOUR



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

Not To Scale

Figure A-2

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Proposed Residential Development
Wellesley Square Residences
Weekday
Peak Hour Traffic Volumes

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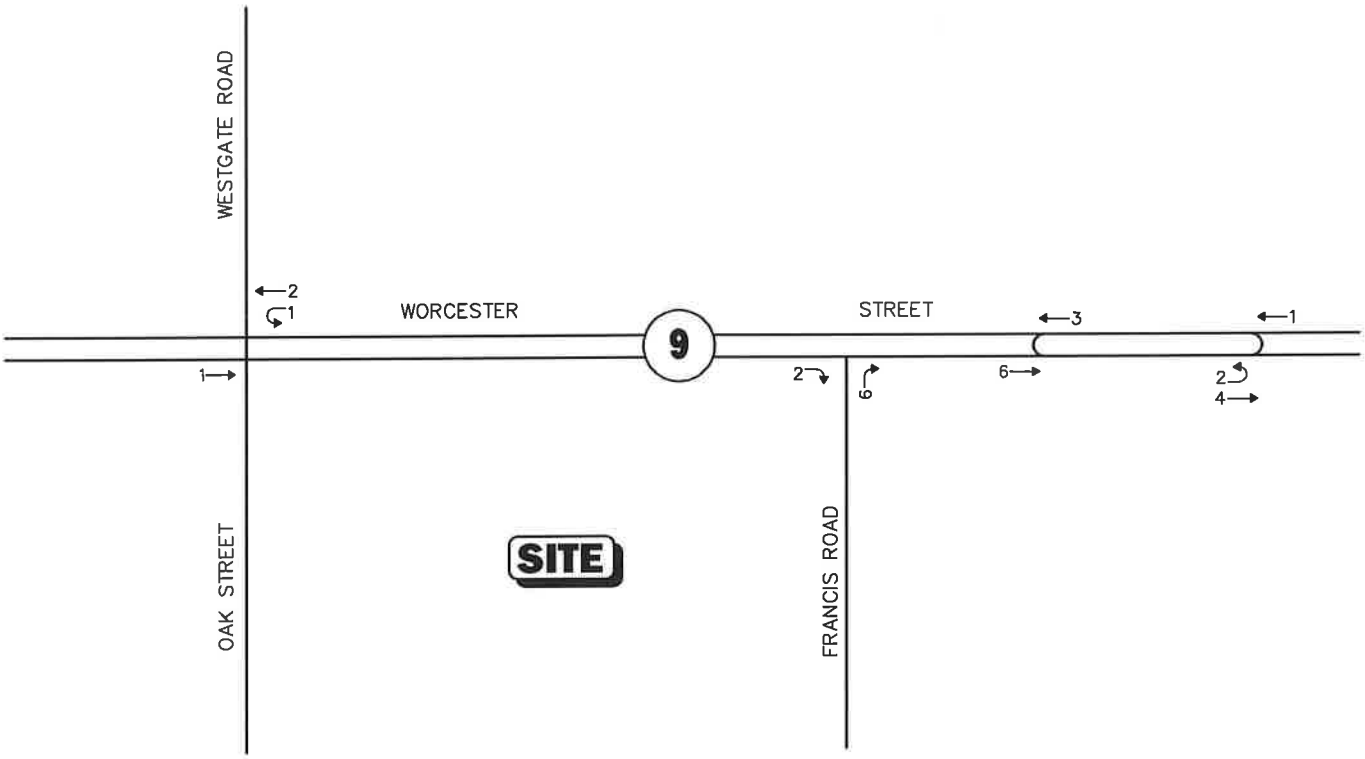
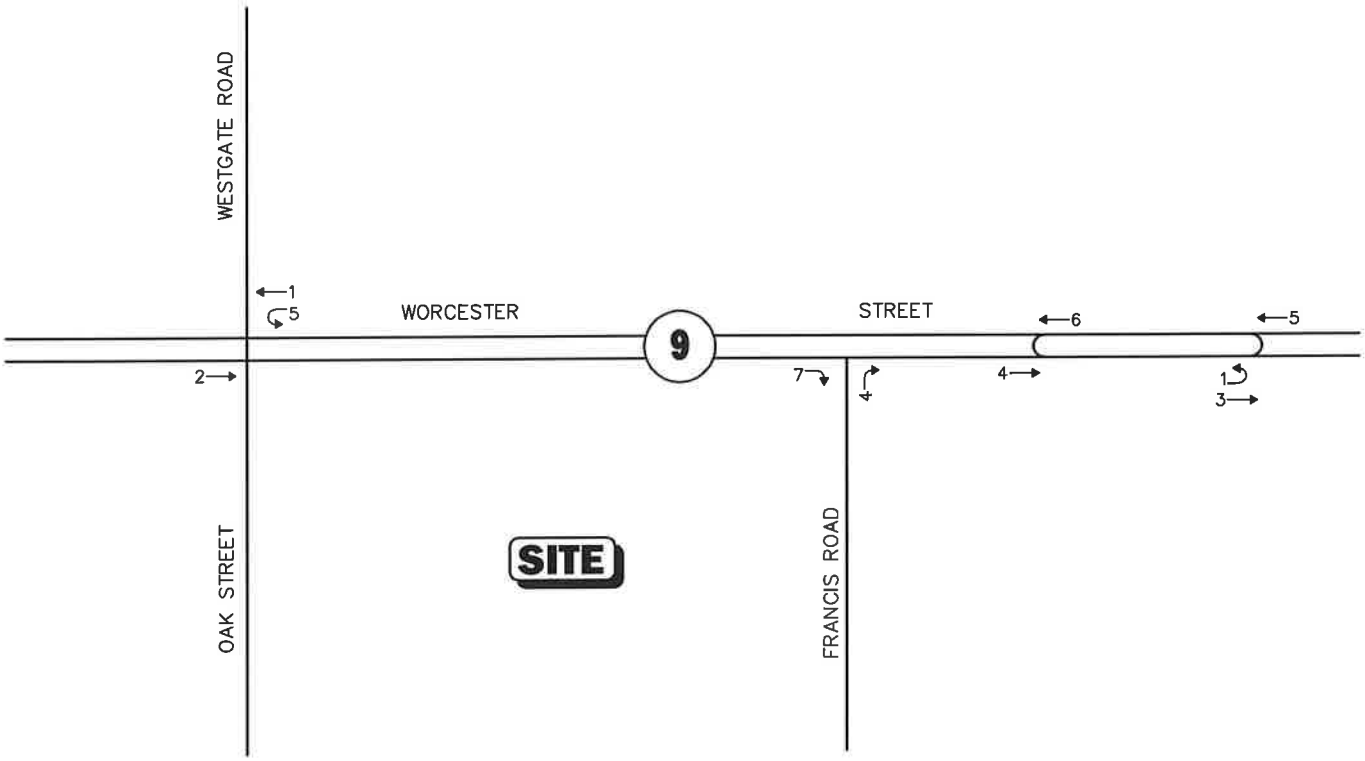
WEEKDAY MORNING PEAK HOUR



WEEKDAY EVENING PEAK HOUR



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

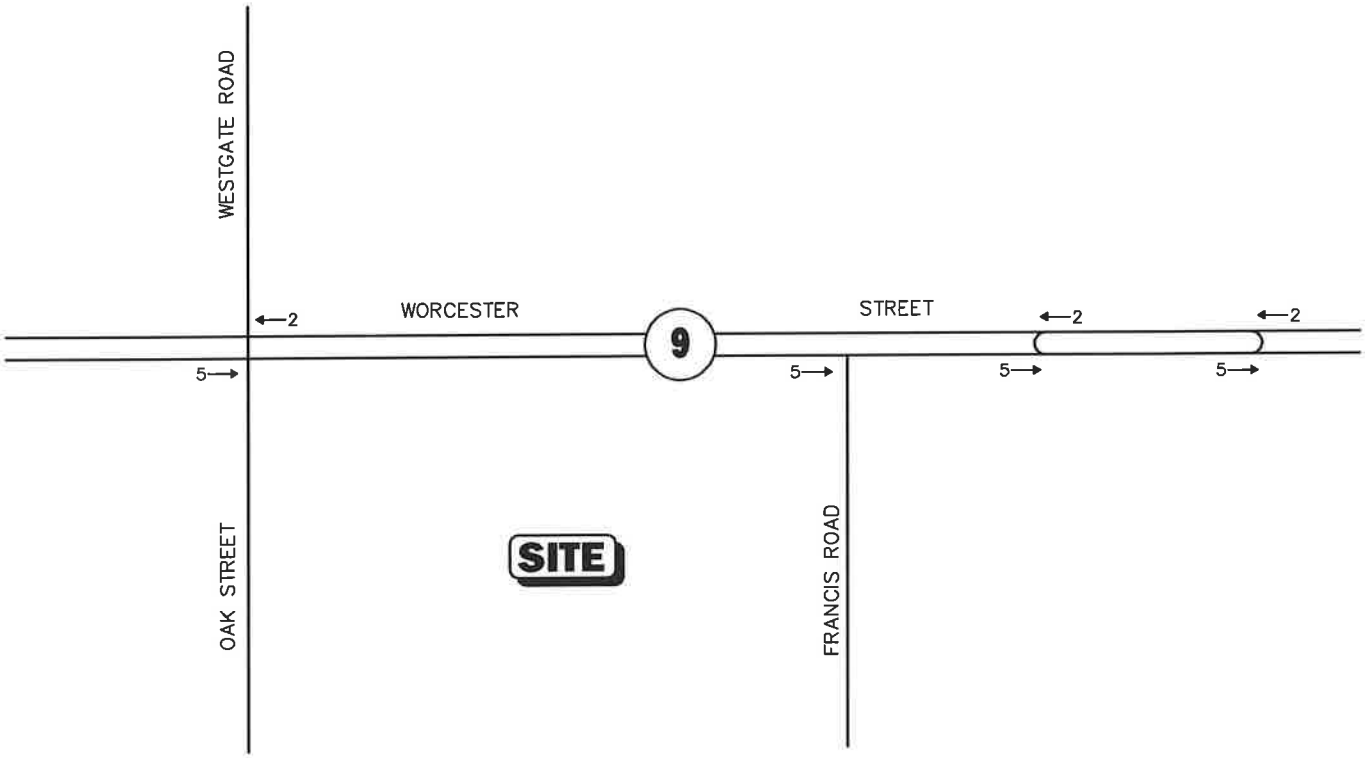
Not To Scale

Figure A-3

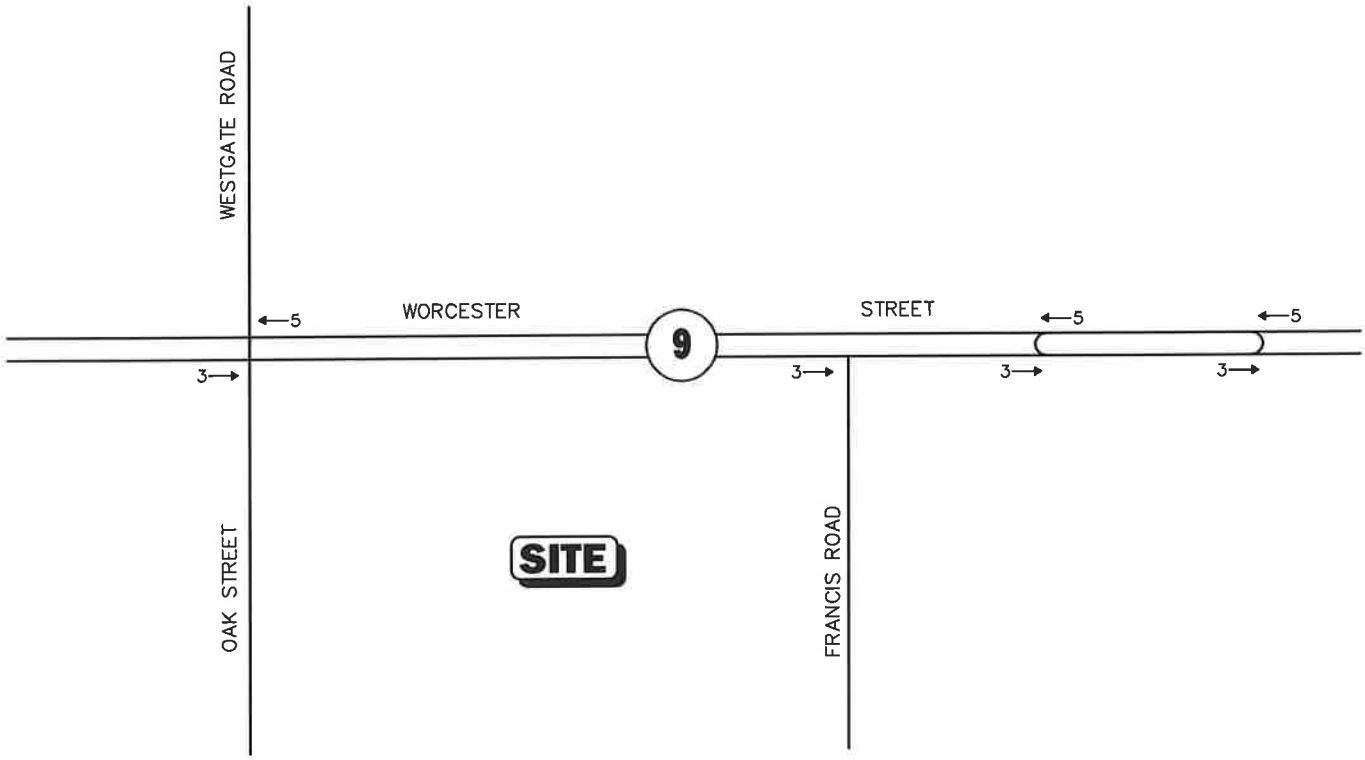
Vanasse & Associates, Inc.
Transportation Engineers & Planners

Proposed Residential Development
16 Sterns Road
Peak Hour Traffic Volumes

WEEKDAY MORNING PEAK HOUR



WEEKDAY EVENING PEAK HOUR



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

Not To Scale

Figure A-4

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Proposed Residential Development
148 Weston Road
Peak Hour Traffic Volumes

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TRIP-GENERATION CALCULATIONS

Multifamily Housing (Mid-Rise)
(221)

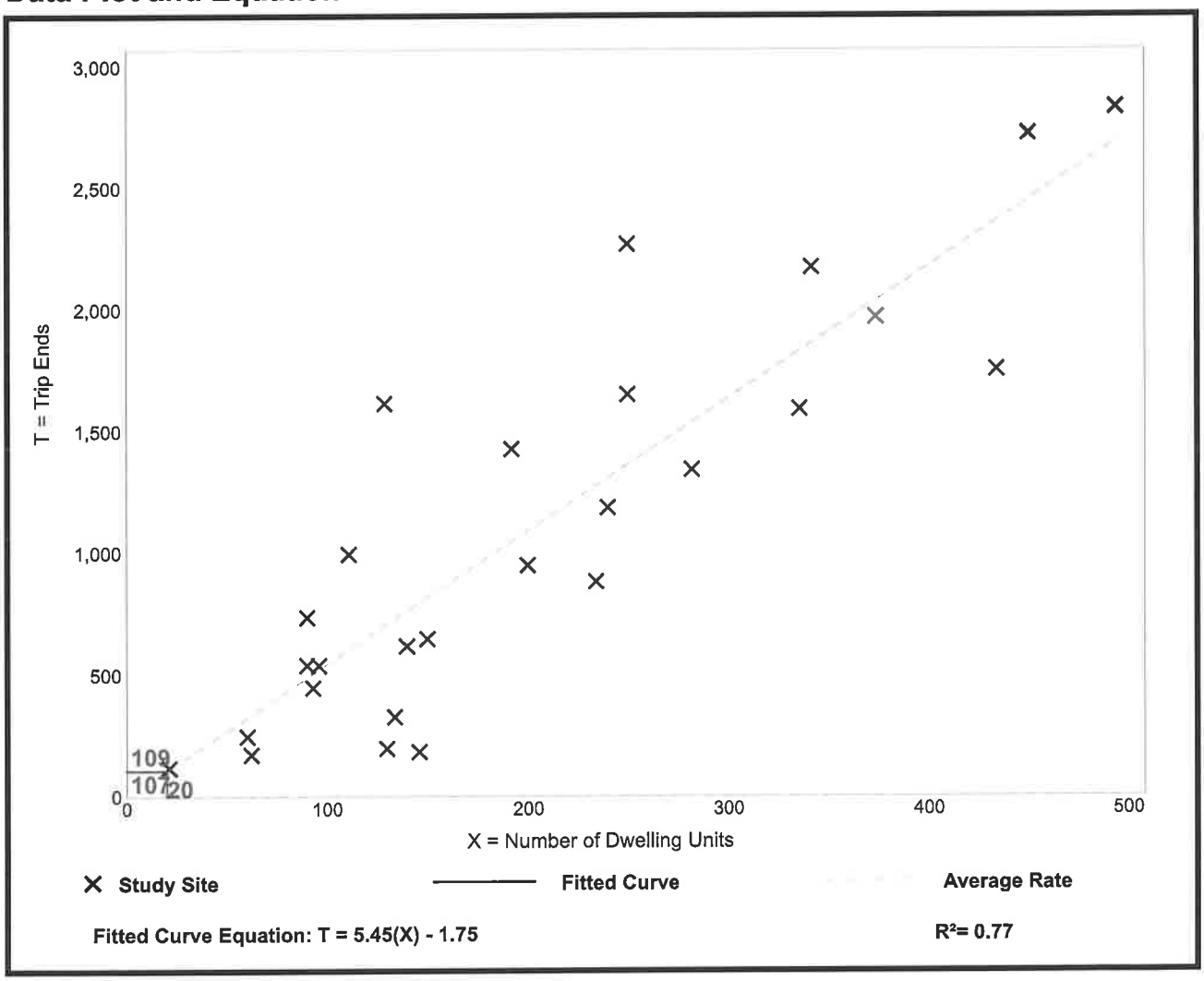
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



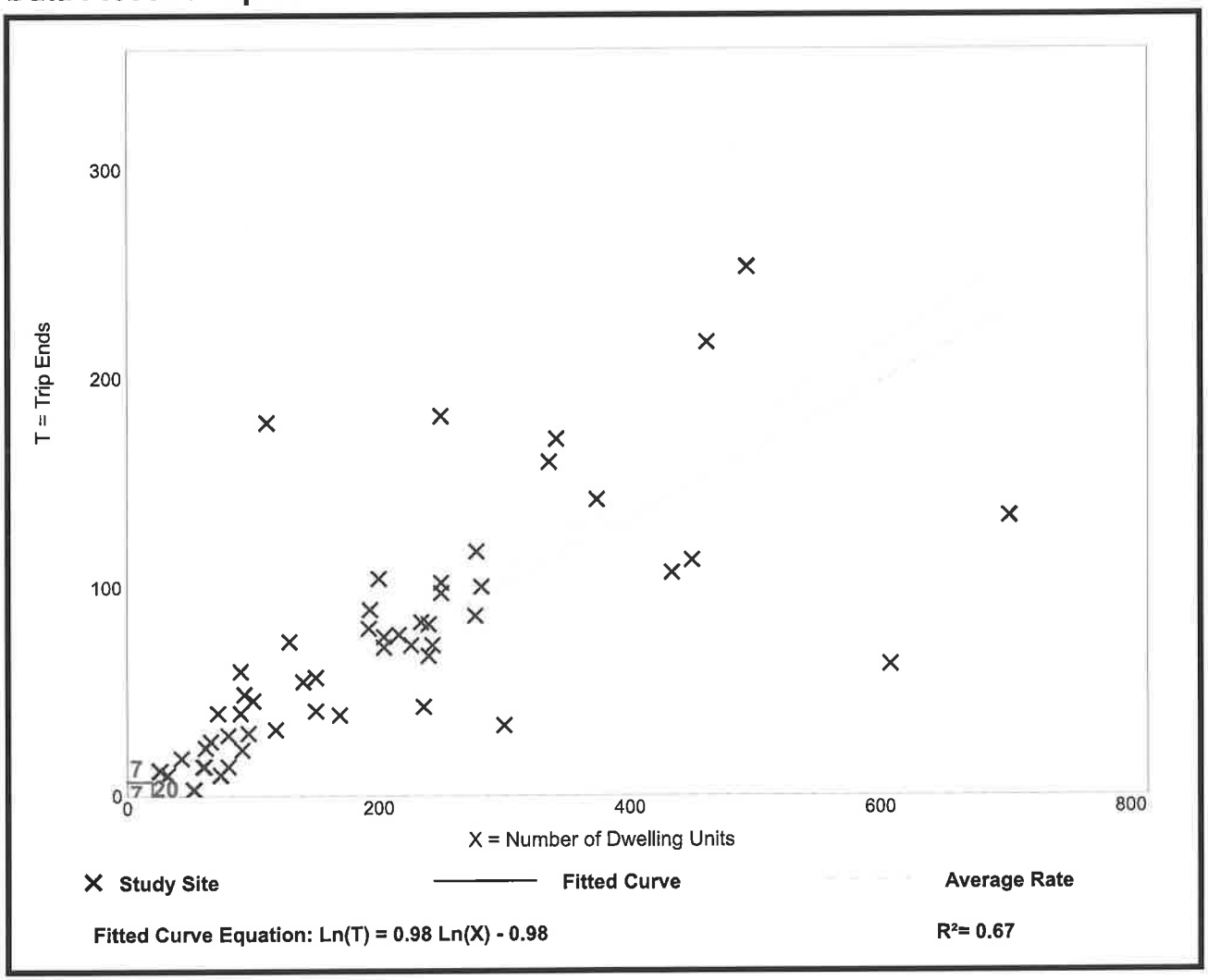
Multifamily Housing (Mid-Rise)
(221)

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: 53
Avg. Num. of Dwelling Units: 207
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



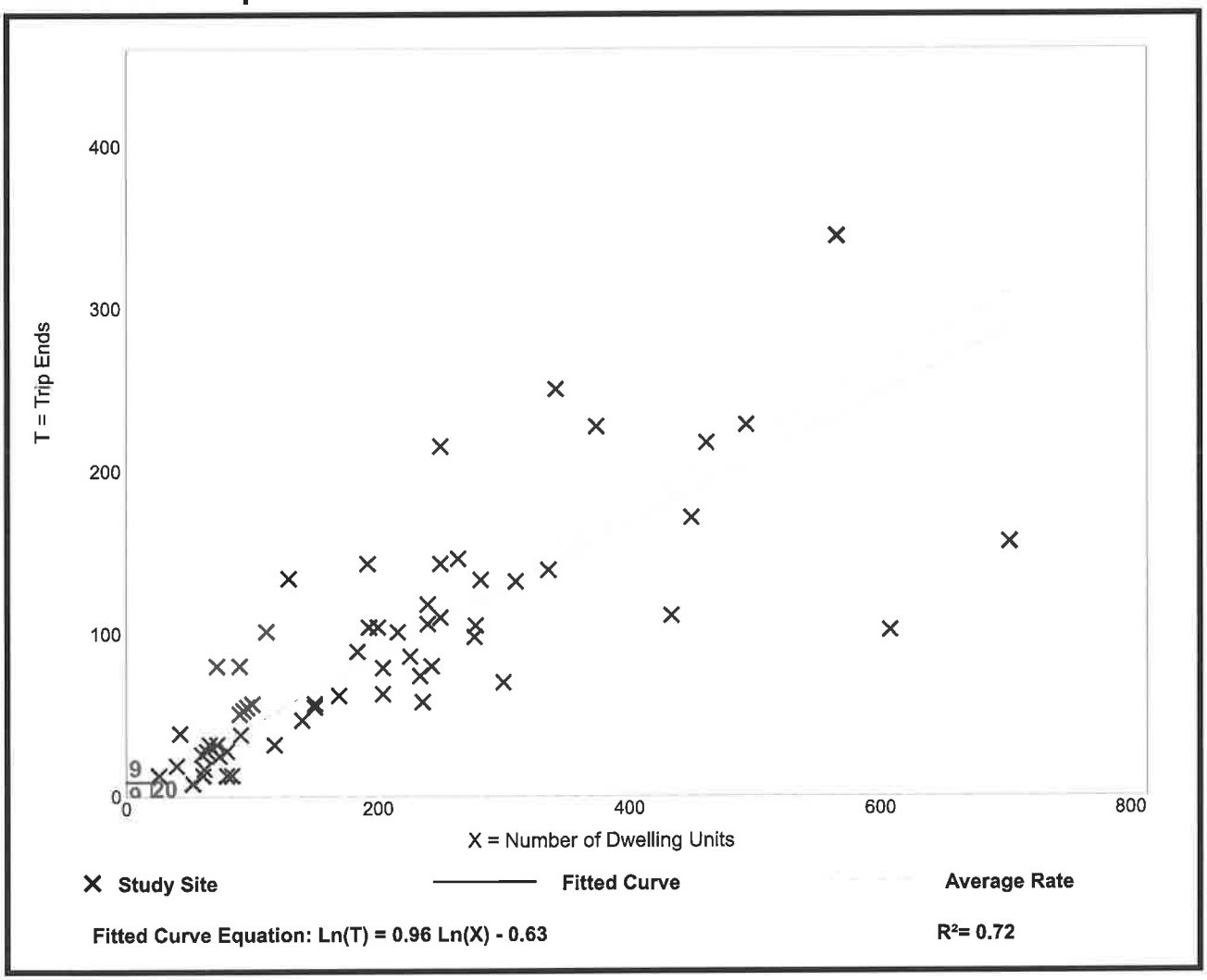
Multifamily Housing (Mid-Rise)
(221)

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: 60
Avg. Num. of Dwelling Units: 208
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



JOURNEY TO WORK TRIP DISTRIBUTION

Residence		Workplace		Worcester Street (East)	Worcester Street (West)	Westgate Road (North)
Massachusetts	Wellesley town	Wellesley town	4,709	3061	1177	471
Massachusetts	Wellesley town	Boston city	2,193	2193		
Massachusetts	Wellesley town	Cambridge city	616	616		
Massachusetts	Wellesley town	Newton city	474	474		
Massachusetts	Wellesley town	Needham town	276	276		
Massachusetts	Wellesley town	Waltham city	265	265		
Massachusetts	Wellesley town	Framingham town	238		238	
Massachusetts	Wellesley town	Brookline town	224	224		
Massachusetts	Wellesley town	Weston town	223		167	56
Massachusetts	Wellesley town	Natick town	199		199	
Massachusetts	Wellesley town	Marlborough city	128		128	
Massachusetts	Wellesley town	Westwood town	105	105		
Massachusetts	Wellesley town	Worcester city	101		101	
Massachusetts	Wellesley town	Braintree Town city	99	99		
Massachusetts	Wellesley town	Weymouth Town city	84	84		
Massachusetts	Wellesley town	Watertown Town city	77	77		
Massachusetts	Wellesley town	Norwood town	64	64		
Massachusetts	Wellesley town	Lexington town	60	60		
Massachusetts	Wellesley town	Billerica town	55	55		
Massachusetts	Wellesley town	Lowell city	54	54		
Massachusetts	Wellesley town	Quincy city	54	54		
Massachusetts	Wellesley town	Foxborough town	52	52		
Massachusetts	Wellesley town	Dedham town	50	37		
Massachusetts	Wellesley town	Franklin Town city	49	49		
			10,449	7,899	2,010	527
				76%	19%	5%
		SAY		75%	20%	5%

CAPACITY ANALYSIS WORKSHEETS

Worcester Street at Oak Street and Westgate Road
Worcester Street at Francis Road
Worcester Street at the Worcester Street Eastbound U-Turns
Worcester Street at the Worcester Street Westbound U-Turns
Worcester Street at the Project Site Driveway

Worcester Street at Oak Street and Westgate Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	2027	50	135	1757	39	0	0	60	0	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1752	3440	0	1668	3445	0	0	0	1753	0	0	1634
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1752	3440	0	1668	3445	0	0	0	1753	0	0	1634
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			1039			326			294	
Travel Time (s)		12.1			23.6			7.4			6.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.88	0.88	0.88	0.69	0.69	0.69
Heavy Vehicles (%)	3%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	14%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	2163	0	141	1871	0	0	0	68	0	0	32
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	104	2027	50	135	1757	39	0	0	60	0	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	88	88	88	69	69	69
Heavy Vehicles, %	3	1	2	1	1	0	0	0	0	0	0	14
Mvmt Flow	108	2111	52	141	1830	41	0	0	68	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1871	0	0	2164	0	0	3550	4506	1082	3404	4512	935
Stage 1	-	-	-	-	-	-	2354	2354	-	2132	2132	-
Stage 2	-	-	-	-	-	-	1196	2152	-	1272	2380	-
Critical Hdwy	4.16	-	-	4.12	-	-	7.5	6.5	6.9	7.5	6.5	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.23	-	-	2.21	-	-	3.5	4	3.3	3.5	4	3.44
Pot Cap-1 Maneuver	314	-	-	247	-	-	2	1	216	3	1	245
Stage 1	-	-	-	-	-	-	37	70	-	52	91	-
Stage 2	-	-	-	-	-	-	201	88	-	180	68	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	314	-	-	247	-	-	1	0	216	1	0	245
Mov Cap-2 Maneuver	-	-	-	-	-	-	1	0	-	1	0	-
Stage 1	-	-	-	-	-	-	24	46	-	34	39	-
Stage 2	-	-	-	-	-	-	75	38	-	81	45	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	2.6	29.2	21.9
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	216	314	-	-	247	-	-	245
HCM Lane V/C Ratio	0.316	0.345	-	-	0.569	-	-	0.13
HCM Control Delay (s)	29.2	22.4	-	-	37.2	-	-	21.9
HCM Lane LOS	D	C	-	-	E	-	-	C
HCM 95th %tile Q(veh)	1.3	1.5	-	-	3.2	-	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	2003	105	243	1872	44	0	0	26	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3429	0	1685	3444	0	0	0	1753	0	0	1863
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1805	3429	0	1685	3444	0	0	0	1753	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			1039			326			294	
Travel Time (s)		12.1			23.6			7.4			6.7	
Peak Hour Factor	0.95	0.95	0.95	0.96	0.96	0.96	0.65	0.65	0.65	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	2219	0	253	1996	0	0	0	40	0	0	24
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 78.8% ICU Level of Service D
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	2003	105	243	1872	44	0	0	26	0	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	96	96	96	65	65	65	75	75	75
Heavy Vehicles, %	0	1	0	0	1	2	0	0	0	0	0	0
Mvmt Flow	35	2108	111	253	1950	46	0	0	40	0	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1996	0	0	2219	0	0	3714	4735	1109	3603	4767	998
Stage 1	-	-	-	-	-	-	2233	2233	-	2479	2479	-
Stage 2	-	-	-	-	-	-	1481	2502	-	1124	2288	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	292	-	-	~ 239	-	-	2	1	207	2	1	246
Stage 1	-	-	-	-	-	-	45	80	-	31	60	-
Stage 2	-	-	-	-	-	-	134	58	-	222	75	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	292	-	-	~ 239	-	-	2	1	207	1	1	246
Mov Cap-2 Maneuver	-	-	-	-	-	-	2	1	-	1	1	-
Stage 1	-	-	-	-	-	-	40	70	-	27	60	-
Stage 2	-	-	-	-	-	-	121	58	-	158	66	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	13.4	26.5	21.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	207	292	-	-	~ 239	-	-	246
HCM Lane V/C Ratio	0.193	0.119	-	-	1.059	-	-	0.098
HCM Control Delay (s)	26.5	19	-	-	119.1	-	-	21.2
HCM Lane LOS	D	C	-	-	F	-	-	C
HCM 95th %tile Q(veh)	0.7	0.4	-	-	10.7	-	-	0.3

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	2271	54	148	1927	42	0	0	68	0	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1752	3444	0	1668	3445	0	0	0	1753	0	0	1634
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1752	3444	0	1668	3445	0	0	0	1753	0	0	1634
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			1039			326			294	
Travel Time (s)		12.1			23.6			7.4			6.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.88	0.88	0.88	0.69	0.69	0.69
Heavy Vehicles (%)	3%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	14%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	2422	0	154	2051	0	0	0	77	0	0	35
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.4% ICU Level of Service D
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	113	2271	54	148	1927	42	0	0	68	0	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	88	88	88	69	69	69
Heavy Vehicles, %	3	1	2	1	1	0	0	0	0	0	0	14
Mvmt Flow	118	2366	56	154	2007	44	0	0	77	0	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2051	0	0	2422	0	0	3941	4988	1211	3756	4995	1026
Stage 1	-	-	-	-	-	-	2629	2629	-	2338	2338	-
Stage 2	-	-	-	-	-	-	1312	2359	-	1418	2657	-
Critical Hdwy	4.16	-	-	4.12	-	-	7.5	6.5	6.9	7.5	6.5	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.23	-	-	2.21	-	-	3.5	4	3.3	3.5	4	3.44
Pot Cap-1 Maneuver	267	-	-	196	-	-	1	1	177	2	1	212
Stage 1	-	-	-	-	-	-	25	50	-	38	71	-
Stage 2	-	-	-	-	-	-	170	69	-	146	48	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	267	-	-	196	-	-	0	0	177	0	0	212
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	0	0	-
Stage 1	-	-	-	-	-	-	14	28	-	21	15	-
Stage 2	-	-	-	-	-	-	30	15	-	46	27	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	4.8	40.2	25.3
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	177	267	-	-	196	-	-	212
HCM Lane V/C Ratio	0.437	0.441	-	-	0.787	-	-	0.164
HCM Control Delay (s)	40.2	28.7	-	-	69.2	-	-	25.3
HCM Lane LOS	E	D	-	-	F	-	-	D
HCM 95th %tile Q(veh)	2	2.1	-	-	5.4	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	2253	114	271	2101	48	0	0	30	0	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3433	0	1685	3444	0	0	0	1753	0	0	1863
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1805	3433	0	1685	3444	0	0	0	1753	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			1039			326			294	
Travel Time (s)		12.1			23.6			7.4			6.7	
Peak Hour Factor	0.95	0.95	0.95	0.96	0.96	0.96	0.65	0.65	0.65	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	2492	0	282	2239	0	0	0	46	0	0	25
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 87.6% **ICU Level of Service E**
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	17.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	35	2253	114	271	2101	48	0	0	30	0	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	96	96	96	65	65	65	75	75	75
Heavy Vehicles, %	0	1	0	0	1	2	0	0	0	0	0	0
Mvmt Flow	37	2372	120	282	2189	50	0	0	46	0	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2239	0	0	2492	0	0	4164	5308	1246	4037	5343	1119
Stage 1	-	-	-	-	-	-	2505	2505	-	2778	2778	-
Stage 2	-	-	-	-	-	-	1659	2803	-	1259	2565	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	235	-	-	~ 187	-	-	1	0	168	1	0	204
Stage 1	-	-	-	-	-	-	30	58	-	20	42	-
Stage 2	-	-	-	-	-	-	104	41	-	184	54	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	235	-	-	~ 187	-	-	1	0	168	1	0	204
Mov Cap-2 Maneuver	-	-	-	-	-	-	1	0	-	1	0	-
Stage 1	-	-	-	-	-	-	25	49	-	17	42	-
Stage 2	-	-	-	-	-	-	91	41	-	112	45	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	33.7	34.4	25.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	235	-	-	~ 187	-	-	204
HCM Lane V/C Ratio	0.275	0.157	-	-	1.51	-	-	0.124
HCM Control Delay (s)	34.4	23.1	-	-	$ 300.8	-	-	25.1
HCM Lane LOS	D	C	-	-	F	-	-	D
HCM 95th %tile Q(veh)	1.1	0.5	-	-	17.8	-	-	0.4

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	2272	54	149	1928	42	0	0	68	0	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1752	3444	0	1668	3445	0	0	0	1753	0	0	1634
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1752	3444	0	1668	3445	0	0	0	1753	0	0	1634
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			699			326			294	
Travel Time (s)		12.1			15.9			7.4			6.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.88	0.88	0.88	0.69	0.69	0.69
Heavy Vehicles (%)	3%	1%	2%	1%	1%	0%	0%	0%	0%	0%	0%	14%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	2423	0	155	2052	0	0	0	77	0	0	35
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 79.4% ICU Level of Service D
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	113	2272	54	149	1928	42	0	0	68	0	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	88	88	88	69	69	69
Heavy Vehicles, %	3	1	2	1	1	0	0	0	0	0	0	14
Mvmt Flow	118	2367	56	155	2008	44	0	0	77	0	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2052	0	0	2423	0	0	3945	4993	1211	3760	4999	1026
Stage 1	-	-	-	-	-	-	2630	2630	-	2341	2341	-
Stage 2	-	-	-	-	-	-	1315	2363	-	1419	2658	-
Critical Hdwy	4.16	-	-	4.12	-	-	7.5	6.5	6.9	7.5	6.5	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.23	-	-	2.21	-	-	3.5	4	3.3	3.5	4	3.44
Pot Cap-1 Maneuver	266	-	-	196	-	-	1	1	177	2	1	212
Stage 1	-	-	-	-	-	-	25	50	-	38	71	-
Stage 2	-	-	-	-	-	-	170	69	-	146	48	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	266	-	-	196	-	-	0	0	177	0	0	212
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	0	0	-
Stage 1	-	-	-	-	-	-	14	28	-	21	15	-
Stage 2	-	-	-	-	-	-	30	14	-	46	27	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	4.9	40.2	25.3
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	177	266	-	-	196	-	-	212
HCM Lane V/C Ratio	0.437	0.443	-	-	0.792	-	-	0.164
HCM Control Delay (s)	40.2	28.9	-	-	70	-	-	25.3
HCM Lane LOS	E	D	-	-	F	-	-	D
HCM 95th %tile Q(veh)	2	2.1	-	-	5.5	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	2254	114	275	2102	48	0	0	30	0	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	10	11	12	12	12	14	12	12	16
Storage Length (ft)	110		0	110		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3433	0	1685	3444	0	0	0	1753	0	0	1863
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1805	3433	0	1685	3444	0	0	0	1753	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		533			669			326			294	
Travel Time (s)		12.1			15.2			7.4			6.7	
Peak Hour Factor	0.95	0.95	0.95	0.96	0.96	0.96	0.65	0.65	0.65	0.75	0.75	0.75
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	2493	0	286	2240	0	0	0	46	0	0	25
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 87.8% ICU Level of Service E
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	18.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	35	2254	114	275	2102	48	0	0	30	0	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	110	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	96	96	96	65	65	65	75	75	75
Heavy Vehicles, %	0	1	0	0	1	2	0	0	0	0	0	0
Mvmt Flow	37	2373	120	286	2190	50	0	0	46	0	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2240	0	0	2493	0	0	4174	5319	1246	4048	5354	1120
Stage 1	-	-	-	-	-	-	2506	2506	-	2788	2788	-
Stage 2	-	-	-	-	-	-	1668	2813	-	1260	2566	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	234	-	-	~ 186	-	-	1	0	168	1	0	204
Stage 1	-	-	-	-	-	-	30	58	-	19	41	-
Stage 2	-	-	-	-	-	-	102	40	-	183	54	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	234	-	-	~ 186	-	-	1	0	168	1	0	204
Mov Cap-2 Maneuver	-	-	-	-	-	-	1	0	-	1	0	-
Stage 1	-	-	-	-	-	-	25	49	-	16	41	-
Stage 2	-	-	-	-	-	-	89	40	-	112	45	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	35.6	34.4	25.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	234	-	-	~ 186	-	-	204
HCM Lane V/C Ratio	0.275	0.157	-	-	1.54	-	-	0.124
HCM Control Delay (s)	34.4	23.2	-	-	$ 313.8	-	-	25.1
HCM Lane LOS	D	C	-	-	F	-	-	D
HCM 95th %tile Q(veh)	1.1	0.5	-	-	18.4	-	-	0.4

Notes

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

Worcester Street at Francis Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	2197	5	0	0	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	11
Satd. Flow (prot)	3455	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3455	0	0	3574	0	1589
Link Speed (mph)	30			30	30	
Link Distance (ft)	1039			690	765	
Travel Time (s)	23.6			15.7	17.4	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.65	0.65
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2294	0	0	0	0	20
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2197	5	0	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	65	65
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2289	5	0	0	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2294	0	2291	1147
Stage 1	-	-	-	-	2291	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	223	-	34	196
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	223	-	34	196
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	196	-	-	223	-
HCM Lane V/C Ratio	0.102	-	-	-	-
HCM Control Delay (s)	25.4	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	2084	9	0	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	11
Satd. Flow (prot)	3452	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3452	0	0	3574	0	1589
Link Speed (mph)	30			30	30	
Link Distance (ft)	1039			690	765	
Travel Time (s)	23.6			15.7	17.4	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.56	0.56
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2251	0	0	0	0	16
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2084	9	0	0	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	92	92	56	56
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2241	10	0	0	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2251	0	2246	1125
Stage 1	-	-	-	-	2246	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	232	-	36	202
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	232	-	36	202
Mov Cap-2 Maneuver	-	-	-	-	36	-
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	202	-	-	232	-
HCM Lane V/C Ratio	0.08	-	-	-	-
HCM Control Delay (s)	24.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	**2457**	7	0	**0**	**0**	**20**
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	**11**	12	12	**12**	**12**	**11**
Satd. Flow (prot)	3455	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3455	0	0	3574	0	1589
Link Speed (mph)	**30**			**30**	**30**	
Link Distance (ft)	1039			690	765	
Travel Time (s)	**23.6**			**15.7**	**17.4**	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.65	0.65
Heavy Vehicles (%)	**1%**	**0%**	**0%**	**1%**	**0%**	**0%**
Shared Lane Traffic (%)						
Lane Group Flow (vph)	**2566**	**0**	**0**	**0**	**0**	**31**
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2457	7	0	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	65	65
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2559	7	0	0	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2567	0	2563	1283
Stage 1	-	-	-	-	2563	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	174	-	22	159
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	174	-	22	159
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	159	-	-	174	-
HCM Lane V/C Ratio	0.194	-	-	-	-
HCM Control Delay (s)	33	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	2341	17	0	0	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	11
Satd. Flow (prot)	3452	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3452	0	0	3574	0	1589
Link Speed (mph)	30			30	30	
Link Distance (ft)	1039			690	765	
Travel Time (s)	23.6			15.7	17.4	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.56	0.56
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2535	0	0	0	0	25
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2341	17	0	0	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	92	92	56	56
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2517	18	0	0	0	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2535	0	2526	1268
Stage 1	-	-	-	-	2526	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	179	-	23	162
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	179	-	23	162
Mov Cap-2 Maneuver	-	-	-	-	23	-
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	162	-	-	179	-
HCM Lane V/C Ratio	0.154	-	-	-	-
HCM Control Delay (s)	31.2	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	**2462**	**7**	**0**	**0**	**0**	**20**
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	**11**	**12**	**12**	**12**	**12**	**11**
Satd. Flow (prot)	3455	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3455	0	0	3574	0	1589
Link Speed (mph)	**30**			**30**	**30**	
Link Distance (ft)	341			690	765	
Travel Time (s)	**7.8**			**15.7**	**17.4**	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.65	0.65
Heavy Vehicles (%)	**1%**	**0%**	**0%**	**1%**	**0%**	**0%**
Shared Lane Traffic (%)						
Lane Group Flow (vph)	**2572**	**0**	**0**	**0**	**0**	**31**
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2462	7	0	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	65	65
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2565	7	0	0	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2572	0	2568	1286
Stage 1	-	-	-	-	2568	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	173	-	22	158
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	173	-	22	158
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	158	-	-	173	-
HCM Lane V/C Ratio	0.195	-	-	-	-
HCM Control Delay (s)	33.2	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	2345	17	0	0	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	11
Satd. Flow (prot)	3452	0	0	3574	0	1589
Flt Permitted						
Satd. Flow (perm)	3452	0	0	3574	0	1589
Link Speed (mph)	30			30	30	
Link Distance (ft)	370			690	765	
Travel Time (s)	8.4			15.7	17.4	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.56	0.56
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2540	0	0	0	0	25
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2345	17	0	0	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	92	92	56	56
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	2522	18	0	0	0	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2540	0	2531	1270
Stage 1	-	-	-	-	2531	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	179	-	23	162
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	179	-	23	162
Mov Cap-2 Maneuver	-	-	-	-	23	-
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	162	-	-	179	-
HCM Lane V/C Ratio	0.154	-	-	-	-
HCM Control Delay (s)	31.2	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Worcester Street at the Worcester Street Eastbound U-Turns

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Volume (vph)	165	2030	1795	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1728	3455	3421	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1728	3455	3421	0	0	1863
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.98	0.98	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	2071	1870	0	0	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 65.4% ICU Level of Service C
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	165	2030	1795	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	96	96	92	92
Heavy Vehicles, %	1	1	2	0	0	2
Mvmt Flow	168	2071	1870	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1870	0	-	0	3242	935
Stage 1	-	-	-	-	1870	-
Stage 2	-	-	-	-	1372	-
Critical Hdwy	4.12	-	-	-	6.8	6.94
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.32
Pot Cap-1 Maneuver	322	-	-	-	7	267
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	204	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	322	-	-	-	3	267
Mov Cap-2 Maneuver	-	-	-	-	3	-
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	98	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	322	-	-	-	-
HCM Lane V/C Ratio	0.523	-	-	-	-
HCM Control Delay (s)	27.8	-	-	-	0
HCM Lane LOS	D	-	-	-	A
HCM 95th %tile Q(veh)	2.9	-	-	-	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			
Volume (vph)	121	1947	2274	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1745	3455	3421	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1745	3455	3421	0	0	1863
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.94	0.94	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	0%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	2071	2369	0	0	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	121	1947	2274	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	96	96	92	92
Heavy Vehicles, %	0	1	2	0	0	2
Mvmt Flow	129	2071	2369	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2369	0	-	0	3662	1184
Stage 1	-	-	-	-	2369	-
Stage 2	-	-	-	-	1293	-
Critical Hdwy	4.1	-	-	-	6.8	6.94
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.32
Pot Cap-1 Maneuver	209	-	-	-	4	182
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	225	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	209	-	-	-	2	182
Mov Cap-2 Maneuver	-	-	-	-	2	-
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	86	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	209	-	-	-	-
HCM Lane V/C Ratio	0.616	-	-	-	-
HCM Control Delay (s)	46.5	-	-	-	0
HCM Lane LOS	E	-	-	-	A
HCM 95th %tile Q(veh)	3.6	-	-	-	-

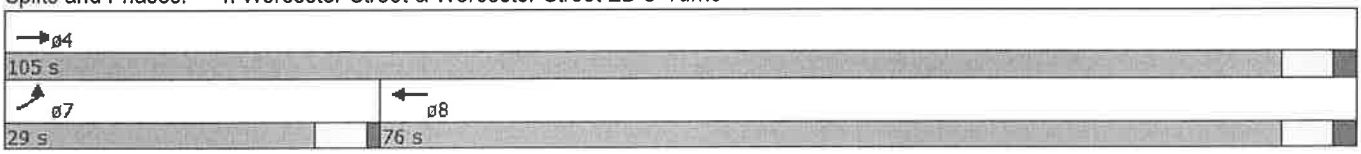
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			
Volume (vph)	181	2280	1968	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1728	3455	3421	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1728	3455	3421	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.98	0.98	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	2327	2050	0	0	0
Turn Type	Prot	NA	NA			
Protected Phases	7	4	8			
Permitted Phases						
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	9.0	22.0	22.0			
Total Split (s)	29.0	105.0	76.0			
Total Split (%)	27.6%	100.0%	72.4%			
Yellow Time (s)	4.0	4.0	4.0			
All-Red Time (s)	1.0	2.0	2.0			
Lost Time Adjust (s)	-1.0	-2.0	-2.0			
Total Lost Time (s)	4.0	4.0	4.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min			
Act Effct Green (s)	16.8	97.0	72.1			
Actuated g/C Ratio	0.17	1.00	0.74			
v/c Ratio	0.62	0.67	0.81			
Control Delay	46.9	1.1	12.1			
Queue Delay	0.0	0.0	0.0			
Total Delay	46.9	1.1	12.1			
LOS	D	A	B			
Approach Delay		4.4	12.1			
Approach LOS		A	B			
Queue Length 50th (ft)	112	0	354			
Queue Length 95th (ft)	178	0	603			
Internal Link Dist (ft)		291	213		1	
Turn Bay Length (ft)	150					
Base Capacity (vph)	448	3455	2614			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.41	0.67	0.78			

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 97
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 80.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Worcester Street & Worcester Street EB U-Turns



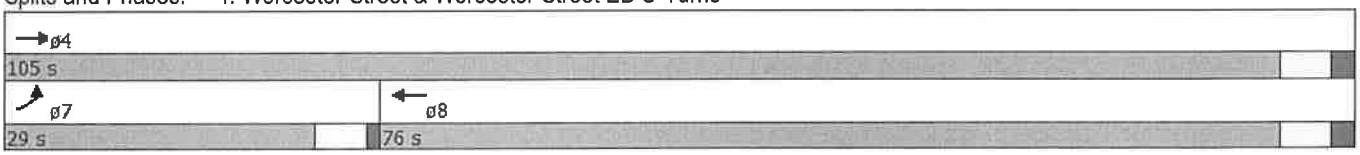
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑			
Volume (vph)	132	2195	2543	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1745	3455	3421	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1745	3455	3421	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.94	0.94	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	0%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	2335	2649	0	0	0
Turn Type	Prot	NA	NA			
Protected Phases	7	4	8			
Permitted Phases						
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	9.0	22.0	22.0			
Total Split (s)	29.0	105.0	76.0			
Total Split (%)	27.6%	100.0%	72.4%			
Yellow Time (s)	4.0	4.0	4.0			
All-Red Time (s)	1.0	2.0	2.0			
Lost Time Adjust (s)	-1.0	-2.0	-2.0			
Total Lost Time (s)	4.0	4.0	4.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min			
Act Effct Green (s)	14.6	104.2	81.6			
Actuated g/C Ratio	0.14	1.00	0.78			
v/c Ratio	0.57	0.68	0.99			
Control Delay	50.6	1.1	27.6			
Queue Delay	0.0	0.0	0.0			
Total Delay	50.6	1.1	27.6			
LOS	D	A	C			
Approach Delay		3.9	27.6			
Approach LOS		A	C			
Queue Length 50th (ft)	87	0	706			
Queue Length 95th (ft)	146	0	#1175			
Internal Link Dist (ft)		291	213		1	
Turn Bay Length (ft)	150					
Base Capacity (vph)	418	3422	2679			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	**0**	**0**	**0**			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	**0**	**0**	**0**			
Reduced v/c Ratio	0.33	0.68	0.99			

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 104.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 86.6% ICU Level of Service E
Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Worcester Street & Worcester Street EB U-Turns



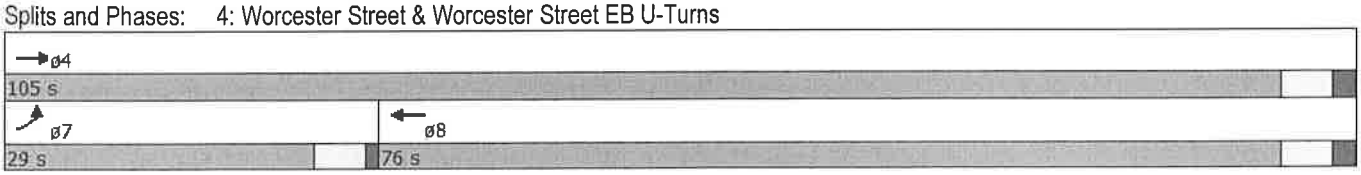
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			
Volume (vph)	182	2285	1968	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1728	3455	3421	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1728	3455	3421	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.98	0.98	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	1%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	2332	2050	0	0	0
Turn Type	Prot	NA	NA			
Protected Phases	7	4	8			
Permitted Phases						
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	9.0	22.0	22.0			
Total Split (s)	29.0	105.0	76.0			
Total Split (%)	27.6%	100.0%	72.4%			
Yellow Time (s)	4.0	4.0	4.0			
All-Red Time (s)	1.0	2.0	2.0			
Lost Time Adjust (s)	-1.0	-2.0	-2.0			
Total Lost Time (s)	4.0	4.0	4.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min			
Act Effct Green (s)	16.9	97.0	72.0			
Actuated g/C Ratio	0.17	1.00	0.74			
v/c Ratio	0.62	0.67	0.81			
Control Delay	46.9	1.1	12.1			
Queue Delay	0.0	0.0	0.0			
Total Delay	46.9	1.1	12.1			
LOS	D	A	B			
Approach Delay		4.5	12.1			
Approach LOS		A	B			
Queue Length 50th (ft)	113	0	355			
Queue Length 95th (ft)	179	0	603			
Internal Link Dist (ft)		291	213		1	
Turn Bay Length (ft)	150					
Base Capacity (vph)	448	3455	2613			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.42	0.67	0.78			

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 97
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 7.9 Intersection LOS: A
Intersection Capacity Utilization 81.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Worcester Street & Worcester Street EB U-Turns



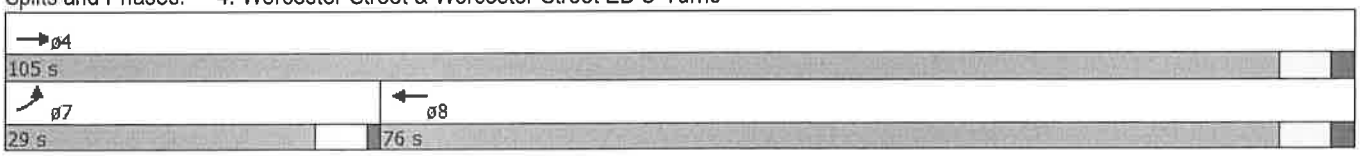
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	133	2198	2547	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12
Storage Length (ft)	150			0	0	0
Storage Lanes	1			0	0	0
Taper Length (ft)	25				25	
Satd. Flow (prot)	1745	3455	3421	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1745	3455	3421	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (mph)		30	30		30	
Link Distance (ft)		371	293		72	
Travel Time (s)		8.4	6.7		1.6	
Peak Hour Factor	0.94	0.94	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	0%	1%	2%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	2338	2653	0	0	0
Turn Type	Prot	NA	NA			
Protected Phases	7	4	8			
Permitted Phases						
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	9.0	22.0	22.0			
Total Split (s)	29.0	105.0	76.0			
Total Split (%)	27.6%	100.0%	72.4%			
Yellow Time (s)	4.0	4.0	4.0			
All-Red Time (s)	1.0	2.0	2.0			
Lost Time Adjust (s)	-1.0	-2.0	-2.0			
Total Lost Time (s)	4.0	4.0	4.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min			
Act Effct Green (s)	14.6	104.2	81.6			
Actuated g/C Ratio	0.14	1.00	0.78			
v/c Ratio	0.58	0.68	0.99			
Control Delay	50.6	1.1	28.2			
Queue Delay	0.0	0.0	0.0			
Total Delay	50.6	1.1	28.2			
LOS	D	A	C			
Approach Delay		3.9	28.2			
Approach LOS		A	C			
Queue Length 50th (ft)	88	0	715			
Queue Length 95th (ft)	147	0	#1177			
Internal Link Dist (ft)		291	213		1	
Turn Bay Length (ft)	150					
Base Capacity (vph)	418	3421	2677			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.34	0.68	0.99			

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 104.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 16.4 Intersection LOS: B
Intersection Capacity Utilization 86.7% **ICU Level of Service E**
Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Worcester Street & Worcester Street EB U-Turns



Worcester Street at the Worcester Street Westbound U-Turns

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		↱
Volume (vph)	2137	0	133	1902	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	3574	0	1652	3574	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	3574	0	1652	3574	0	1863
Link Speed (mph)	30			30	30	
Link Distance (ft)	690			371	118	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	0.97	0.97	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2203	0	139	1981	0	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2137	0	133	1902	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	96	96	92	92
Heavy Vehicles, %	1	0	2	1	2	2
Mvmt Flow	2203	0	139	1981	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2203	0	3471	1102
Stage 1	-	-	-	-	2203	-
Stage 2	-	-	-	-	1268	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	235	-	5	206
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	228	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	235	-	2	206
Mov Cap-2 Maneuver	-	-	-	-	2	-
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	93	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	235	-
HCM Lane V/C Ratio	-	-	-	0.59	-
HCM Control Delay (s)	0	-	-	40.2	-
HCM Lane LOS	A	-	-	E	-
HCM 95th %tile Q(veh)	-	-	-	3.4	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		↱
Volume (vph)	2042	0	272	2113	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		0	1
Taper Length (ft)			25		25	
Satd. Flow (prot)	3574	0	1685	3574	0	1863
Flt Permitted			0.950			
Satd. Flow (perm)	3574	0	1685	3574	0	1863
Link Speed (mph)	30			30	30	
Link Distance (ft)	690			371	118	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	0.93	0.93	0.97	0.97	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2196	0	280	2178	0	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 78.2% ICU Level of Service D
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	8.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2042	0	272	2113	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	97	97	92	92
Heavy Vehicles, %	1	0	0	1	2	2
Mvmt Flow	2196	0	280	2178	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2196	0	3846	1098
Stage 1	-	-	-	-	2196	-
Stage 2	-	-	-	-	1650	-
Critical Hdwy	-	-	4.1	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.2	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	~ 244	-	3	208
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	142	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	~ 244	-	3	208
Mov Cap-2 Maneuver	-	-	-	-	3	-
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	142	-

Approach	EB	WB	NB
HCM Control Delay, s	0	16.8	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	~ 244	-
HCM Lane V/C Ratio	-	-	-	1.149	-
HCM Control Delay (s)	0	-	-	146.9	-
HCM Lane LOS	A	-	-	F	-
HCM 95th %tile Q(veh)	-	-	-	12.8	-

Notes

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

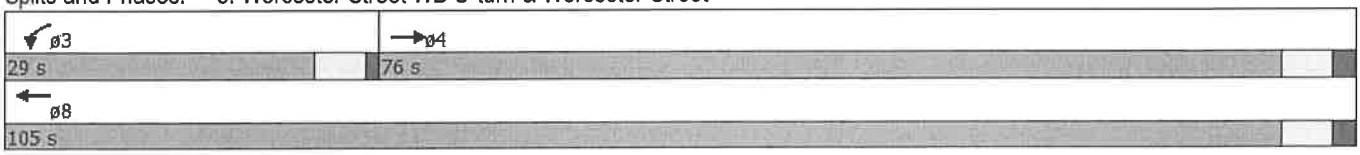
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		
Volume (vph)	2398	0	144	2086	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		0	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	3574	0	1652	3574	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3574	0	1652	3574	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	690			371	118	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	0.97	0.97	0.96	0.96	0.92	0.92
Heavy Vehicles (%)	1%	0%	2%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2472	0	150	2173	0	0
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0		
Minimum Split (s)	22.0		9.0	22.0		
Total Split (s)	76.0		29.0	105.0		
Total Split (%)	72.4%		27.6%	100.0%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	2.0		1.0	2.0		
Lost Time Adjust (s)	-2.0		-1.0	-2.0		
Total Lost Time (s)	4.0		4.0	4.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min		
Act Effct Green (s)	79.8		15.5	103.3		
Actuated g/C Ratio	0.77		0.15	1.00		
v/c Ratio	0.90		0.60	0.61		
Control Delay	15.6		50.4	0.8		
Queue Delay	0.0		0.0	0.0		
Total Delay	15.6		50.4	0.8		
LOS	B		D	A		
Approach Delay	15.6			4.0		
Approach LOS	B			A		
Queue Length 50th (ft)	514		93	0		
Queue Length 95th (ft)	#988		148	0		
Internal Link Dist (ft)	610			291	38	
Turn Bay Length (ft)			150			
Base Capacity (vph)	2759		399	3557		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.90		0.38	0.61		

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 103.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 10.0 Intersection LOS: A
Intersection Capacity Utilization 80.9% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Worcester Street WB U-turn & Worcester Street



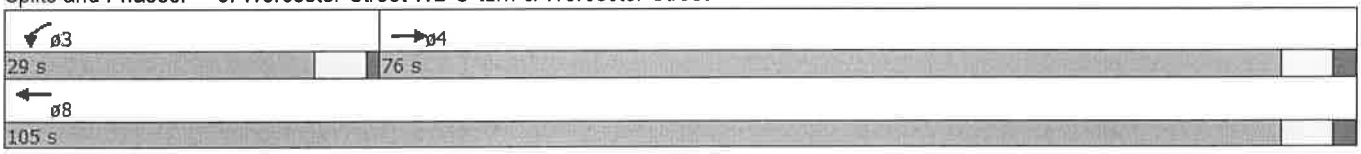
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		
Volume (vph)	2299	0	295	2370	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		0	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	3574	0	1685	3574	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3574	0	1685	3574	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	690			371	118	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	0.93	0.93	0.97	0.97	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2472	0	304	2443	0	0
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0		
Minimum Split (s)	22.0		9.0	22.0		
Total Split (s)	76.0		29.0	105.0		
Total Split (%)	72.4%		27.6%	100.0%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	2.0		1.0	2.0		
Lost Time Adjust (s)	-2.0		-1.0	-2.0		
Total Lost Time (s)	4.0		4.0	4.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min		
Act Effct Green (s)	73.1		22.7	103.8		
Actuated g/C Ratio	0.70		0.22	1.00		
v/c Ratio	0.98		0.82	0.68		
Control Delay	30.6		57.6	1.1		
Queue Delay	0.0		1.0	0.0		
Total Delay	30.6		58.6	1.1		
LOS	C		E	A		
Approach Delay	30.6			7.4		
Approach LOS	C			A		
Queue Length 50th (ft)	~815		191	0		
Queue Length 95th (ft)	#1056		#315	0		
Internal Link Dist (ft)	610			291	38	
Turn Bay Length (ft)			150			
Base Capacity (vph)	2515		406	3560		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		19	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.98		0.79	0.69		

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 103.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 86.6% ICU Level of Service E
Analysis Period (min) 15
~ 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: 3: Worcester Street WB U-turn & Worcester Street



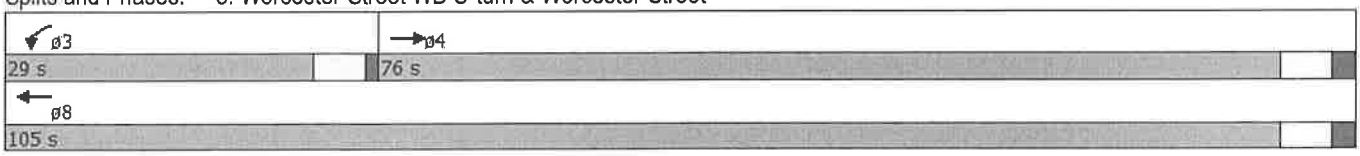
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		
Volume (vph)	**2403**	**0**	**144**	**2088**	**0**	**0**
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	**12**	**12**	**10**	**12**	**12**	**12**
Storage Length (ft)		0	150		0	0
Storage Lanes		**0**	**1**		**0**	**0**
Taper Length (ft)			25		25	
Satd. Flow (prot)	**3574**	**0**	**1652**	**3574**	**0**	**0**
Flt Permitted			0.950			
Satd. Flow (perm)	**3574**	**0**	**1652**	**3574**	**0**	**0**
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	**690**			**371**	**118**	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	**0.97**	**0.97**	**0.96**	**0.96**	**0.92**	**0.92**
Heavy Vehicles (%)	1%	0%	2%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2477	0	150	2175	0	0
Turn Type	**NA**		**Prot**	**NA**		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0		
Minimum Split (s)	**22.0**		**9.0**	**22.0**		
Total Split (s)	76.0		29.0	105.0		
Total Split (%)	**72.4%**		**27.6%**	**100.0%**		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	**2.0**		**1.0**	**2.0**		
Lost Time Adjust (s)	-2.0		-1.0	-2.0		
Total Lost Time (s)	**4.0**		**4.0**	**4.0**		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	**Yes**		**Yes**			
Recall Mode	Min		None	Min		
Act Effct Green (s)	**79.8**		**15.5**	**103.3**		
Actuated g/C Ratio	0.77		0.15	1.00		
v/c Ratio	**0.90**		**0.60**	**0.61**		
Control Delay	15.7		50.4	0.8		
Queue Delay	**0.0**		**0.0**	**0.0**		
Total Delay	15.7		50.4	0.8		
LOS	B		D	A		
Approach Delay	15.7			4.0		
Approach LOS	B			A		
Queue Length 50th (ft)	517		93	0		
Queue Length 95th (ft)	**#991**		**148**	**0**		
Internal Link Dist (ft)	610			291	38	
Turn Bay Length (ft)			**150**			
Base Capacity (vph)	2759		399	3557		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.90		0.38	0.61		

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 103.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 10.0 Intersection LOS: B
Intersection Capacity Utilization 81.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Worcester Street WB U-turn & Worcester Street



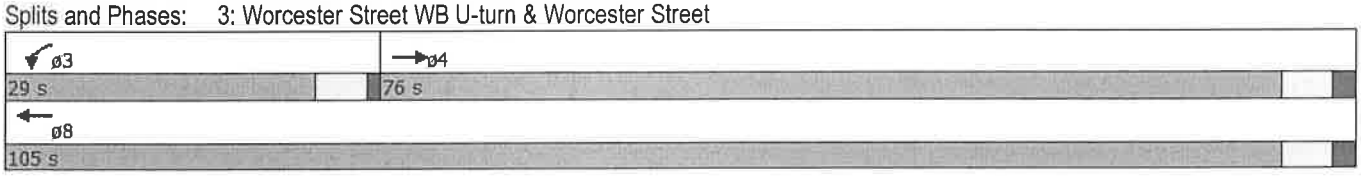
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↰	↑↑		
Volume (vph)	2303	0	295	2375	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	12
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		0	0
Taper Length (ft)			25		25	
Satd. Flow (prot)	3574	0	1685	3574	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3574	0	1685	3574	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	690			371	118	
Travel Time (s)	15.7			8.4	2.7	
Peak Hour Factor	0.93	0.93	0.97	0.97	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2476	0	304	2448	0	0
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0		
Minimum Split (s)	22.0		9.0	22.0		
Total Split (s)	76.0		29.0	105.0		
Total Split (%)	72.4%		27.6%	100.0%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	2.0		1.0	2.0		
Lost Time Adjust (s)	-2.0		-1.0	-2.0		
Total Lost Time (s)	4.0		4.0	4.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min		
Act Effct Green (s)	73.1		22.7	103.8		
Actuated g/C Ratio	0.70		0.22	1.00		
v/c Ratio	0.98		0.82	0.68		
Control Delay	30.9		57.6	1.1		
Queue Delay	0.0		1.0	0.0		
Total Delay	30.9		58.6	1.1		
LOS	C		E	A		
Approach Delay	30.9			7.4		
Approach LOS	C			A		
Queue Length 50th (ft)	~824		191	0		
Queue Length 95th (ft)	#1059		#315	0		
Internal Link Dist (ft)	610			291	38	
Turn Bay Length (ft)			150			
Base Capacity (vph)	2515		406	3560		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		19	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.98		0.79	0.69		

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 103.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 86.7% ICU Level of Service E
Analysis Period (min) 15
~ 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: 3: Worcester Street WB U-turn & Worcester Street



Worcester Street at the Project Site Driveway

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	**2457**	2	0	0	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	**11**	12	12	12	12	12
Satd. Flow (prot)	3421	0	0	3539	0	1611
Flt Permitted						
Satd. Flow (perm)	3421	0	0	3539	0	1611
Link Speed (mph)	**30**			**30**	**30**	
Link Distance (ft)	699			341	205	
Travel Time (s)	**15.9**			**7.8**	**4.7**	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2673	0	0	0	0	5
Sign Control	Free			Free	**Stop**	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 78.0% **ICU Level of Service D**
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2457	2	0	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2671	2	0	0	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2673	0	2672	1336
Stage 1	-	-	-	-	2672	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	153	-	18	144
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	153	-	18	144
Mov Cap-2 Maneuver	-	-	-	-	18	-
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	144	-	-	153	-
HCM Lane V/C Ratio	0.038	-	-	-	-
HCM Control Delay (s)	31	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↳			↑↑		↱
Volume (vph)	**2358**	**5**	**0**	**0**	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	**11**	**12**	**12**	**12**	12	**12**
Satd. Flow (prot)	3421	0	0	3539	0	1611
Flt Permitted						
Satd. Flow (perm)	3421	0	0	3539	0	1611
Link Speed (mph)	**30**			30	30	
Link Distance (ft)	669			370	278	
Travel Time (s)	**15.2**			8.4	6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2568	0	0	0	0	4
Sign Control	**Free**			Free	**Stop**	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 75.3% **ICU Level of Service D**
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	2358	5	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2563	5	0	0	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2568	0	2566	1284
Stage 1	-	-	-	-	2566	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	169	-	21	156
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	169	-	21	156
Mov Cap-2 Maneuver	-	-	-	-	21	-
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	156	-	-	169	-
HCM Lane V/C Ratio	0.028	-	-	-	-
HCM Control Delay (s)	28.7	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-