

TRANSPORTATION IMPACT ASSESSMENT

PARKSIDE APARTMENTS AND CONDOMINIUMS
383-385 WASHINGTON STREET
BRAINTREE, MASSACHUSETTS

Prepared for:

383 WASHINGTON STREET, LLC
Boston, Massachusetts

February 2017

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. 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, 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 78-unit residential townhouse/apartment community to be located at 383-385 Washington Street in Braintree, Massachusetts (hereafter referred to as the “Project”). The Project site is currently occupied by several commercial structures that include a one-story concrete block building and metal accessory storage/garage buildings. A portion of the paved area within the Project site is informally used as parking for the adjacent Archbishop Williams Memorial Field. The existing structures and paved areas that occupy the Project site will be removed to accommodate the new structures, some accessory parking and landscaping associated with the Project.

This assessment was prepared in consultation with the Town of Braintree and the Massachusetts Department of Transportation (MassDOT); was performed in accordance with MassDOT’s *Transportation Impact Assessment (TIA) Guidelines*; 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 620 vehicle trips on an average weekday (two-way, 24-hour volume), with 45 vehicle trips expected during the weekday morning peak-hour and 64 vehicle trips expected during the weekday evening peak-hour;
2. The Project is expected to add between 5 and 6 vehicle trips during the weekday peak commuter hours to Storrs Avenue west of the Project site, or approximately one (1) additional vehicle every 10 minutes during the peak-hour, a level of impact that would not be readily apparent over existing conditions;
3. 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;

¹*Trip Generation*, 9th Edition; Institute of Transportation Engineers; Washington, DC; 2012.

4. All movements at the access points to the Project site from Washington Street (Parkingway) and Storrs Avenue (existing driveway) were shown to operate at LOS D or better during both the weekday morning and evening peak hours with minimal (up to one (1) vehicle) vehicle queuing predicted;
5. Independent of the Project, it was noted that the Hollis Avenue and Clark Street approaches to Washington Street were operating at or over capacity during both the weekday morning and evening peak hours as a result of the relatively large volume of conflicting traffic travelling along Washington Street during the commuter peak hours; however, the residual vehicle queue was reported to be no more than two (2) vehicles;
6. During game/event conditions at Archbishop Williams Memorial Field, traffic volumes and parking demands can exceed the capacity of the roadways and parking accommodations that are available in the area. These conditions occur independent of the Project and are best managed through the implementation of an event traffic and parking management plan;
7. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and
8. Lines of sight to and from the access points serving the Project site from Washington Street and Storrs Avenue were found to exceed or could be made to exceed the required minimum distances for the intersections to function in a safe manner with consideration of the urban environment in which the Project site is located.

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 Parkingway, which intersects the west side of Washington Street approximately 450 feet south of Storrs Avenue, and an existing driveway that intersects the south side of Storrs Avenue approximately 300 feet west of Washington Street. The following recommendations are offered with respect to the design and operation of the Project site access:

- The access points serving the Project site and internal circulating roadways should be a minimum of 20-feet in width or as required to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Town of Braintree Fire Department.

- Where perpendicular parking is provided, the drive aisle behind the parking should be a minimum of 23-feet in order to allow for vehicle maneuvering.
- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.
- All signs and pavement markings to be installed within the Project site shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices (MUTCD)*.²
- Sidewalks have been provided within the Project site that link the proposed buildings to on-site amenities and parking areas, and extend to Storrs Avenue.
- The Proponent should work with the Town and abutting property owners to provide a sidewalk connection between the Project site and the existing sidewalk along the north side of Parkingway.
- Marked crosswalks and Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings within the Project site.
- Signs and landscaping to be installed as a part of the Project within intersection sight triangle areas should be designed and maintained so as not to restrict lines of sight.
- One or more of the existing arborvitae that have been planted along the south side of Storrs Avenue and west of the existing driveway that serves the Project site should be relocated or removed and replaced with low-growing vegetation that would not exceed 2.5-feet in height.
- The Proponent should coordinate with the Town to ensure that on-street parking is prohibited along Washington Street and Storrs Avenue within 20-feet (approximately one parking space) of Parkingway and the Storrs Avenue access to the Project site.
- Snow windrows within sight triangle areas shall be promptly removed where such accumulations would exceed 2.5 feet in height.
- Consideration should be given to installing electric vehicle charging stations within the Project site and to accommodating the staging of carsharing vehicles (ZipCar or similar).

Off-Site

Washington Street at Elm Street and Storrs Avenue

The addition of Project-related traffic to the signalized intersection of Washington Street at Elm Street and Storrs Avenue was shown to result in a slight degradation in overall operating conditions (from LOS C to LOS D) during the weekday morning peak-hour as a result of a predicted increase in average motorist delay of approximately 5.0 seconds, with no change in LOS predicted to occur during the weekday evening peak-hour (LOS C conditions were maintained). In addition, it was noted that one or more movements at the intersection were operating at or over capacity (defined as LOS “E” or “F”, respectively) independent of the Project. In an effort to improve operating conditions at this intersection, the Proponent will complete the following improvements to the extent so desired by the Town and in the context of

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

the overall mitigation package for the Project, subject to receipt of all necessary rights, permits and approvals:

1. Design and implement an optimal traffic signal timing and phasing plan;
2. Upgrade/replace pedestrian pushbuttons, signs, saddles and indications for compliance with ADA standards; and
3. Review and adjust the pedestrian walk and clearance times as necessary to meet current standards.

These improvements will be completed prior to the issuance of the first Certificate of Occupancy for the Project. With implementation of these improvements, overall intersection operations were improved from LOS D to LOS C during the weekday morning peak-hour and were maintained at LOS C during the weekday evening peak-hour, with no movement predicted to operate below LOS E (an improvement over No-Build conditions).

In addition, within 6-months of achieving 80 percent occupancy of the Project, the Proponent will reassess operating conditions at the intersection to include the collection of manual turning movement and vehicle classification counts during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak hours, and performing a traffic operations analysis (level-of-service, motorist delays and vehicle queuing). To the extent that adjustments are required to the traffic signal timing to accommodate the then observed traffic patterns and operating conditions at the intersection, the Proponent will implement the recommended timing adjustments subject to receipt of all necessary rights, permits and approvals.

Transportation Demand Management

The study area is served by public transportation services (fixed-route bus service) that are provided by the Massachusetts Bay Transportation Authority (MBTA). The MBTA operates fixed-route bus service along Washington Street by way of Route 230, *Quincy Center Station - Montello Commuter Rail Station via Holbrook & Braintree Station*, which includes a stop in both directions at the intersection of Washington Street at Storrs Avenue and Washington Street at River Street, both of which are within a 2-minute walking distance of the Project site. In addition, both Washington Street and Storrs Avenue provide sufficient width to accommodate bicycle travel to the Project site. 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 become a MassRIDES employer partner to facilitate and encourage healthy transportation options for residents of the Project and to coordinate a carpool/vanpool matching program;
- 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 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 will be incorporated within the Project site consisting of sidewalks linking the proposed buildings on-site amenities and will connect to the sidewalk infrastructure along both Storrs Avenue and Washington Street; and
- Secure bicycle parking will be provided consisting of: i) exterior bicycle parking conveniently located proximate to the apartment building and townhouses; and ii) weather protected bicycle parking located in a secure area within apartment 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 residential townhouse/apartment community to be located at 383-385 Washington Street in Braintree, 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 Washington Street and Storrs Avenue, and at the following intersections: Washington Street at Elm Street and Storrs Avenue; Washington Street at Parkingway; Washington Street at Hollis Avenue and Clark Street; Storrs Avenue at the existing driveway that serves the Project site; and Storrs Avenue at Abbott Street.

PROJECT DESCRIPTION

The Project will entail the construction of a 78-unit residential townhouse/apartment community to be located at 383-385 Washington Street in Braintree, Massachusetts. The proposed building program will entail the construction of two (2) townhouse buildings in northern portion of the Project site that will include a total of 8-units and an apartment building in the southern portion of the Project site that will include 70-units. The Project site encompasses approximately 2.62 ± acres of land this is bounded by Storrs Avenue and commercial properties to the north; commercial properties to the south; the Braintree Square Municipal Parking Lot and commercial properties to the east; and the Archbishop Williams Memorial Field 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 several commercial structures that include a one-story concrete block building and metal accessory storage/garage buildings. A portion of the paved area within the Project site is informally used as parking for the adjacent Archbishop Williams Memorial Field. The existing structures and paved areas that occupy the Project site will be removed to accommodate the new structures, some accessory parking and landscaping associated with the Project.

Access to the Project will be provided by way of Parkingway, which intersects the west side of Washington Street approximately 450 feet south of Storrs Avenue, and an existing driveway that intersects the south side of Storrs Avenue approximately 300 feet west of Washington Street. On-site parking is proposed as follows: for the apartment building, a total of 128 parking spaces will be provided consisting of 47 surface parking spaces and 81 parking spaces to be located beneath

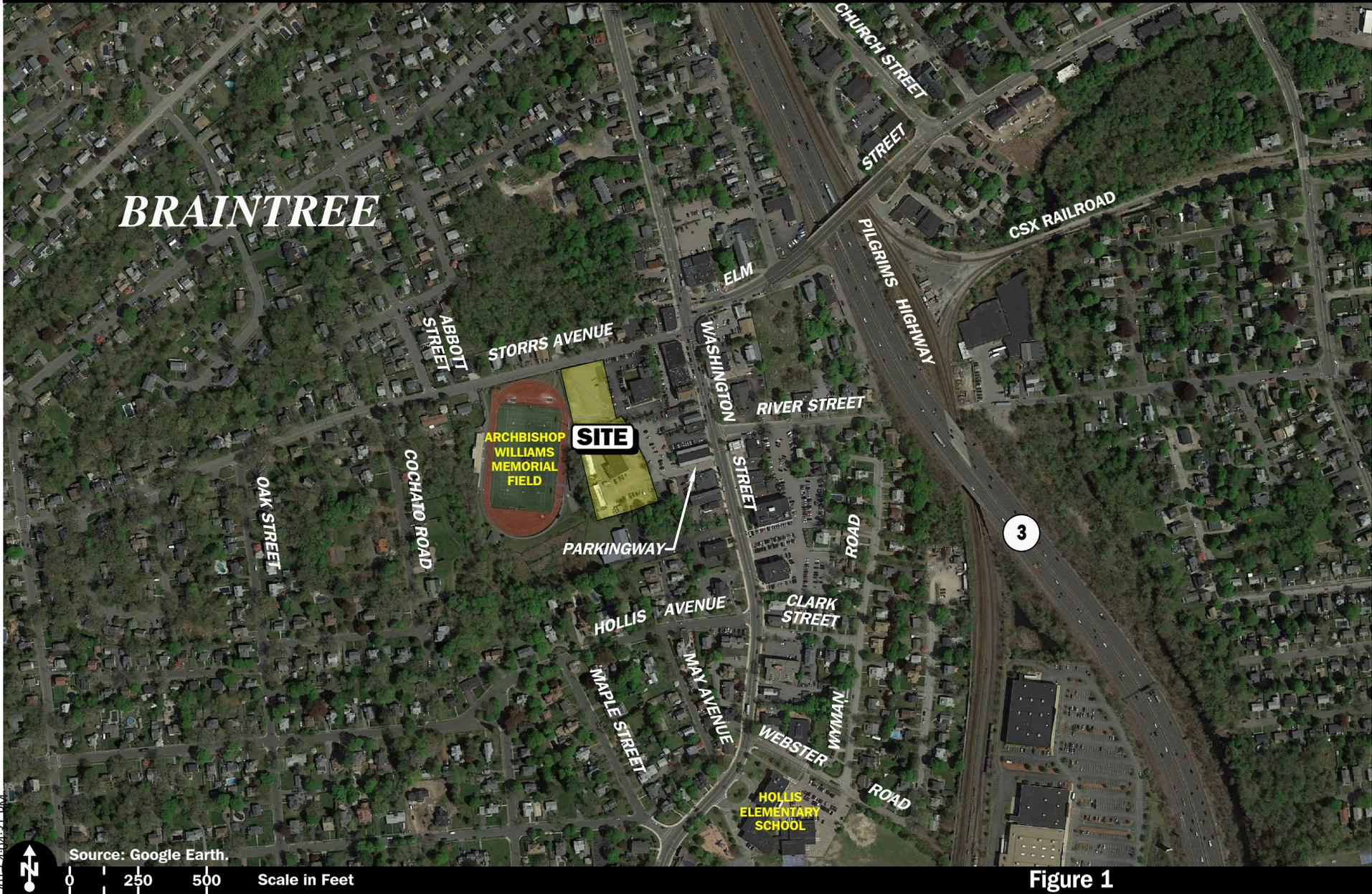


Figure 1
Site Location Map

the building, resulting in a parking ratio of approximately 1.82 spaces per dwelling unit, which is below that required pursuant to Article VIII, *Off-Street Parking and Loading*, Section 135-806, *Schedule of off-street parking requirements*, of the Zoning Bylaws of the Town of Braintree, which requires 2.0 parking spaces per residential unit, but is within the range of values documented by the Institute of Transportation Engineers (ITE) for an apartment community in a suburban setting³; for the townhouse community, a total of 21 parking spaces will be provided consisting of one (1) garage and one (1) driveway parking space for each unit (16 spaces total) and five (5) visitor parking spaces, or a parking ratio of approximately 2.6 spaces per dwelling unit, which exceeds the parking ratio required by the Town Zoning Bylaws.

STUDY METHODOLOGY

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

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

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

The third stage of the study presents and evaluates measures to address traffic and safety issues, if any, identified in stage two of the study.

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.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in January and February 2017. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; 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 roadways providing access to the Project site, Washington Street and Storrs Avenue, as well as the intersections of Washington Street at Elm Street and Storrs Avenue; Washington Street at Parkingway; Washington Street at Hollis Avenue and Clark Street; Storrs Avenue at the existing driveway that serves the Project site; and Storrs Avenue at Abbott Street.

The following describes the study area roadways and intersections.

Roadways

Washington Street

- Two-lane urban principal arterial roadway under Town jurisdiction
- Traverses study area in a general north-south direction and provides access to Route 3 and I-93 to the north of the Project site
- Provides two 12-foot wide travel lanes per direction within the study area separated by a double-yellow centerline with 5-foot wide marked shoulders and additional turn lanes provided at major intersections
- Regulated (by signs) on-street parking is provided along one or both sides of the roadway
- A posted speed limit is not provided, therefore the “prima facie” speed limit is 30 miles per hour (mph)⁴
- Sidewalks are provided continuously along both sides of the roadway
- Massachusetts Bay Transportation Authority (MBTA) bus stops are provided at designated locations along both sides of the roadway
- Land use consists of the Project site and residential and commercial uses

⁴The “prima facie” speed is determined pursuant to M.G.L. Chapter 90, Section 17, as the speed which would be deemed reasonable and proper to operate a motor vehicle given the nature of the abutting land use (thickly settled residential or business district).

Storrs Avenue

- Two lane local collector roadway under Town jurisdiction
- Traverses the study area in a general east-west direction between Washington Street and Parkside Avenue
- Consists of a 26-foot wide paved roadway that accommodates two-way travel with centerline pavement markings provided along portions of the roadway
- A posted speed limit is not provided, therefore the “prima facie” speed limit is 30 mph
- Radar speed signs are provided between Oak Street and Windemere Circle (eastbound) and opposite the Archbishop Williams Stadium (westbound)
- On-street parking is prohibited along the south side of the roadway proximate to the Archbishop Williams Stadium
- Sidewalks are provided continuously along both sides of the roadway
- Land use consists of the Project site, the Archbishop Williams Stadium, and residential and commercial (proximate to Washington Street) 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 January and February 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)
Washington St./ Elm St./ Storrs Ave.	TS	1 general purpose lane and 1 right-turn lane on Washington St. northbound; 1 left-turn lane and 1 general purpose lane on Washington St. southbound; 1 general purpose lane on Storrs Ave.; 1 general purpose lane and 1 right-turn lane on Elm St.; on-street parking along west side of Washington St. south of intersection	No	Yes – both sides of the intersecting roadways; crosswalks are provided across all legs; pedestrian traffic signal equipment and phasing provided	Yes - Shared traveled-way ^b
Washington St./ Parkingway	NC	1 per direction on all legs of the intersection	Yes – 2-feet along east side of Washington St. and on-street parking lane along west side	Yes – both sides of Washington St. and north side of Parkingway; crosswalk provided for crossing Parkingway	Yes - Shared traveled-way on Washington St.
Washington St./ Hollis Ave./ Clark St.	S	1 per direction on all legs of the intersection	Yes – 5-10 feet on Washington St.	Yes – both sides of the intersecting roadways; crosswalks are provided for crossing Hollis Ave. and Clark St.	Yes - Shared traveled-way

See notes at end of table.

Table 1 (Continued)
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)
Storrs Ave./ Existing Project Access	NC	1 per direction on all legs of the intersection	No	Yes – both sides of Storrs Ave.	Yes - Shared traveled-way
Storrs Ave./ Abbott St.	S	1 per direction on all legs of the intersection	No	Yes – both sides of the intersecting roadways; crosswalk is provided for crossing Abbott St.	Yes - Shared traveled-way

^aTS = traffic signal control; S = STOP-sign control; Y = YIELD-sign control; R = rotary/roundabout control; NC = no control present.

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

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in December 2016 while public schools were in regular session.⁵ The ATR counts were conducted on December 20th and 21st (Tuesday and Wednesday) on Washington Street and Storrs Avenue in the vicinity of the Project site in order to record weekday daily traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period manual TMCs performed at the study intersections on December 20th (Tuesday). These time periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.

Traffic-Volume Adjustments

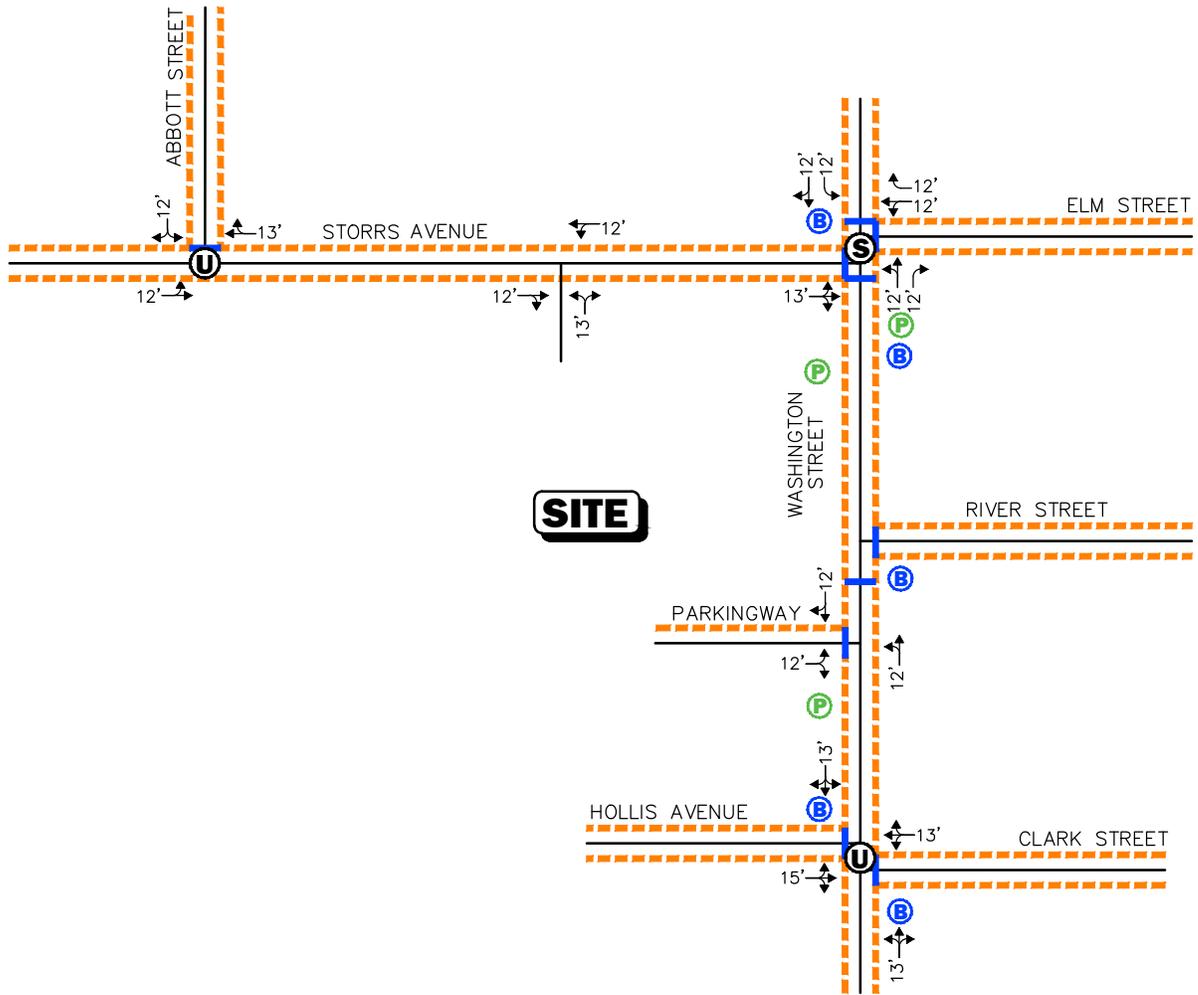
In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic volume data from MassDOT Continuous Count Station No. 7318 located on Route 3 between Exits 14 and 15 in Hingham were reviewed.⁶ Based on a review of this data, it was determined that traffic volumes for the month of December are approximately 9 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 2016 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.

⁵Supplemental TMC's were performed in February 2017 to obtain entering and exiting traffic volumes for Parkingway and the Storrs Avenue access to the Project site.

⁶MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2016.

Legend:

-  Sidewalk
-  Crosswalk
-  Bus Stop
-  Public Parking
-  Lane Use and Travel Lane Width
-  Signalized Intersection
-  Unsignalized Intersection



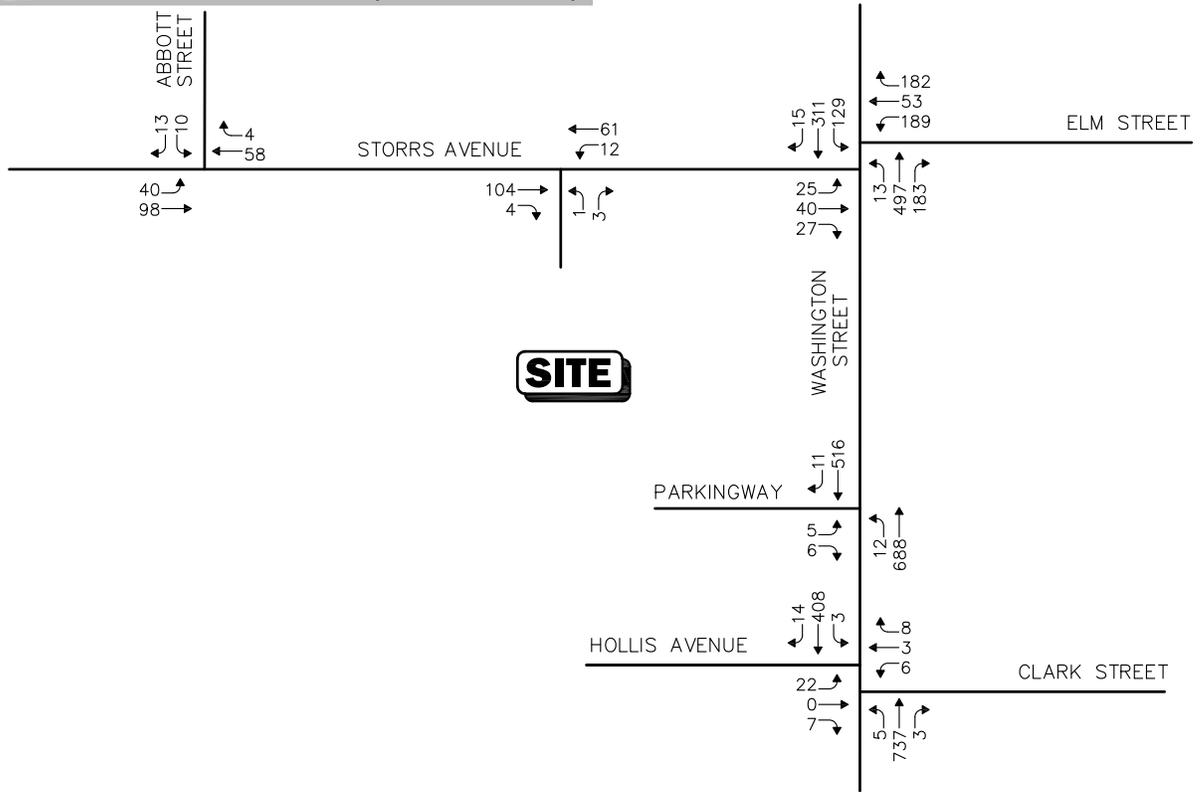
 Not To Scale



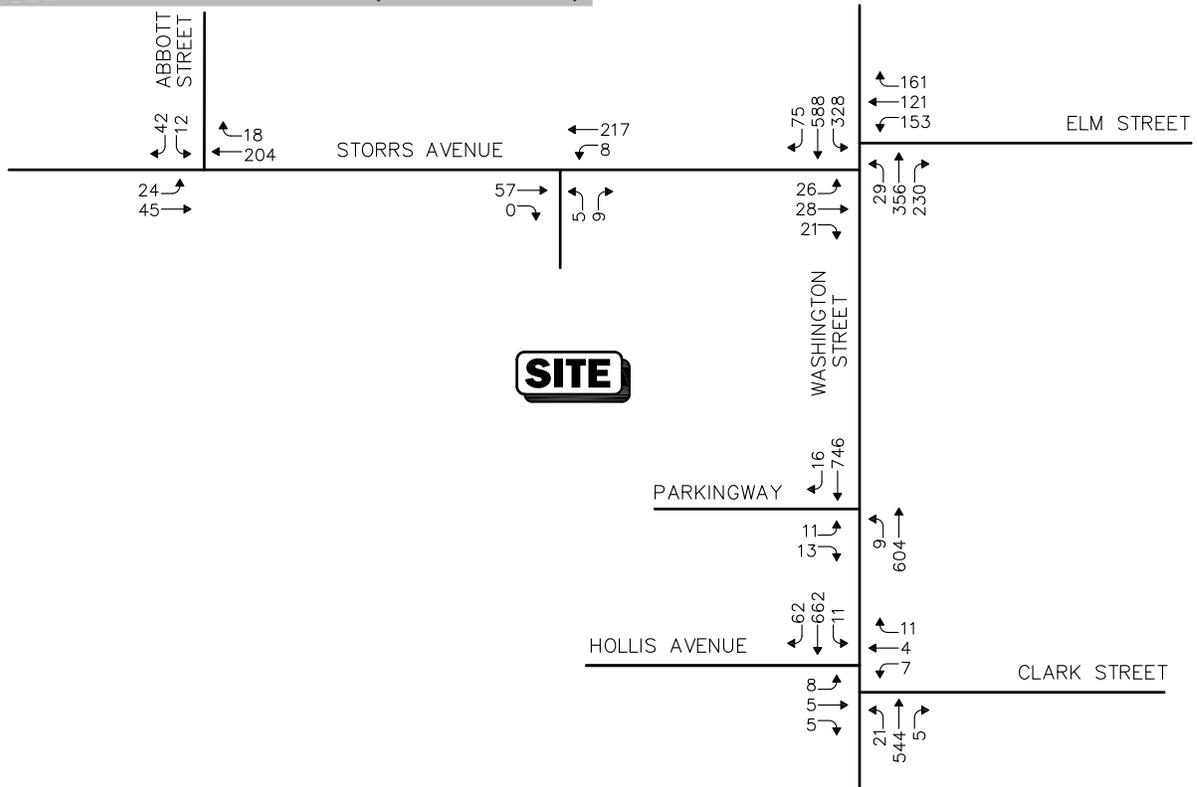
Figure 2

Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



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

Figure 3



2016 Existing Peak Hour Traffic Volumes

Table 2
2016 EXISTING TRAFFIC VOLUMES

Location	AWT ^a	Weekday Morning Peak-Hour (7:15 – 8:15 AM)			Weekday Evening Peak-Hour (4:45 – 5:45 PM)		
		VPH ^b	K Factor ^c	Directional Distribution	VPH	K Factor	Directional Distribution
Washington Street, south of Storrs Avenue	17,870	1,220	6.8	56.8% NB	1,377	7.7	55.3% SB
Storrs Avenue, west of Washington Street	2,620	173	6.6	53.2% EB	300	11.5	75.0% WB

^aAverage weekday traffic in vehicles per day.

^bVehicles per hour.

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

NB = northbound; SB = southbound; EB = eastbound; WB = westbound.

As can be seen in Table 2, Washington Street in the vicinity of the Project site was found to accommodate approximately 17,870 vehicles on an average weekday (two-way, 24-hour volume), with approximately 1,220 vehicles per hour (vph) during the weekday morning peak-hour and 1,377 vph during the weekday evening peak-hour.

Storrs Avenue in the vicinity of the Project site was found to accommodate approximately 2,620 vehicles on an average weekday (again, two-way, 24-hour volume), with approximately 173 vph during the weekday morning peak-hour and 300 vph during the weekday evening peak-hour. We note that these traffic volumes do not reflect conditions with activities at Archbishop Williams High School Memorial Field.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in January and February 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. As detailed on Figure 2, sidewalks are provided continuously along both sides of the study area roadways, with marked crosswalks provided for crossing one or more approaches at the study intersections. The crossings at the Washington Street/Elm Street/Storrs Avenue intersection are included as a part of the traffic signal system at the intersection (pedestrian pushbuttons, signal indications and phasing are provided for the crossings).

Formal bicycle facilities were not identified within the immediate study area; however, the majority of the study area roadways provide sufficient width (combined travel lane and paved shoulder) to support bicycle travel in a shared traveled-way configuration.⁷

⁷A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared traveled-way condition.

PUBLIC TRANSPORTATION

The study area is served by public transportation services (fixed-route bus service) that are provided by the MBTA. The MBTA operates fixed-route bus service along Washington Street by way of Route 230, *Quincy Center Station - Montello Commuter Rail Station via Holbrook & Braintree Station*, which includes a stop in both directions at the intersection of Washington Street at Storrs Avenue and Washington Street at River Street, both of which are within a 2-minute walking distance of the Project site. The Route 230 bus provides service to Braintree Station, where connections can be made to the Red Line subway system and the commuter rail system (Middleborough/Lakeville Line), and to Quincy Center Station, where connections can be made to the commuter rail system (Greenbush and Middleborough/Lakeville Lines), the Red Line subway system, and to other MBTA bus lines. As noted in the previous section, sidewalks are provided along both sides of Washington Street and Storrs Avenue that link the Project site to the MBTA bus stops along Washington Street. The public transportation schedules and fare information are provided in the Appendix.

SPOT SPEED MEASUREMENTS

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

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Washington Street		Storrs Avenue	
	Northbound	Southbound	Eastbound	Westbound
Mean Travel Speed (mph)	18	18	22	28
85 th Percentile Speed (mph)	27	26	29	32
Posted Speed Limit (mph)	-- ^a	-- ^a	-- ^a	-- ^a

^aSpeed limit is not posted.
mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Washington Street in the vicinity of the Project site was found to be approximately 18 mph. The average 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 27 mph, which is generally consistent with the “prima facie” speed limit (30 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.

The mean vehicle travel speed along Storrs Avenue in the vicinity of the Project site was found to be approximately 25 mph, with the average measured 85th percentile vehicle travel speed found to be approximately 31 mph, which is also generally consistent with the “prima facie” speed limit (30 mph).

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 (2010 through 2014, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, and day of occurrence, and presented in Table 4.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Washington Street/ Elm Street/ Storrs Avenue	Washington Street/ Parkingway	Washington Street/ Hollis Avenue/ Clark Street	Storrs Avenue/ 14 Storrs Avenue	Storrs Avenue/ Abbott Street
Traffic Control Type: ^b	TS	U	U	U	U
<i>Year:</i>					
2010	1	0	3	0	1
2011	3	0	0	0	0
2012	2	1	1	0	0
2013	1	0	0	0	0
<u>2014</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	10	1	4	0	1
Average Rate ^c	2.00	0.20	0.80	0.00	0.20
MassDOT Crash Rate: ^d	0.77/0.70	0.58/0.53	0.58/0.53	0.58/0.53	0.58/0.53
Significant? ^e	No	No	No	No	No
<i>Type:</i>					
Angle	3	0	1	0	0
Rear-End	5	0	3	0	0
Head-On	0	0	0	0	1
Sideswipe	2	1	0	0	0
Fixed Object	0	0	0	0	0
Pedestrian/Bicycle	0	0	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	10	1	4	0	1
<i>Day of Week:</i>					
Monday through Friday	7	0	4	0	1
Saturday	1	0	0	0	0
<u>Sunday</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	10	1	4	0	1
<i>Severity:</i>					
Property Damage Only	6	0	2	0	1
Personal Injury	4	1	2	0	0
<u>Fatality</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	10	1	4	0	1

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2010 through 2014.

^bTraffic Control Type: U = unsignalized; TS = traffic signal.

^cCrash rate per million vehicles entering the intersection.

^dStatewide/District crash rate.

^eThe intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 6).

As can be seen in Table 4, the study area intersections experienced an average of two (2) or fewer reported motor vehicle crash 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 a

signalized or an unsignalized intersection, as appropriate, for the MassDOT Highway Division District in which the intersections are located (District 6). 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 high crash locations. 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 are provided in the Appendix.

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2024, 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 2024 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2024 No-Build traffic volumes reflect 2024 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 Braintree Planning and Community Development 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:

- ***Independence Avenue Residential Community, Braintree, Massachusetts.*** This approved project will entail the construction of a 36-unit residential condominium community to be located at 7, 7R and 11 Independence Avenue in Braintree, Massachusetts. Construction has not yet commenced.
- ***Elm Street Residential Community, Braintree, Massachusetts.*** This approved project will entail the construction of a 12-unit residential condominium community to be located at 205 Elm Street in Braintree, Massachusetts. This project is currently under construction.
- ***Graziano Residential Community, Braintree, Massachusetts.*** This proposed project will entail the construction of a 142-unit residential condominium community to be located along the south side of Adams Street between Elm Street and Commercial Street in Braintree, Massachusetts.
- ***Washington Street Townhouse Community, Braintree, Massachusetts.*** This proposed project will entail the construction of a 6-unit residential townhouse community to be located at 639 Washington Street in Braintree, Massachusetts.

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)⁸ 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. 7318 located on Route 3 in Hingham were reviewed in order to determine general background traffic growth trends. Based on a review of this data, it was determined that traffic volumes within the study area have generally decreased by an average of approximately 0.2 percent over the past several years. In order to provide a conservative (high) analysis scenario and 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 Town Engineer for the Town of Braintree and MassDOT were contacted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2024 within the study area. Based on these discussions, the following roadway improvement project was identified within the study area:

- ***Bridge Replacement – B-21-017, Washington Street over MBTA/CSX Railroad Braintree (MassDOT Project Number 607684).*** This project is being undertaken by MassDOT and entails the replacement of the existing Washington Street Bridge over the

⁸Ibid 1

MBTA/CSX railroad tracks. These improvements are currently at the preliminary design stage; a construction date and funding source have not yet been established.

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

In addition, the Town Engineer indicated that traffic signal timing adjustments were recently completed at the Washington Street/Elm Street/Storrs Avenue intersection to increase the allocation of “green” time to the Storrs Avenue approach. It was noted that timing of the traffic signal system at the intersection has been established to discourage the use of Storrs Avenue as a cut-through roadway by introducing delays on the Storrs Avenue approach.

No-Build Traffic Volumes

The 2024 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 2016 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the identified specific development projects by others. The resulting 2024 No-Build weekday morning and evening peak-hour traffic volumes are shown on Figure 4.

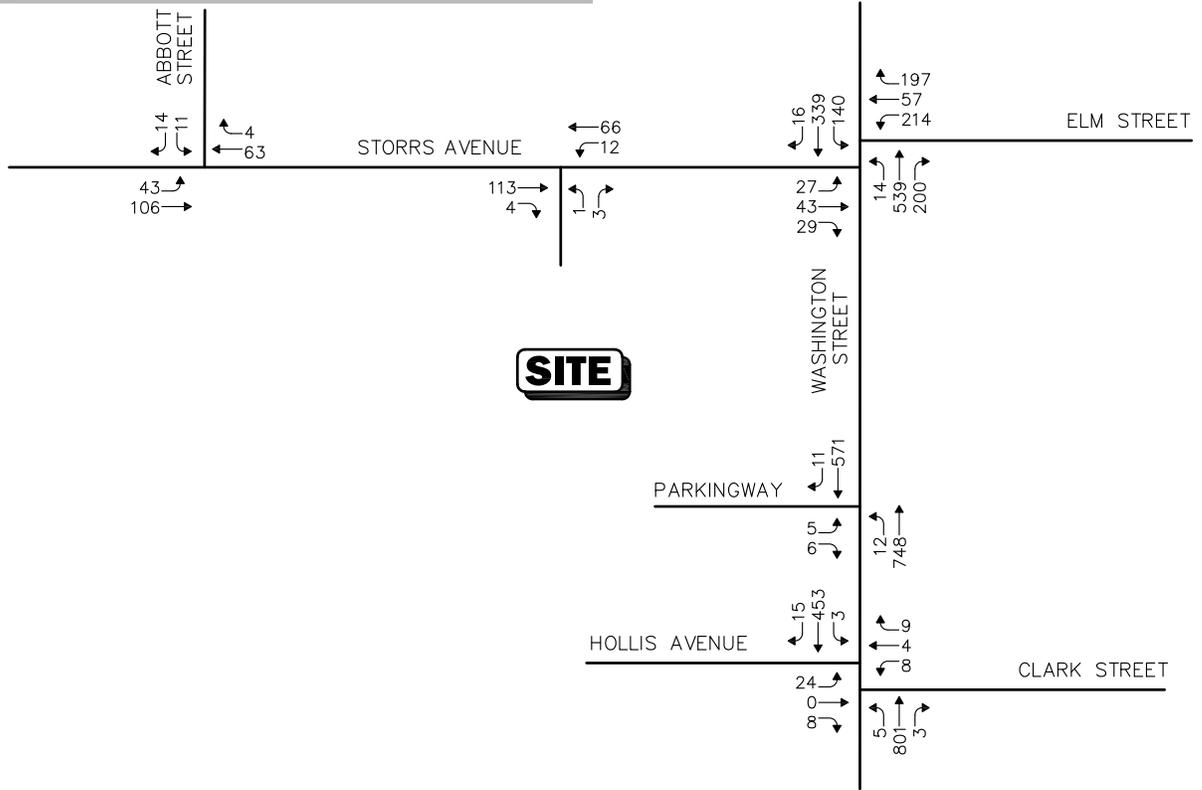
PROJECT-GENERATED TRAFFIC

Design year (2024 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.

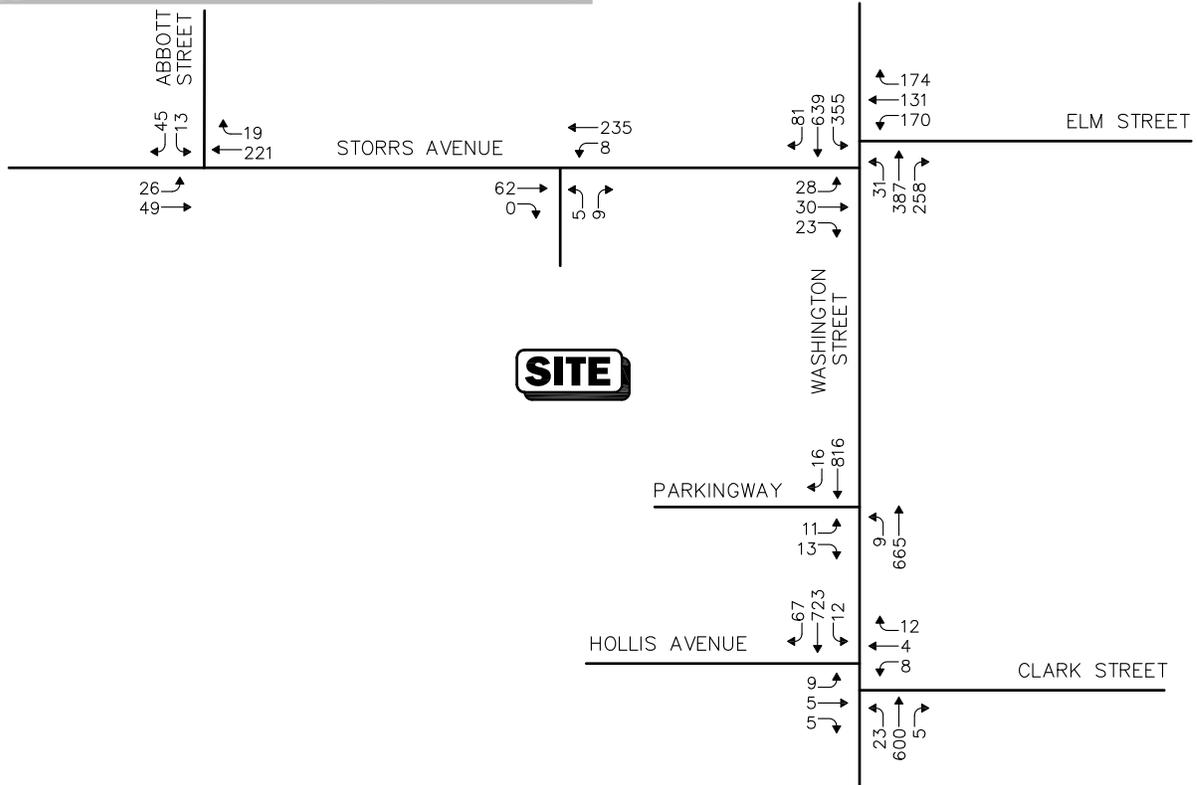
As proposed, the Project will entail the construction of a 78-unit residential community that will consist of 70 apartments and 8 townhouses. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE⁹ for similar land uses as those proposed were used. ITE Land Use Codes (LUCs) 220, *Apartment*, and 230, *Residential Condominium/Townhouse*, were used to develop the traffic characteristics of the Project. Table 5 summarizes the traffic characteristics of the Project using the above methodology.

⁹Ibid 1.

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



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

Not To Scale

Figure 4



2024 No-Build
Peak Hour Traffic Volumes

**Table 5
TRIP GENERATION SUMMARY**

Time Period/Direction	Vehicle Trips		
	Apartments (70 Units) ^a	Townhouses (8 Units) ^b	(A + B) Total
<i>Average Weekday Daily:</i>			
Entering	274	36	310
<u>Exiting</u>	<u>274</u>	<u>36</u>	<u>310</u>
Total	548	72	620
<i>Weekday Morning Peak Hour:</i>			
Entering	8	1	9
<u>Exiting</u>	<u>30</u>	<u>6</u>	<u>36</u>
Total	38	7	45
<i>Weekday Evening Peak Hour:</i>			
Entering	36	5	41
<u>Exiting</u>	<u>20</u>	<u>3</u>	<u>23</u>
Total	56	8	64

^aBased on ITE LUC 220, *Apartment*.

^bBased on ITE LUC 230, *Residential Condominium/Townhouse*.

Project-Generated Traffic Volume Summary

As can be seen in Table 4, the Project is expected to generate approximately 620 vehicle trips on an average weekday (two-way, 24-hour volume, or 310 vehicles entering and 310 exiting), with 45 vehicle trips (9 vehicles entering and 36 exiting) expected during the weekday morning peak-hour and 64 vehicle trips (41 vehicles entering and 23 exiting) expected during the weekday evening peak-hour.

Existing Project Site Traffic

As noted previously, the Project site is currently occupied by a one-story, 10,000± sf concrete block building and associated structures and appurtenances that support the Proponent's construction company. It is estimated that approximately 25 employees arrive at the site on a daily basis and are then dispatched to a job site, leaving in a company vehicle or their own private vehicle. Miscellaneous equipment and material deliveries also occur during the day and are made by way of large trucks, with generally one (1) employee remaining on-site. These combined activities (employees, equipment and materials deliveries) are estimated to generate fewer than 100 vehicle trips per day, with no more than 15 vehicle trips during the weekday commuter peak hours, all of which will be eliminated with the completion of the Project.

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 Braintree, 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 2024 Build condition traffic volumes consist of the 2024 No-Build traffic volumes with the additional traffic expected to be generated by the Project added to them. The 2024 Build weekday morning and evening peak-hour traffic-volumes are graphically depicted on Figure 7.

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**

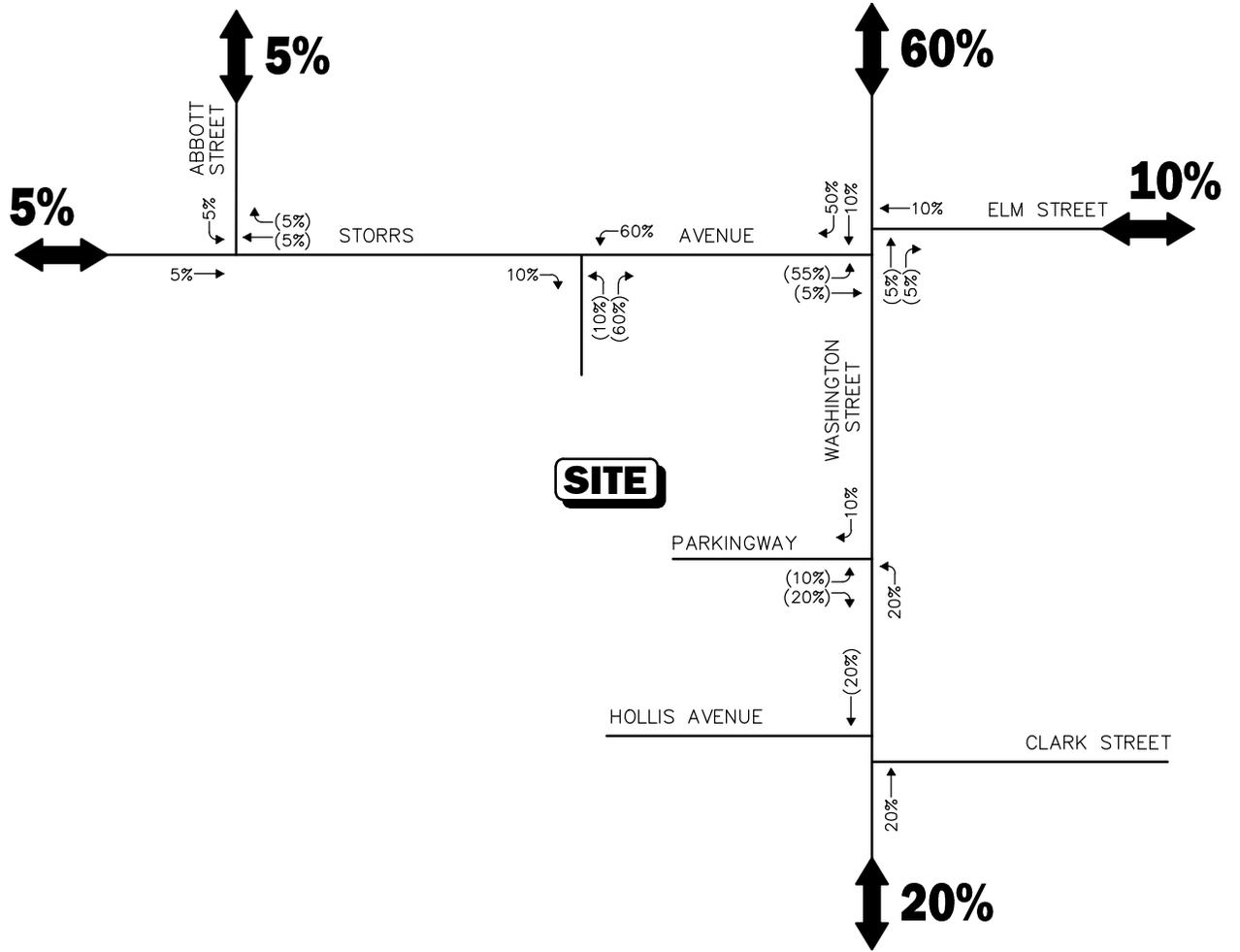
Location/Peak Hour	2016 Existing	2024 No-Build	2024 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Washington Street, north of Storrs Avenue:</i>					
Weekday Morning	1,159	1,258	1,284	26	2.1
Weekday Evening	1,534	1,664	1,703	39	2.3
<i>Washington Street, south of Clark Street:</i>					
Weekday Morning	1,166	1,278	1,287	9	0.7
Weekday Evening	1,244	1,364	1,377	13	1.0
<i>Elm Street, east of Washington Street:</i>					
Weekday Morning	776	851	856	5	0.6
Weekday Evening	1,021	1,118	1,124	6	0.5
<i>Storrs Avenue, west of Abbott Street:</i>					
Weekday Morning	209	226	229	3	1.3
Weekday Evening	315	341	344	3	0.9
<i>Abbott Street, north of Storrs Avenue:</i>					
Weekday Morning	67	72	74	2	2.8
Weekday Evening	96	103	106	3	2.9

As shown in Table 6, Project-related traffic-volume increases outside of the study area relative to 2024 No-Build conditions are anticipated to range from 0.5 to 2.9 percent during the peak periods, with vehicle increases shown to range from 2 to 39 vehicles. ***Such increases are considered nominal when dispersed over the peak-hour and would not result in a material impact (increase) on motorist delays or vehicle queuing outside of the immediate study area that is the subject of this assessment.***

With respect to Storrs Avenue west of the Project site, the Project is expected to add between 5 and 6 vehicle trips during the weekday peak commuter hours, or approximately one (1) additional vehicle every 10 minutes during the peak-hour, a level of impact that would not be readily apparent over existing conditions.

Legend:

- XX** Entering Trips
- (XX)** Exiting Trips



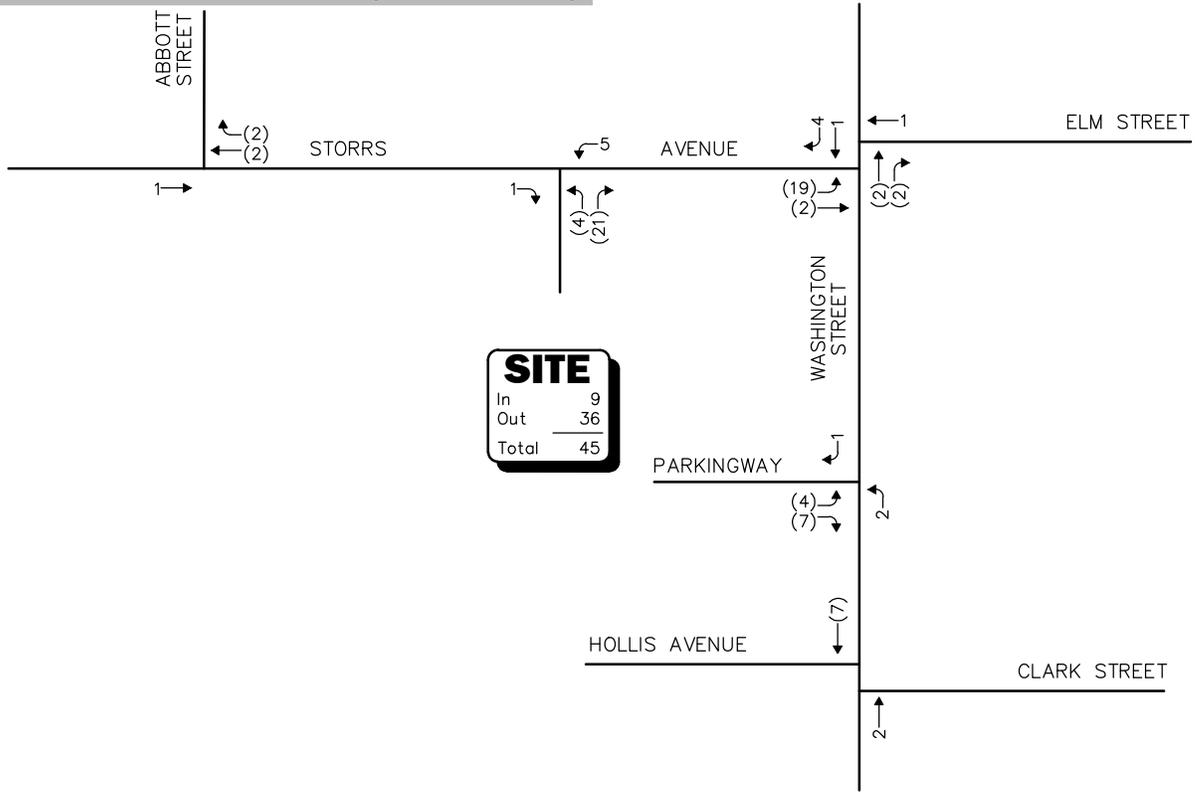
Not To Scale

Figure 5

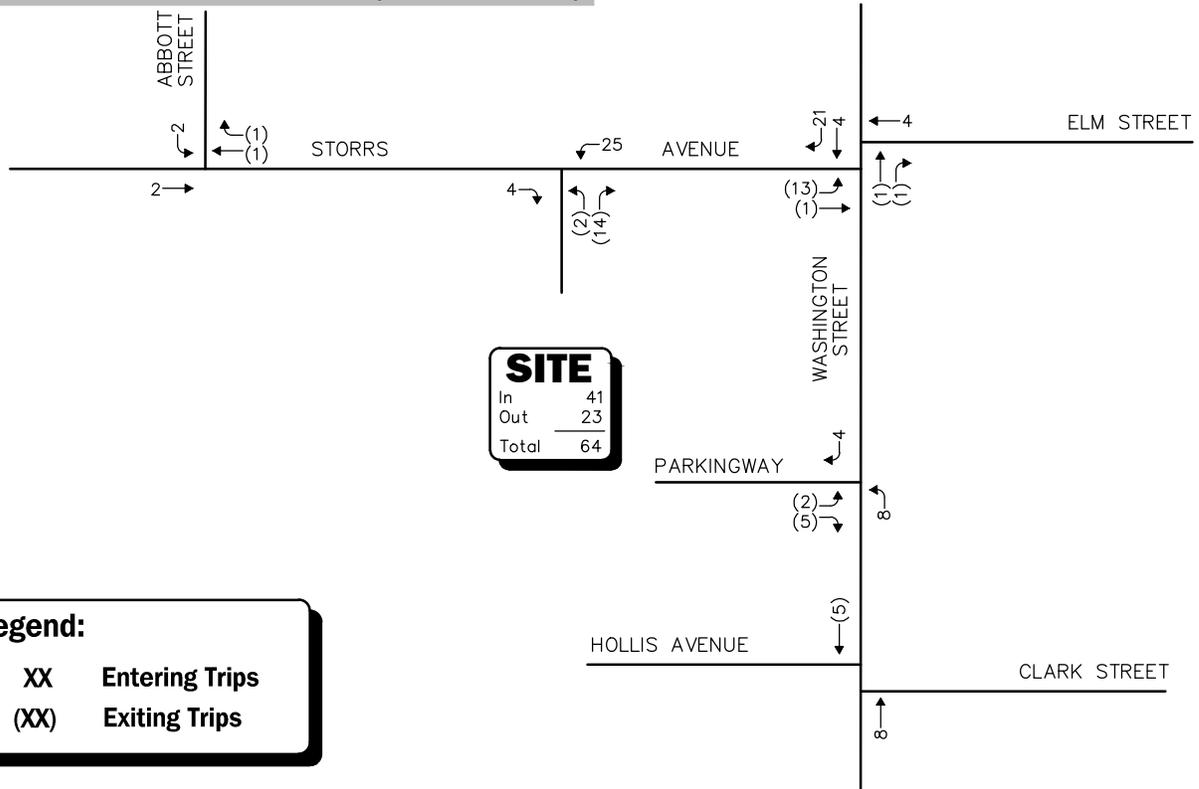


Trip-Distribution Map

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



Legend:
 XX Entering Trips
 (XX) Exiting Trips

Not To Scale

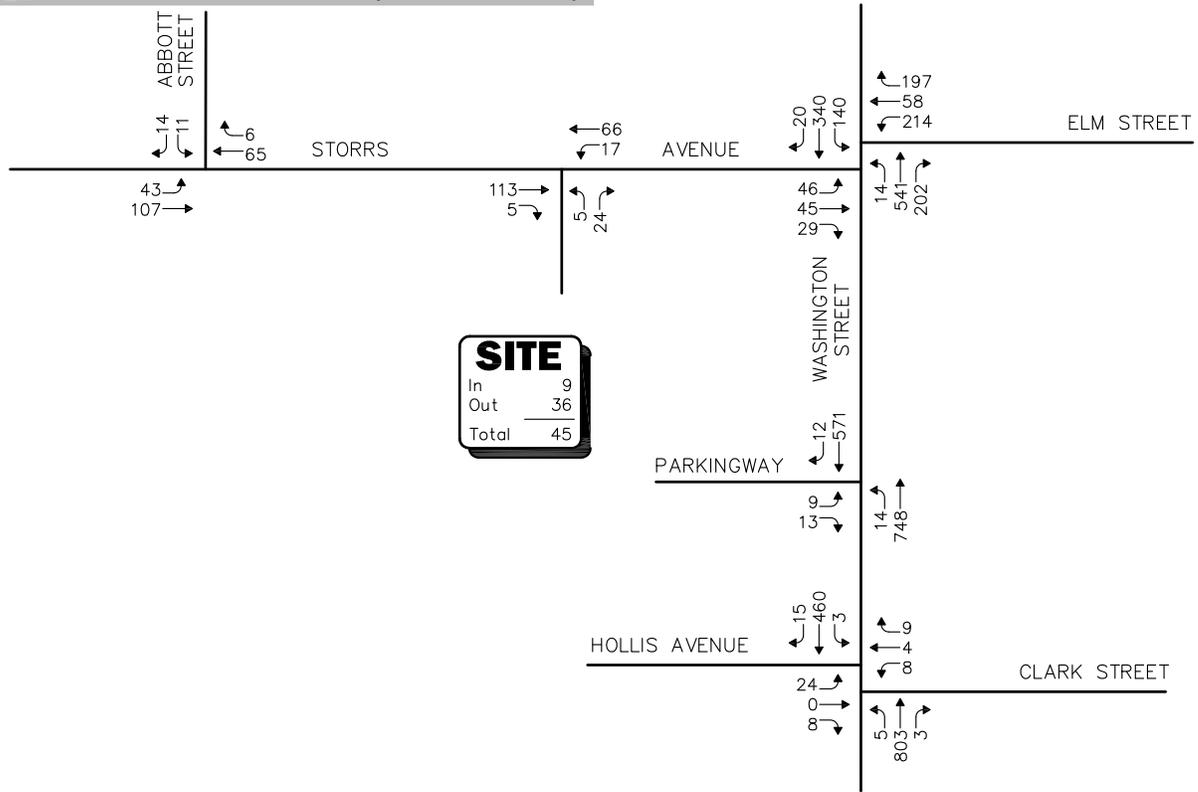


Figure 6

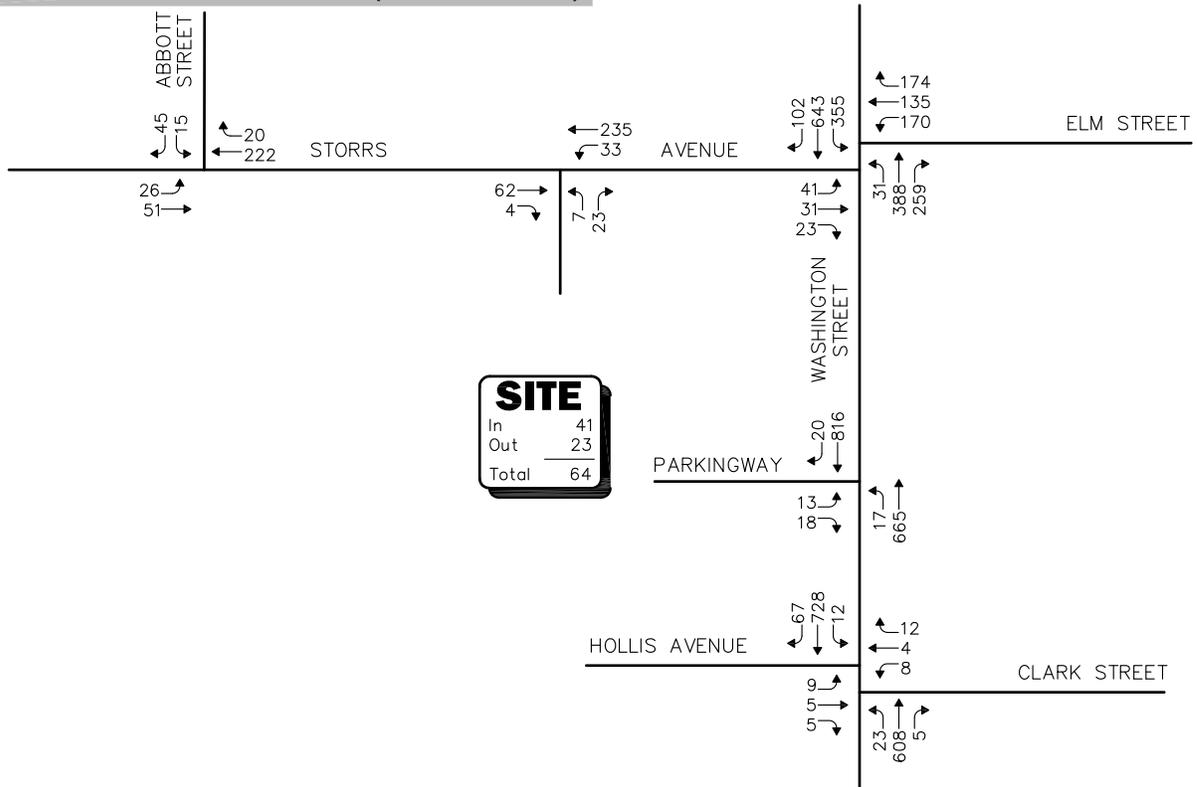
Project-Generated Peak Hour Traffic Volumes

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WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



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

Not To Scale

Figure 7



2024 build
Peak Hour Traffic Volumes

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.¹⁰ 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.

¹⁰The capacity analysis methodology is based on the concepts and procedures presented in the *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 required by MassDOT. The Percentile Delay Method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on “percentile” delay. Level-of-service designations are based on the criterion of percentile delay per vehicle and is a measure of: i) driver discomfort; ii) motorist frustration; and iii) fuel consumption; and includes a uniform delay based on percentile volumes using a Poisson arrival pattern, an initial queue move-up time, and a queue interaction delay that accounts for delays resulting from queues extending from adjacent intersections. Table 7 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 7
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

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*.¹¹ 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 8 summarizes the relationship between level of service and average control delay for two-way stop controlled and all-way stop controlled intersections.

¹¹*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Table 8
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

^aSource: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; page 19-2.

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 2016 Existing, 2024 No-Build and 2024 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. 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.

Signalized Intersections

As can be seen in Table 9, the signalized intersection of Washington Street at Elm Street and Storrs Avenue was shown to operate at an overall LOS C during both the weekday morning and evening peak hours under 2016 Existing and 2024 No-Build conditions. Under 2024 Build

conditions, with the addition of Project-related traffic, overall operating conditions at the intersection were shown to degrade slightly from LOS C to LOS D during the weekday morning peak-hour as a result of a predicted increase in average motorist delay of approximately 5.0 seconds, and to remain operating at LOS C during the weekday evening peak-hour. We note that one or more movements at the intersection were identified to be operating at or over capacity (defined as LOS “E” or “F”, respectively) independent of the Project.

Unsignalized Intersections

As can be seen in Table 10, the addition of Project-related traffic to the unsignalized study area intersections resulted in no change in LOS or vehicle queuing for any movement over 2024 No-Build conditions. All movements at the access points to the Project site from Washington Street (Parkingway) and Storrs Avenue (existing driveway) were shown to operate at LOS D or better during both the weekday morning and evening peak hours with minimal (up to one (1) vehicle) vehicle queuing predicted.

Independent of the Project, it was noted that the Hollis Avenue and Clark Street approaches to Washington Street were operating at or over capacity during both the weekday morning and evening peak hours as a result of the relatively large volume of conflicting traffic travelling along Washington Street during the commuter peak hours; however, the residual vehicle queue was reported to be no more than two (2) vehicles and there were no identified safety issues on these approaches.

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

Signalized Intersection/Peak-hour/Movement	2016 Existing				2024 No-Build				2024 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Washington Street at Elm Street and Storrs Avenue												
<i>Weekday Morning:</i>												
Storrs Avenue EB LT/TH/RT	0.72	54.1	D	4/4	0.81	64.9	E	4/4	1.01	>80.0	F	5/6
Elm Street WB LT/TH	0.68	41.4	D	5/11	0.74	45.1	D	6/13	0.74	45.2	D	6/13
Elm Street WB RT	0.32	7.0	A	1/3	0.34	7.9	A	1/3	0.34	7.9	A	1/3
Washington Street NB LT/TH	0.79	35.2	D	10/22	0.83	37.9	D	12/24	0.83	38.1	D	12/25
Washington Street NB RT	0.21	2.2	A	0/1	0.22	2.3	A	1/2	0.22	2.4	A	1/2
Washington Street SB LT	0.73	40.0	D	2/6	0.83	53.9	D	2/7	0.83	54.0	D	2/7
Washington Street SB TH/RT	0.41	17.4	B	5/10	0.44	18.0	B	6/11	0.44	18.1	B	6/12
Overall	--	28.3	C	--	--	31.8	C	--	--	36.6	D	--
<i>Weekday Evening:</i>												
Storrs Avenue EB LT/TH/RT	0.43	48.1	D	2/5	0.51	53.5	D	2/5	0.61	60.2	E	3/7
Elm Street WB LT/TH	0.69	46.2	D	7/18	0.86	63.0	E	9/20	0.90	69.8	E	10/20
Elm Street WB RT	0.22	6.5	A	1/3	0.25	7.6	A	1/3	0.26	7.8	A	1/3
Washington Street NB LT/TH	0.74	40.5	D	9/17	0.81	46.1	D	10/20	0.81	46.7	D	10/21
Washington Street NB RT	0.24	3.4	A	1/2	0.28	3.9	A	1/3	0.28	3.9	A	1/3
Washington Street SB LT	0.79	30.8	C	5/12	0.84	36.8	D	6/15	0.84	36.8	D	6/15
Washington Street SB TH/RT	0.63	20.0	B	10/19	0.75	24.1	C	14/27	0.76	24.6	C	14/28
Overall	--	27.4	C	--	--	32.9	C	--	--	33.6	C	--

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles.

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

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

Unsignalized Intersection/ Peak Hour/Movement	2016 Existing				2024 No-Build				2024 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Washington Street at Hollis Avenue and Clark Street												
<i>Weekday Morning:</i>												
Hollis Avenue EB LT/TH/RT	29	40.6	E	1	32	>50.1	F	2	32	>50.0	F	2
Clark Street WB LT/TH/RT	17	27.5	D	1	21	35.7	E	1	21	36.3	E	1
Washington Street NB LT/TH/RT	745	0.1	A	0	809	0.1	A	0	811	0.1	A	0
Washington Street SB LT/TH/RT	425	0.1	A	0	471	0.1	A	0	478	0.1	A	0
<i>Weekday Evening:</i>												
Hollis Avenue EB LT/TH/RT	18	36.2	E	1	19	48.3	E	1	19	49.9	E	1
Clark Street WB LT/TH/RT	22	30.8	D	1	24	40.6	E	2	24	41.6	E	2
Washington Street NB LT/TH/RT	570	0.3	A	0	628	0.4	A	0	636	0.4	A	0
Washington Street SB LT/TH/RT	735	0.1	A	0	802	0.1	A	0	807	0.1	A	0
Storrs Avenue at Abbott Street												
<i>Weekday Morning:</i>												
Storrs Avenue EB LT/TH	138	2.2	A	0	149	2.2	A	0	150	2.2	A	0
Storrs Avenue WB TH/RT	62	0.0	A	0	67	0.0	A	0	71	0.0	A	0
Abbot Street SB LT/RT	23	9.8	A	0	25	10.0	B	0	25	10.0	B	0
<i>Weekday Evening:</i>												
Storrs Avenue EB LT/TH	69	2.7	A	0	75	2.7	A	0	77	25.7	A	0
Storrs Avenue WB TH/RT	222	0.0	A	0	240	0.0	A	0	242	0.0	A	0
Abbot Street SB LT/RT	54	10.3	B	1	58	10.5	B	1	60	10.5	B	1
Washington Street at Parkingway												
<i>Weekday Morning:</i>												
Parkingway EB LT/ RT	11	19.5	C	0	11	22.1	C	0	22	22.4	C	1
Washington Street NB LT/TH	700	0.1	A	0	760	0.1	A	0	762	0.2	A	0
Washington Street TH/RT	527	0.0	A	0	582	0.0	A	0	583	0.0	A	0
<i>Weekday Evening:</i>												
Parkingway EB LT/ RT	24	26.1	D	1	24	31.0	D	1	31	32.6	D	1
Washington Street NB LT/TH	613	0.1	A	0	674	0.1	A	0	682	0.2	A	0
Washington Street TH/RT	762	0.0	A	0	832	0.0	A	0	836	0.0	A	0

Table 10 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2016 Existing				2024 No-Build				2024 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
<i>Storrs Avenue at the Project Site Access</i>												
<i>Weekday Morning:</i>												
Project Site Access NB LT/RT	4	9.1	A	0	4	9.1	A	0	29	9.3	A	0
Storrs Avenue EB TH/RT	108	0.0	A	0	117	0.0	A	0	118	0.0	A	0
Storrs Avenue WB LT/TH	73	1.2	A	0	78	1.2	A	0	83	1.5	A	0
<i>Weekday Evening:</i>												
Project Site Access NB LT/RT	14	9.3	A	0	14	9.4	A	0	30	9.4	A	0
Storrs Avenue EB TH/RT	57	0.0	A	0	62	0.0	A	0	66	0.0	A	0
Storrs Avenue WB LT/TH	225	0.3	A	0	243	0.3	A	0	268	0.9	A	0

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel-of-Service.

^dQueue length in vehicles.

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

ARCHBISHOP WILLIAMS HIGH SCHOOL MEMORIAL FIELD

The Project site abuts Archbishop Williams High School Memorial Field, which fronts along Storrs Avenue and is accessed by way of two (2) gated connections to the sidewalk along the south side of Storrs Avenue and a gated access to the parking area in the northern portion of the Project site. The field facility features a multi-purpose synthetic turf field with lighting, and is used for football, soccer and lacrosse, and includes a perimeter track and accompanying features for field and track events associated with. The field complex is used for both practices and games, with primary use occurring after school and on Saturday. The field complex hosts approximately six (6) nighttime games or events per year, with the largest events consisting of Friday night football games.

Memorial Field is located approximately 0.5 miles from the Archbishop Williams High School campus. As such, students and coaches use private automobiles or a shuttle bus to travel to/from the high school campus for practices. During games, buses are used to transport players and coaches, with spectators arriving by private automobile. A formal parking facility is not provided for the field facility, with players, spectators and coaches informally parking within the Project site or other proximate private parking lots, at the municipal parking lot located immediately east of the Project site, or using on-street parking where permitted. On-street parking is prohibited immediately adjacent to the field along the south side of Storrs Avenue.

The Proponent estimates that approximately 10 to 20 vehicles park within the Project site during practices, and that approximately 40 to 50 vehicles park within the site for games/track & field meets. This parking will be displaced with the completion of the Project. When a game or event is scheduled at Memorial Field, traffic volumes and parking demands within the study area can exceed the capacity of the roadways and parking accommodations that are available in the area. These conditions occur independent of the Project and are best managed through the implementation of an event traffic and parking management plan. The key aspects of such a plan are a series of measures that Archbishop Williams High School would undertake in consultation with the Town and neighbors to minimize impacts during events. These measures typically include: using buses and shuttle vans for players and spectators; identifying satellite parking areas where spectators can park and be shuttled to the field; scheduling events so as not to conflict with peak traffic volume periods; encouraging use of public transportation and carpooling; and implementing a traffic management plan that includes the use of police details and providing directions to the field and off-site parking facilities that avoid the use of neighborhood streets.

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the intersections of Washington Street at Parkingway and Storrs Avenue at the existing driveway that serves the Project site in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)¹² 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 intersections.

¹²*A Policy on Geometric Design of Highway and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

Table 11
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
<i>Washington Street at Parkingway</i>			
<i>Stopping Sight Distance:</i>			
Washington Street approaching from the north	200	--	500+
Washington Street approaching from the south	200	--	500+
<i>Intersection Sight Distance:</i>			
Looking to the north from Parkingway	200	290/335	500 ^c
Looking to the south from Parkingway	200	290/335	500 ^c
<i>Storrs Avenue at the Existing Project Site Access</i>			
<i>Stopping Sight Distance:</i>			
Storrs Avenue approaching from the east	220	--	332 ^d
Storrs Avenue approaching from the west	220	--	500+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Existing Project Site Access	220	310/355	332 ^d
Looking to the west from the Existing Project Site Access	220	310/355	123/500+ ^e

^aRecommended 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 a 30 mph approach speed on Washington Street and a 32 mph approach speed on Storrs Avenue.

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

^cSight line that is available with driver positioned within the crosswalk area (approximate).

^dClear line of sight is provided to/from Washington Street.

^eWith the removal/relocation of vegetation along the south side of Storrs Avenue west of the existing driveway that serves the Project site.

As can be seen in Table 11, the available sight lines at the intersections of Washington Street at Parkingway and Storrs Avenue at the existing driveway that serves the Project site were found to exceed or could be made to exceed the recommended minimum sight distance to function in a safe manner (SSD) based on the appropriate approach speeds along both roadways (30 mph along Washington Street and 32 mph along Storrs Avenue). It was noted that one or more of the existing arborvitae that have been planted in a row along the south side of Storrs Avenue and west of the existing driveway that serves the Project site should be relocated or removed and replaced with low-growing vegetation that would not exceed 2.5-feet in height.

As noted in Table 11, lines of sight exiting Parkingway were found to be partially obscured by on-street parking adjacent to the intersection; however, sight lines improved when the vehicle was positioned within the crosswalk area, typical of driveway and side street exit maneuvers in an urban area with on-street parking. That being said, independent of the Project, the Town should consider restricting parking adjacent to the Parkingway in order to provide the requisite sight lines and to facilitate emergency vehicle access to the Town's municipal parking lot and abutting properties, including the Project site, from Washington Street.

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 78-unit residential townhouse/apartment community to be located at 383-385 Washington Street in Braintree, 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,¹³ the Project is expected to generate approximately 620 vehicle trips on an average weekday (two-way, 24-hour volume), with 45 vehicle trips expected during the weekday morning peak-hour and 64 vehicle trips expected during the weekday evening peak-hour;
2. The Project is expected to add between 5 and 6 vehicle trips during the weekday peak commuter hours to Storrs Avenue west of the Project site, or approximately one (1) additional vehicle every 10 minutes during the peak-hour, a level of impact that would not be readily apparent over existing conditions;
3. 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;
4. All movements at the access points to the Project site from Washington Street (Parkingway) and Storrs Avenue (existing driveway) were shown to operate at LOS D or better during both the weekday morning and evening peak hours with minimal (up to one (1) vehicle) vehicle queuing predicted;
5. Independent of the Project, it was noted that the Hollis Avenue and Clark Street approaches to Washington Street were operating at or over capacity during both the

¹³Ibid 1.

weekday morning and evening peak hours as a result of the relatively large volume of conflicting traffic travelling along Washington Street during the commuter peak hours; however, the residual vehicle queue was reported to be no more than two (2) vehicles;

6. During game/event conditions at Archbishop Williams Memorial Field, traffic volumes and parking demands can exceed the capacity of the roadways and parking accommodations that are available in the area. These conditions occur independent of the Project and are best managed through the implementation of an event traffic and parking management plan;
7. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and
8. Lines of sight to and from the access points serving the Project site from Washington Street and Storrs Avenue were found to exceed or could be made to exceed the required minimum distances for the intersections to function in a safe manner with consideration of the urban environment in which the Project site is located.

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 Parkingway, which intersects the west side of Washington Street approximately 450 feet south of Storrs Avenue, and an existing driveway that intersects the south side of Storrs Avenue approximately 300 feet west of Washington Street. The following recommendations are offered with respect to the design and operation of the Project site access:

- The access points serving the Project site and internal circulating roadways should be a minimum of 20-feet in width or as required to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Town of Braintree Fire Department.
- Where perpendicular parking is to be provided, the drive aisle behind the parking should be a minimum of 23-feet in width in order to allow for vehicle maneuvering.
- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.

- All signs and pavement markings to be installed within the Project site shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).¹⁴
- Sidewalks have been provided within the Project site that link the proposed buildings to on-site amenities and parking areas, and extend to Storrs Avenue.
- The Proponent should work with the Town and abutting property owners to provide a sidewalk connection between the Project site and the existing sidewalk along the north side of Parkingway.
- Marked crosswalks and Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings within the Project site.
- Signs and landscaping to be installed as a part of the Project within intersection sight triangle areas should be designed and maintained so as not to restrict lines of sight.
- One or more of the existing arborvitae that have been planted along the south side of Storrs Avenue and west of the existing driveway that serves the Project site should be relocated or removed and replaced with low-growing vegetation that would not exceed 2.5-feet in height.
- The Proponent should coordinate with the Town to ensure that on-street parking is prohibited along Washington Street and Storrs Avenue within 20-feet (approximately one parking space) of Parkingway and the Storrs Avenue access to the Project site.
- Snow windrows within sight triangle areas shall be promptly removed where such accumulations would exceed 2.5 feet in height.
- Consideration should be given to installing electric vehicle charging stations within the Project site and to accommodating the staging of carsharing vehicles (ZipCar or similar).

Off-Site

Washington Street at Elm Street and Storrs Avenue

The addition of Project-related traffic to the signalized intersection of Washington Street at Elm Street and Storrs Avenue was shown to result in a slight degradation in overall operating conditions from (LOS C to LOS D) during the weekday morning peak-hour as a result of a predicted increase in average motorist delay of approximately 5.0 seconds, with no change in LOS predicted to occur during the weekday evening peak-hour (LOS C conditions were maintained). In addition, it was noted that one or more movements at the intersection were operating at or over capacity (defined as LOS “E” or “F”, respectively) independent of the Project. In an effort to improve operating conditions at this intersection, the Proponent will complete the following improvements to the extent so desired by the Town and in the context of the overall mitigation package for the Project, subject to receipt of all necessary rights, permits and approvals:

1. Design and implement an optimal traffic signal timing and phasing plan;

¹⁴Ibid 2.

2. Upgrade/replace pedestrian pushbuttons, signs, saddles and indications for compliance with ADA standards; and
3. Review and adjust the pedestrian walk and clearance times as necessary to meet current standards.

These improvements will be completed prior to the issuance of the first Certificate of Occupancy for the Project. As can be seen in Table 12, with implementation of these improvements, overall intersection operations were improved from LOS D to LOS C during the weekday morning peak-hour and were maintained at LOS C during the weekday evening peak-hour, with no movement predicted to operate below LOS E (an improvement over No-Build conditions).

In addition, within 6-months of achieving 80 percent occupancy of the Project, the Proponent will reassess operating conditions at the intersection to include the collection of manual turning movement and vehicle classification counts during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak hours, and performing a traffic operations analysis (level-of-service, motorist delays and vehicle queuing). To the extent that adjustments are required to the traffic signal timing to accommodate the then observed traffic patterns and operating conditions at the intersection, the Proponent will implement the recommended timing adjustments subject to receipt of all necessary rights, permits and approvals.

Transportation Demand Management

The study area is served by public transportation services (fixed-route bus service) that are provided by the MBTA. The MBTA operates fixed-route bus service along Washington Street by way of Route 230, *Quincy Center Station - Montello Commuter Rail Station via Holbrook & Braintree Station*, which includes a stop in both directions at the intersection of Washington Street at Storrs Avenue and Washington Street at River Street, both of which are within a 2-minute walking distance of the Project site. In addition, both Washington Street and Storrs Avenue provide sufficient width to accommodate bicycle travel to the Project site. 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 become a MassRIDES employer partner to facilitate and encourage healthy transportation options for residents of the Project and to coordinate a carpool/vanpool matching program;
- 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 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 will be incorporated within the Project site consisting of sidewalks linking the proposed buildings on-site amenities and will connect to the sidewalk infrastructure along both Storrs Avenue and Washington Street; and
- Secure bicycle parking will be provided consisting of: i) exterior bicycle parking conveniently located proximate to the apartment building and townhouses; and ii) weather protected bicycle parking located in a secure area within apartment 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.

Table 12
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/Peak-hour/Movement	2024 No-Build				2024 Build				2024 Build with Mitigation			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
<i>Washington Street at Elm Street and Storrs Avenue</i>												
<i>Weekday Morning:</i>												
Storrs Avenue EB LT/TH/RT	0.81	64.9	E	4/4	1.01	>80.0	F	5/6	0.76	54.1	D	5/5
Elm Street WB LT/TH	0.74	45.1	D	6/13	0.74	45.2	D	6/13	0.81	54.4	D	7/15
Elm Street WB RT	0.34	7.9	A	1/3	0.34	7.9	A	1/3	0.35	8.4	A	1/3
Washington Street NB LT/TH	0.83	37.9	D	12/24	0.83	38.1	D	12/25	0.88	44.3	D	12/26
Washington Street NB RT	0.22	2.3	A	1/2	0.22	2.4	A	1/2	0.23	2.9	A	1/2
Washington Street SB LT	0.83	53.9	D	2/7	0.83	54.0	D	2/7	0.78	45.5	D	2/7
Washington Street SB TH/RT	0.44	18.0	B	6/11	0.44	18.1	B	6/12	0.46	19.2	B	6/12
Overall	--	31.8	C	--	--	36.6	D	--	--	34.1	C	--
<i>Weekday Evening:</i>												
Storrs Avenue EB LT/TH/RT	0.51	53.5	D	2/5	0.61	60.2	E	3/7	0.54	54.9	D	3/6
Elm Street WB LT/TH	0.86	63.0	E	9/20	0.90	69.8	E	10/20	0.91	73.5	E	10/20
Elm Street WB RT	0.25	7.6	A	1/3	0.26	7.8	A	1/3	0.27	8.9	A	1/3
Washington Street NB LT/TH	0.81	46.1	D	10/20	0.81	46.7	D	10/21	0.79	45.7	D	11/22
Washington Street NB RT	0.28	3.9	A	1/3	0.28	3.9	A	1/3	0.27	3.4	A	1/3
Washington Street SB LT	0.84	36.8	D	6/15	0.84	36.8	D	6/15	0.83	33.9	C	6/15
Washington Street SB TH/RT	0.75	24.1	C	14/27	0.76	24.6	C	14/28	0.76	26.9	C	16/33
Overall	--	32.9	C	--	--	33.6	C	--	--	34.9	C	--

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles.

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

APPENDIX

**PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNTS
MANUAL TURNING MOVEMENT COUNTS
SEASONAL ADJUSTMENT DATA
PUBLIC TRANSPORTATION INFORMATION
VEHICLE SPEED MEASUREMENTS
MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING
BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS
GENERAL BACKGROUND TRAFFIC GROWTH
TRIP-GENERATION CALCULATIONS
JOURNEY-TO-WORK TRIP DISTRIBUTION SUMMARY
CAPACITY ANALYSIS WORKSHEETS**

PROJECT SITE PLAN

ZONING SCHEDULE

LOT ZONING CLASSIFICATION : GENERAL BUSINESS (GB); VLLAGE OVERLAY DISTRICT

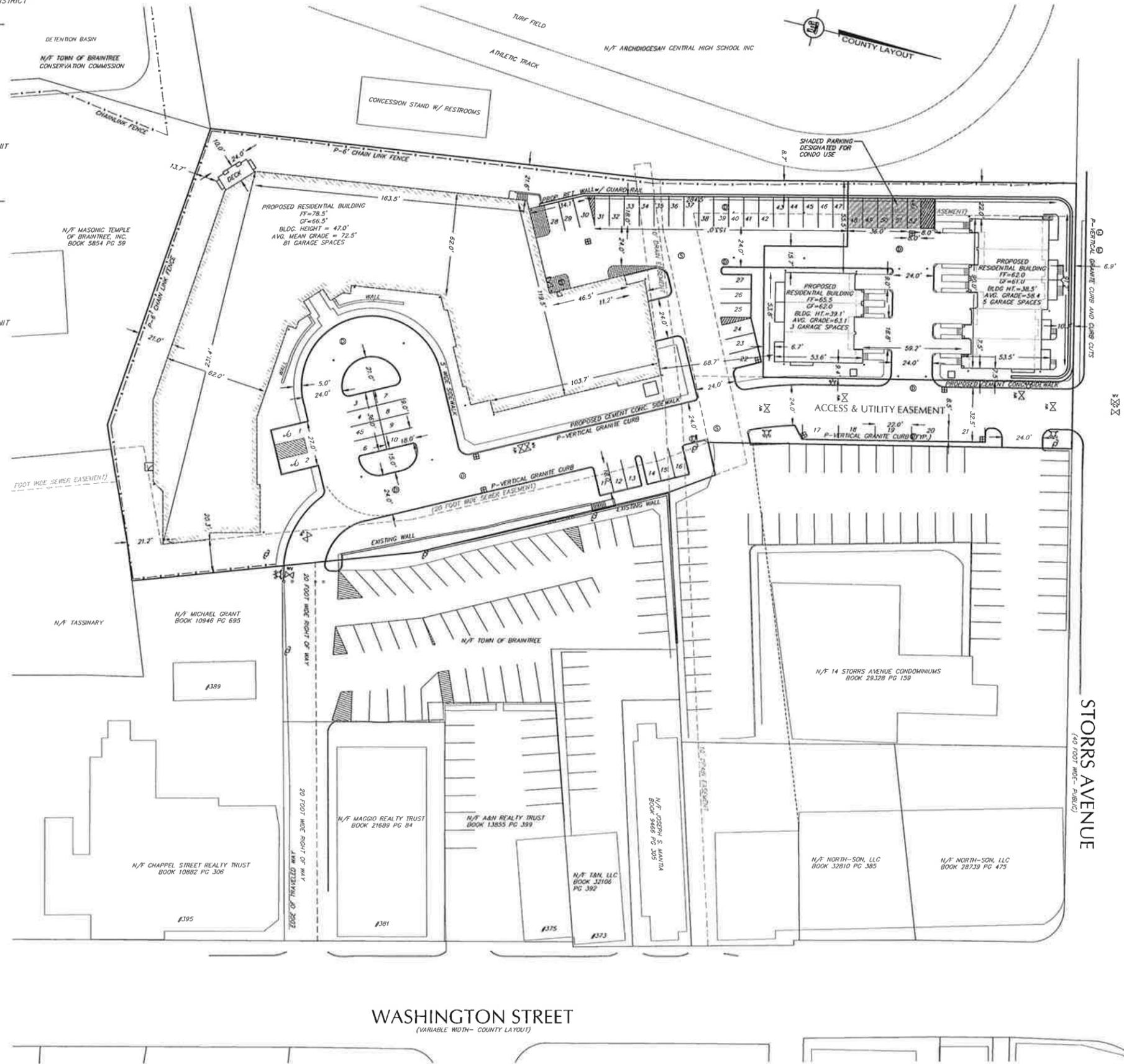
LOT 1	ZONING REQUIREMENT	PROPOSED
MINIMUM LOT SIZE	5,000-15,000 S.F.	93,866 S.F.
MIN. LOT WIDTH	25-50 FEET	40 FEET
MINIMUM LOT FRONTAGE	25-50 FEET	50 FEET
MINIMUM LOT DEPTH	60-85 FEET	400+ FEET
MAXIMUM SETBACK	15 FEET	248.3 FEET
MINIMUM FRONT YARD SETBACK	0-10 FEET	248.3 FEET
MINIMUM SIDE YARD SETBACK	0-10 FEET	20.3 FEET
MINIMUM REAR YARD SETBACK	20 FEET	21.0 FEET
MAXIMUM BUILDING HEIGHT	50 FEET	47.0 FEET
MAXIMUM NUMBER OF STORIES	3	3
MAXIMUM BUILDING COVERAGE	80%	31.8%
MAXIMUM LOT COVERAGE	90%	73.9%
MINIMUM OPEN SPACE	10%	26.1%
MIN. PARKING SPACES/DWELLING UNIT	2 PER UNIT	1.83 PER UNIT

12B PARKING SPACES - 70 UNITS
47 SURFACE PARKING SPACES
81 SUB-SURFACE PARKING SPACES

LOT 2	ZONING REQUIREMENT	PROPOSED
MINIMUM LOT SIZE	5,000-15,000 S.F.	20,327 S.F.
MIN. LOT WIDTH	25-50 FEET	79 FEET
MINIMUM LOT FRONTAGE	25-50 FEET	110 FEET
MINIMUM LOT DEPTH	60-85 FEET	137 FEET
MAXIMUM SETBACK	15 FEET	21.0 FEET
MINIMUM FRONT YARD SETBACK	0-10 FEET	6.9 FEET
MINIMUM SIDE YARD SETBACK	0-10 FEET	7.5 FEET
MINIMUM REAR YARD SETBACK	20 FEET	6.7 FEET
MAXIMUM BUILDING HEIGHT	50 FEET	39.6 FEET
MAXIMUM NUMBER OF STORIES	3	2.5
MAXIMUM BUILDING COVERAGE	80%	31.8%
MAXIMUM LOT COVERAGE	90%	75.0%
MINIMUM OPEN SPACE	10%	25.0%
MIN. PARKING SPACES/DWELLING UNIT	2 PER UNIT	2.62 PER UNIT

21 PARKING SPACES - 8 UNITS

EXISTING:	PROPOSED:



DeCELLE



BURKE & Associates, Inc.
1266 Furnace Brook Parkway Quincy, MA 02169
(617) 405-5100 (O) (617) 405-5101 (F)



JAMES W. BURKE, PE DATE

GENERAL NOTES:

ZONING: GENERAL BUSINESS

MINIMUM REQUIREMENTS:
AREA: 15,000 S.F.
FRONT SETBACK: 10'
SIDE SETBACK: 10'
REAR SETBACK: 20'
LOT FRONTAGE/MOETH: 50'/100'
MAX HEIGHT: 3 STY
BUILDING COVERAGE: 70%
MIN OPEN SPACE: 10%

CURRENT OWNER:
383 WASHINGTON STREET LLC
519 ALBANY STREET, SUITE 200
BOSTON, MA 02122

DEED REFERENCE:
Book 30862 Page 314
Book 14283 Page 545
Book 14283 Page 550

PLAN REFERENCE:
Book 455 Page 272
Book 4284 Page 179
LC PLAN 3751D

ASSESSORS REFERENCE:
MAP 2028 LOT 31

PROJECT TITLE & LOCATION:

**PARKSIDE APARTMENTS & PARKSIDE CONDOMINIUMS
40B RESIDENTIAL PROJECT
383-385 WASHINGTON STREET
BRAINTREE, MA**

PLAN TITLE:

PROPOSED LAYOUT

PREPARED FOR:

**THE HOLLAND COMPANIES
519 ALBANY STREET
SUITE 200
BOSTON, MA 02118**

DATE: FEBRUARY 2, 2017
REVISED:

JOB NUMBER 185.033 SHEET 5 OF 10
SCALE: 1"=30'

AUTOMATIC TRAFFIC RECORDER COUNTS

Accurate Counts
978-664-2565

Location : Washington Street
Location : South of Storrs Avenue
City/State: Braintree, MA

7547VOL1

Start Time	12/20/2016 Tue	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	162			0	152				
12:15		16	86			11	150				
12:30		10	151			6	205				
12:45		6	136	32	535	4	151	21	658	53	1193
01:00		11	95			5	142				
01:15		1	173			5	123				
01:30		7	156			3	141				
01:45		5	194	24	618	4	125	17	531	41	1149
02:00		4	142			2	137				
02:15		4	173			1	148				
02:30		0	151			0	149				
02:45		5	157	13	623	3	141	6	575	19	1198
03:00		2	182			1	128				
03:15		4	183			2	132				
03:30		1	164			3	141				
03:45		5	188	12	717	8	125	14	526	26	1243
04:00		4	204			7	150				
04:15		5	174			8	110				
04:30		11	170			7	137				
04:45		13	220	33	768	30	141	52	538	85	1306
05:00		19	160			41	154				
05:15		27	184			62	134				
05:30		22	172			87	137				
05:45		37	187	105	703	102	118	292	543	397	1246
06:00		32	204			90	118				
06:15		40	190			140	98				
06:30		60	171			133	113				
06:45		82	183	214	748	139	103	502	432	716	1180
07:00		123	203			156	102				
07:15		90	159			200	108				
07:30		91	106			184	81				
07:45		128	103	432	571	165	86	705	377	1137	948
08:00		98	99			157	98				
08:15		124	88			155	86				
08:30		118	92			166	79				
08:45		102	82	442	361	185	100	663	363	1105	724
09:00		139	75			124	77				
09:15		108	68			141	61				
09:30		120	50			141	55				
09:45		134	31	501	224	125	43	531	236	1032	460
10:00		113	41			129	55				
10:15		142	33			126	20				
10:30		124	47			140	15				
10:45		129	19	508	140	138	16	533	106	1041	246
11:00		134	30			156	32				
11:15		137	28			159	12				
11:30		147	23			134	16				
11:45		159	21	577	102	129	4	578	64	1155	166
Total		2893	6110			3914	4949			6807	11059
Percent		32.1%	67.9%			44.2%	55.8%			38.1%	61.9%
Grand Total		2893	6110			3914	4949			6807	11059
Percent		32.1%	67.9%			44.2%	55.8%			38.1%	61.9%

ADT ADT 14,806 AADT 14,806

Accurate Counts

978-664-2565

Location : Washington Street
 Location : South of Storrs Avenue
 City/State: Braintree, MA

7547VOL1

Start Time	12/19/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	*	*	32	21	*	*	*	*	*	*	*	*	*	*	32	21
01:00	*	*	24	17	*	*	*	*	*	*	*	*	*	*	24	17
02:00	*	*	13	6	*	*	*	*	*	*	*	*	*	*	13	6
03:00	*	*	12	14	*	*	*	*	*	*	*	*	*	*	12	14
04:00	*	*	33	52	*	*	*	*	*	*	*	*	*	*	33	52
05:00	*	*	105	292	*	*	*	*	*	*	*	*	*	*	105	292
06:00	*	*	214	502	*	*	*	*	*	*	*	*	*	*	214	502
07:00	*	*	432	705	*	*	*	*	*	*	*	*	*	*	432	705
08:00	*	*	442	663	*	*	*	*	*	*	*	*	*	*	442	663
09:00	*	*	501	531	*	*	*	*	*	*	*	*	*	*	501	531
10:00	*	*	508	533	*	*	*	*	*	*	*	*	*	*	508	533
11:00	*	*	577	578	*	*	*	*	*	*	*	*	*	*	577	578
12:00 PM	*	*	535	658	*	*	*	*	*	*	*	*	*	*	535	658
01:00	*	*	618	531	*	*	*	*	*	*	*	*	*	*	618	531
02:00	*	*	623	575	*	*	*	*	*	*	*	*	*	*	623	575
03:00	*	*	717	526	*	*	*	*	*	*	*	*	*	*	717	526
04:00	*	*	768	538	*	*	*	*	*	*	*	*	*	*	768	538
05:00	*	*	703	543	*	*	*	*	*	*	*	*	*	*	703	543
06:00	*	*	748	432	*	*	*	*	*	*	*	*	*	*	748	432
07:00	*	*	571	377	*	*	*	*	*	*	*	*	*	*	571	377
08:00	*	*	361	363	*	*	*	*	*	*	*	*	*	*	361	363
09:00	*	*	224	236	*	*	*	*	*	*	*	*	*	*	224	236
10:00	*	*	140	106	*	*	*	*	*	*	*	*	*	*	140	106
11:00	*	*	102	64	*	*	*	*	*	*	*	*	*	*	102	64
Lane	0	0	9003	8863	0	0	0	0	0	0	0	0	0	0	9003	8863
Day			17866												17866	
AM Peak	-	-	11:00	07:00	-	-	-	-	-	-	-	-	-	-	11:00	07:00
Vol.	-	-	577	705	-	-	-	-	-	-	-	-	-	-	577	705
PM Peak	-	-	16:00	12:00	-	-	-	-	-	-	-	-	-	-	16:00	12:00
Vol.	-	-	768	658	-	-	-	-	-	-	-	-	-	-	768	658

Comb. Total 0 17866 0 0 0 0 0 0 0 0 0 0 0 0 17866

ADT ADT 14,806 AADT 14,806

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547VOL2

Start Time	12/20/2016 Tue	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	23			2	16				
12:15		3	21			1	14				
12:30		0	15			0	14				
12:45		0	11	5	70	0	21	3	65	8	135
01:00		0	25			1	20				
01:15		2	32			0	16				
01:30		0	24			0	14				
01:45		0	21	2	102	0	16	1	66	3	168
02:00		1	19			0	15				
02:15		0	24			0	17				
02:30		0	26			0	19				
02:45		0	35	1	104	0	25	0	76	1	180
03:00		0	36			1	27				
03:15		0	37			0	23				
03:30		1	54			0	15				
03:45		0	42	1	169	0	18	1	83	2	252
04:00		0	50			0	30				
04:15		0	47			0	26				
04:30		1	46			1	20				
04:45		0	60	1	203	0	11	1	87	2	290
05:00		1	50			1	17				
05:15		0	59			4	19				
05:30		2	59			4	20				
05:45		3	41	6	209	3	26	12	82	18	291
06:00		1	50			2	25				
06:15		3	32			3	13				
06:30		1	30			3	12				
06:45		8	22	13	134	8	12	16	62	29	196
07:00		23	17			10	8				
07:15		19	17			22	12				
07:30		11	14			34	11				
07:45		19	11	72	59	25	9	91	40	163	99
08:00		15	13			28	11				
08:15		19	9			16	4				
08:30		19	9			33	7				
08:45		31	9	84	40	17	1	94	23	178	63
09:00		12	4			14	8				
09:15		17	9			14	1				
09:30		14	7			9	2				
09:45		15	5	58	25	12	1	49	12	107	37
10:00		17	5			16	3				
10:15		14	0			9	0				
10:30		10	1			17	2				
10:45		17	3	58	9	8	3	50	8	108	17
11:00		16	0			9	0				
11:15		12	3			13	2				
11:30		19	1			16	1				
11:45		24	3	71	7	20	0	58	3	129	10
Total		372	1131			376	607			748	1738
Percent		24.8%	75.2%			38.3%	61.7%			30.1%	69.9%

Accurate Counts
978-664-2565

Location : Storrs Avenue
Location : West of Washington Street
City/State: Braintree, MA

7547VOL2

Start Time	12/21/2016 Wed	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	19			2	13				
12:15		0	18			1	14				
12:30		0	28			0	15				
12:45		0	26	2	91	0	20	3	62	5	153
01:00		2	22			1	11				
01:15		1	27			0	17				
01:30		0	20			0	22				
01:45		1	24	4	93	0	22	1	72	5	165
02:00		0	29			0	26				
02:15		0	26			0	23				
02:30		0	49			0	12				
02:45		0	35	0	139	0	20	0	81	0	220
03:00		0	40			0	16				
03:15		0	36			0	21				
03:30		0	49			1	15				
03:45		0	44	0	169	0	22	1	74	1	243
04:00		0	37			0	22				
04:15		1	40			1	26				
04:30		0	52			1	30				
04:45		2	47	3	176	1	16	3	94	6	270
05:00		1	53			2	14				
05:15		0	51			5	15				
05:30		2	56			0	10				
05:45		0	45	3	205	3	23	10	62	13	267
06:00		0	54			0	14				
06:15		3	49			3	19				
06:30		2	55			4	21				
06:45		5	42	10	200	16	21	23	75	33	275
07:00		11	24			7	13				
07:15		21	27			20	7				
07:30		17	20			35	9				
07:45		19	11	68	82	22	14	84	43	152	125
08:00		21	13			27	20				
08:15		16	9			30	6				
08:30		23	11			25	9				
08:45		35	12	95	45	29	4	111	39	206	84
09:00		28	6			27	8				
09:15		22	9			18	4				
09:30		13	11			17	6				
09:45		26	6	89	32	15	6	77	24	166	56
10:00		23	3			11	3				
10:15		28	4			23	6				
10:30		16	4			27	1				
10:45		9	2	76	13	14	0	75	10	151	23
11:00		16	2			11	1				
11:15		17	4			15	1				
11:30		27	1			11	0				
11:45		13	0	73	7	10	3	47	5	120	12
Total		423	1252			435	641			858	1893
Percent		25.3%	74.7%			40.4%	59.6%			31.2%	68.8%
Grand Total		795	2383			811	1248			1606	3631
Percent		25.0%	75.0%			39.4%	60.6%			30.7%	69.3%

ADT ADT 2,617 AADT 2,617

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547VOL2

Start Time	12/19/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	5	3	2	3	*	*	*	*	*	*	*	*	4	3
01:00	*	*	2	1	4	1	*	*	*	*	*	*	*	*	3	1
02:00	*	*	1	0	0	0	*	*	*	*	*	*	*	*	0	0
03:00	*	*	1	1	0	1	*	*	*	*	*	*	*	*	0	1
04:00	*	*	1	1	3	3	*	*	*	*	*	*	*	*	2	2
05:00	*	*	6	12	3	10	*	*	*	*	*	*	*	*	4	11
06:00	*	*	13	16	10	23	*	*	*	*	*	*	*	*	12	20
07:00	*	*	72	91	68	84	*	*	*	*	*	*	*	*	70	88
08:00	*	*	84	94	95	111	*	*	*	*	*	*	*	*	90	102
09:00	*	*	58	49	89	77	*	*	*	*	*	*	*	*	74	63
10:00	*	*	58	50	76	75	*	*	*	*	*	*	*	*	67	62
11:00	*	*	71	58	73	47	*	*	*	*	*	*	*	*	72	52
12:00 PM	*	*	70	65	91	62	*	*	*	*	*	*	*	*	80	64
01:00	*	*	102	66	93	72	*	*	*	*	*	*	*	*	98	69
02:00	*	*	104	76	139	81	*	*	*	*	*	*	*	*	122	78
03:00	*	*	169	83	169	74	*	*	*	*	*	*	*	*	169	78
04:00	*	*	203	87	176	94	*	*	*	*	*	*	*	*	190	90
05:00	*	*	209	82	205	62	*	*	*	*	*	*	*	*	207	72
06:00	*	*	134	62	200	75	*	*	*	*	*	*	*	*	167	68
07:00	*	*	59	40	82	43	*	*	*	*	*	*	*	*	70	42
08:00	*	*	40	23	45	39	*	*	*	*	*	*	*	*	42	31
09:00	*	*	25	12	32	24	*	*	*	*	*	*	*	*	28	18
10:00	*	*	9	8	13	10	*	*	*	*	*	*	*	*	11	9
11:00	*	*	7	3	7	5	*	*	*	*	*	*	*	*	7	4
Lane	0	0	1503	983	1675	1076	0	0	0	0	0	0	0	0	1589	1028
Day	-	-	2486	2751	2751	2617	-	-	-	-	-	-	-	-	2617	1028
AM Peak	-	-	08:00	08:00	08:00	08:00	-	-	-	-	-	-	-	-	08:00	08:00
Vol.	-	-	84	94	95	111	-	-	-	-	-	-	-	-	90	102
PM Peak	-	-	17:00	16:00	17:00	16:00	-	-	-	-	-	-	-	-	17:00	16:00
Vol.	-	-	209	87	205	94	-	-	-	-	-	-	-	-	207	90

Comb. Total 0 2486 2751 2617 0 0 0 0 0 0 0 0 0 0 0 2617

ADT ADT 2.617 AADT 2.617

MANUAL TURNING MOVEMENT COUNTS

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	18	54	2	61	18	25	4	158	18	7	4	3	372
07:15 AM	24	56	7	38	10	25	1	150	50	13	15	4	393
07:30 AM	27	81	2	50	9	47	1	131	46	10	15	2	421
07:45 AM	27	55	2	52	12	45	5	143	34	10	8	4	397
Total	96	246	13	201	49	142	11	582	148	40	42	13	1583
08:00 AM	29	67	3	45	8	45	1	116	42	10	11	4	381
08:15 AM	30	77	3	46	21	32	2	131	39	3	4	7	395
08:30 AM	40	80	6	48	9	54	2	125	57	7	21	14	463
08:45 AM	30	87	3	50	15	51	8	125	45	5	4	2	425
Total	129	311	15	189	53	182	13	497	183	25	40	27	1664
Grand Total	225	557	28	390	102	324	24	1079	331	65	82	40	3247
Apprch %	27.8	68.8	3.5	47.8	12.5	39.7	1.7	75.2	23.1	34.8	43.9	21.4	
Total %	6.9	17.2	0.9	12	3.1	10	0.7	33.2	10.2	2	2.5	1.2	
Cars	216	544	26	373	100	323	23	1062	306	64	80	40	3157
% Cars	96	97.7	92.9	95.6	98	99.7	95.8	98.4	92.4	98.5	97.6	100	97.2
Trucks	9	13	2	17	2	1	1	17	25	1	2	0	90
% Trucks	4	2.3	7.1	4.4	2	0.3	4.2	1.6	7.6	1.5	2.4	0	2.8

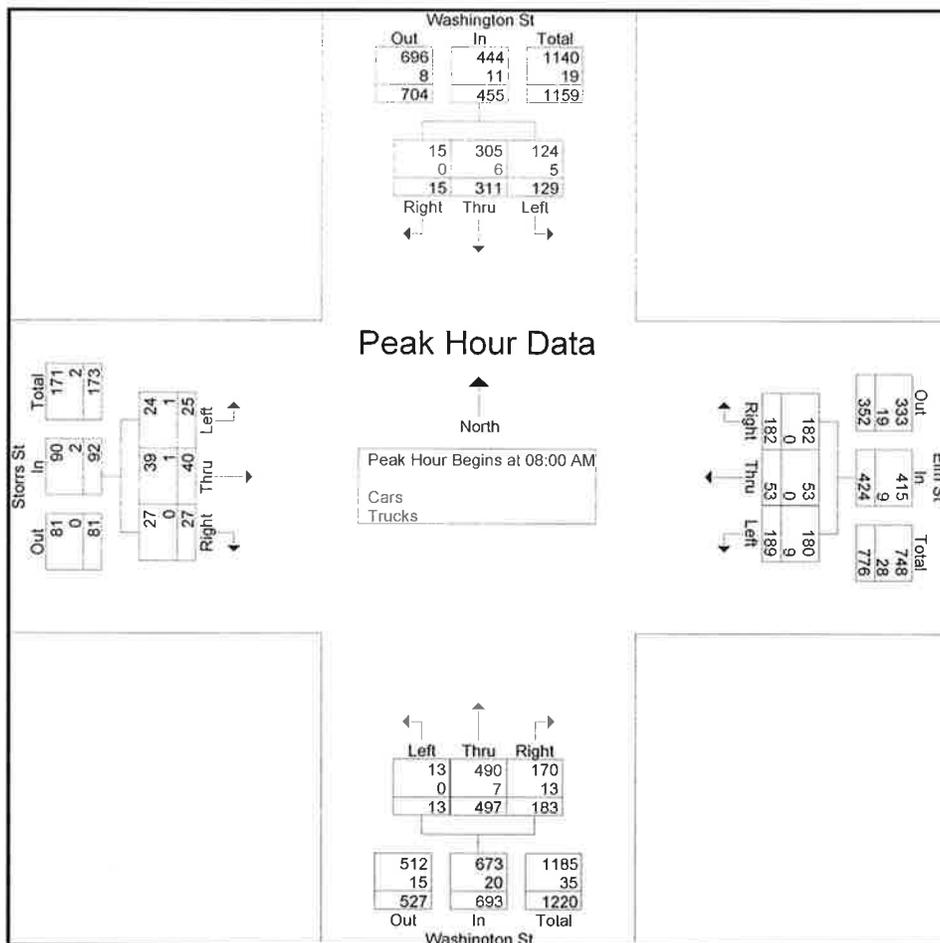
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 2

Start Time	Washington St From North				Elm St From East				Washington St From South				Storrs St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	29	67	3	99	45	8	45	98	1	116	42	159	10	11	4	25	381
08:15 AM	30	77	3	110	46	21	32	99	2	131	39	172	3	4	7	14	395
08:30 AM	40	80	6	126	48	9	54	111	2	125	57	184	7	21	14	42	463
08:45 AM	30	87	3	120	50	15	51	116	8	125	45	178	5	4	2	11	425
Total Volume	129	311	15	455	189	53	182	424	13	497	183	693	25	40	27	92	1664
% App. Total	28.4	68.4	3.3		44.6	12.5	42.9		1.9	71.7	26.4		27.2	43.5	29.3		
PHF	.806	.894	.625	.903	.945	.631	.843	.914	.406	.948	.803	.942	.625	.476	.482	.548	.898
Cars	124	305	15	444	180	53	182	415	13	490	170	673	24	39	27	90	1622
% Cars	96.1	98.1	100	97.6	95.2	100	100	97.9	100	98.6	92.9	97.1	96.0	97.5	100	97.8	97.5
Trucks	5	6	0	11	9	0	0	9	0	7	13	20	1	1	0	2	42
% Trucks	3.9	1.9	0	2.4	4.8	0	0	2.1	0	1.4	7.1	2.9	4.0	2.5	0	2.2	2.5



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int.	Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
07:00 AM	17	53	2	56	17	25	3	154	18	7	4	3		359
07:15 AM	24	53	5	37	9	25	1	147	45	13	15	4		378
07:30 AM	25	78	2	49	9	46	1	128	41	10	14	2		405
07:45 AM	26	55	2	51	12	45	5	143	32	10	8	4		393
Total	92	239	11	193	47	141	10	572	136	40	41	13		1535
08:00 AM	28	66	3	44	8	45	1	114	40	9	11	4		373
08:15 AM	29	75	3	42	21	32	2	129	39	3	4	7		386
08:30 AM	37	78	6	47	9	54	2	125	52	7	20	14		451
08:45 AM	30	86	3	47	15	51	8	122	39	5	4	2		412
Total	124	305	15	180	53	182	13	490	170	24	39	27		1622
Grand Total	216	544	26	373	100	323	23	1062	306	64	80	40		3157
Apprch %	27.5	69.2	3.3	46.9	12.6	40.6	1.7	76.3	22	34.8	43.5	21.7		
Total %	6.8	17.2	0.8	11.8	3.2	10.2	0.7	33.6	9.7	2	2.5	1.3		

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	1	0	5	1	0	1	4	0	0	0	0	13
07:15 AM	0	3	2	1	1	0	0	3	5	0	0	0	15
07:30 AM	2	3	0	1	0	1	0	3	5	0	1	0	16
07:45 AM	1	0	0	1	0	0	0	0	2	0	0	0	4
Total	4	7	2	8	2	1	1	10	12	0	1	0	48
08:00 AM	1	1	0	1	0	0	0	2	2	1	0	0	8
08:15 AM	1	2	0	4	0	0	0	2	0	0	0	0	9
08:30 AM	3	2	0	1	0	0	0	0	5	0	1	0	12
08:45 AM	0	1	0	3	0	0	0	3	6	0	0	0	13
Total	5	6	0	9	0	0	0	7	13	1	1	0	42
Grand Total	9	13	2	17	2	1	1	17	25	1	2	0	90
Apprch %	37.5	54.2	8.3	85	10	5	2.3	39.5	58.1	33.3	66.7	0	
Total %	10	14.4	2.2	18.9	2.2	1.1	1.1	18.9	27.8	1.1	2.2	0	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Washington St From North				Elm St From East				Washington St From South				Storrs St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	3	0	3
07:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	3	1	4
07:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2
Total	0	1	0	0	1	0	0	1	0	0	0	2	0	0	1	5	8	3	11
08:00 AM	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	0	4	0	4
08:15 AM	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	4	0	4
08:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	4	0	4
08:45 AM	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0	2	7	0	7
Total	0	0	0	6	0	0	0	3	0	0	0	5	0	0	0	5	19	0	19
Grand Total	0	1	0	6	1	0	0	4	0	0	0	7	0	0	1	10	27	3	30
Apprch %	0	100	0		100	0	0		0	0	0		0	0	100				
Total %	0	33.3	0		33.3	0	0		0	0	0		0	0	33.3		90	10	

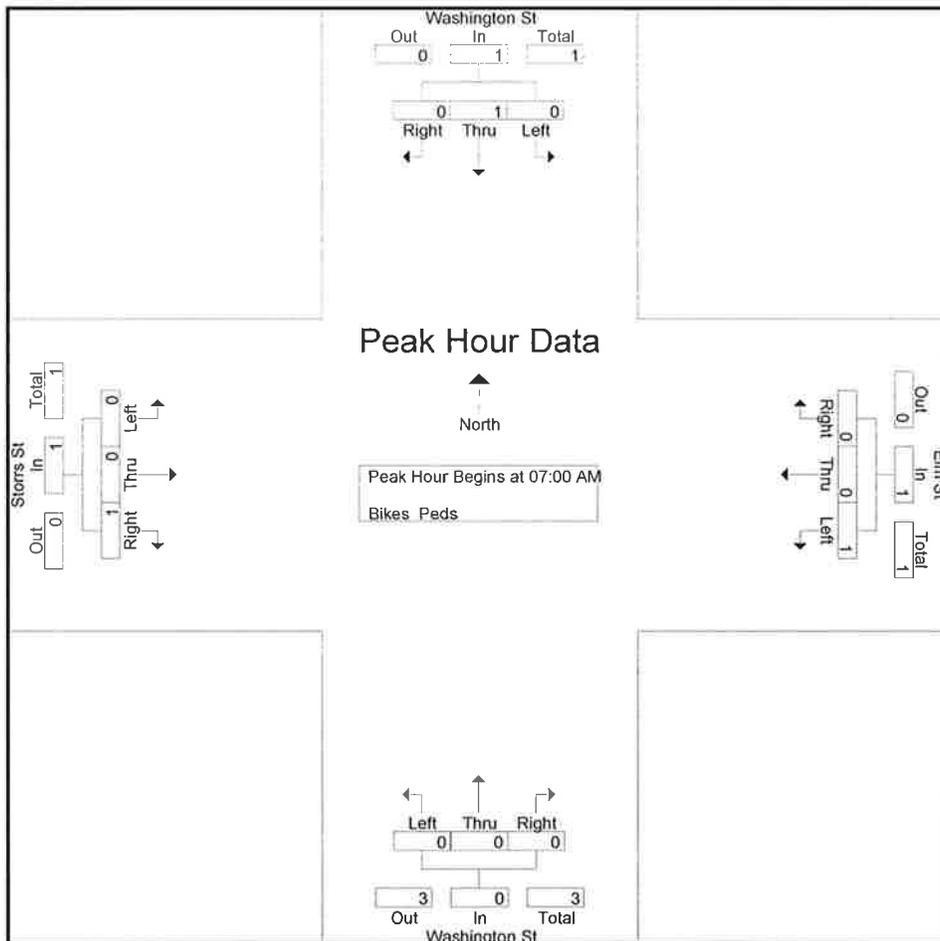
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 11

Start Time	Washington St From North				Elm St From East				Washington St From South				Storrs St From West				Int, Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:00 AM																		
07:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1
07:15 AM	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	1	1	1	1
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	0	0	1	1	1	3
% App. Total	0	100	0		100	0	0		0	0	0		0	0	100			
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.250	.750	



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	68	117	12	40	26	37	5	86	43	6	19	2	461
04:15 PM	57	113	17	48	25	31	7	94	42	6	12	5	457
04:30 PM	59	138	27	41	27	43	2	101	56	5	9	3	511
04:45 PM	79	161	21	35	27	34	5	97	57	4	7	2	529
Total	263	529	77	164	105	145	19	378	198	21	47	12	1958
05:00 PM	91	125	16	45	32	45	6	94	55	9	8	5	531
05:15 PM	79	152	14	37	34	46	8	81	60	6	7	6	530
05:30 PM	79	150	24	36	28	36	10	84	58	7	6	8	526
05:45 PM	65	147	17	37	19	38	7	86	49	10	17	5	497
Total	314	574	71	155	113	165	31	345	222	32	38	24	2084
Grand Total	577	1103	148	319	218	310	50	723	420	53	85	36	4042
Apprch %	31.6	60.3	8.1	37.7	25.7	36.6	4.2	60.6	35.2	30.5	48.9	20.7	
Total %	14.3	27.3	3.7	7.9	5.4	7.7	1.2	17.9	10.4	1.3	2.1	0.9	
Cars	575	1091	148	316	216	310	50	718	418	53	85	36	4016
% Cars	99.7	98.9	100	99.1	99.1	100	100	99.3	99.5	100	100	100	99.4
Trucks	2	12	0	3	2	0	0	5	2	0	0	0	26
% Trucks	0.3	1.1	0	0.9	0.9	0	0	0.7	0.5	0	0	0	0.6

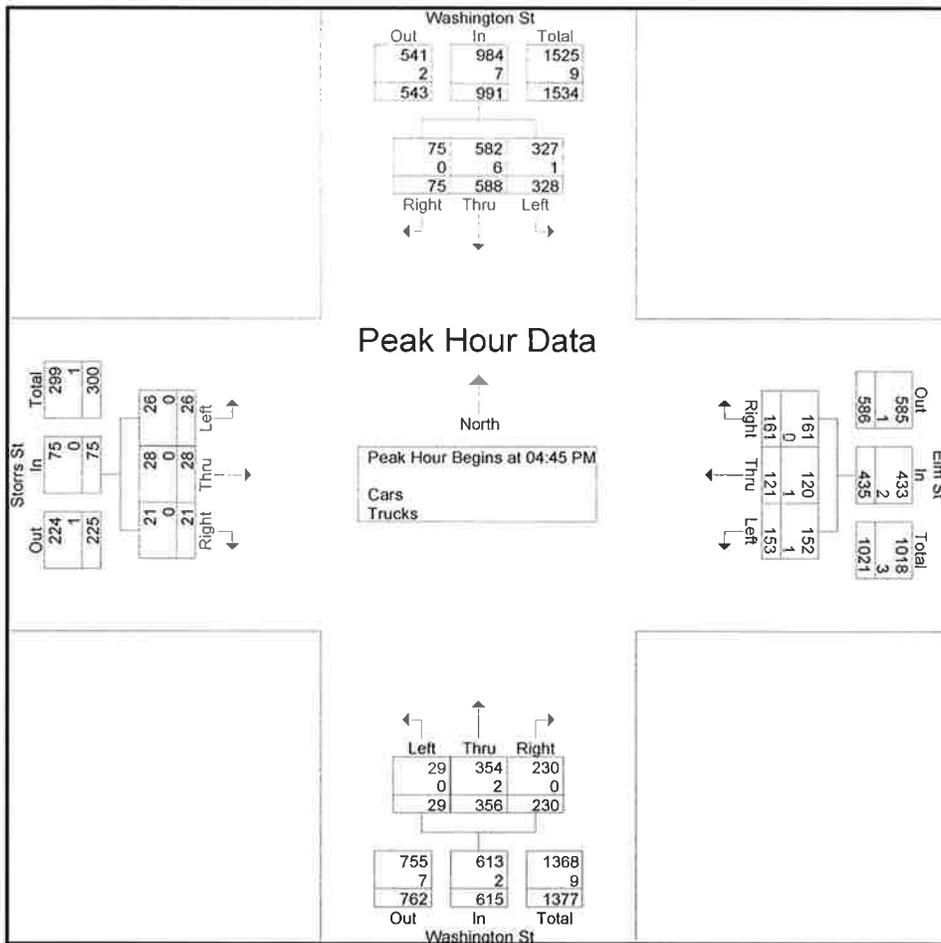
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 2

Start Time	Washington St From North				Elm St From East				Washington St From South				Storrs St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	79	161	21	261	35	27	34	96	5	97	57	159	4	7	2	13	529
05:00 PM	91	125	16	232	45	32	45	122	6	94	55	155	9	8	5	22	531
05:15 PM	79	152	14	245	37	34	46	117	8	81	60	149	6	7	6	19	530
05:30 PM	79	150	24	253	36	28	36	100	10	84	58	152	7	6	8	21	526
Total Volume	328	588	75	991	153	121	161	435	29	356	230	615	26	28	21	75	2116
% App. Total	33.1	59.3	7.6		35.2	27.8	37		4.7	57.9	37.4		34.7	37.3	28		
PHF	.901	.913	.781	.949	.850	.890	.875	.891	.725	.918	.958	.967	.722	.875	.656	.852	.996
Cars	327	582	75	984	152	120	161	433	29	354	230	613	26	28	21	75	2105
% Cars	99.7	99.0	100	99.3	99.3	99.2	100	99.5	100	99.4	100	99.7	100	100	100	100	99.5
Trucks	1	6	0	7	1	1	0	2	0	2	0	2	0	0	0	0	11
% Trucks	0.3	1.0	0	0.7	0.7	0.8	0	0.5	0	0.6	0	0.3	0	0	0	0	0.5



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	68	115	12	38	26	37	5	86	43	6	19	2	457
04:15 PM	57	112	17	48	25	31	7	93	40	6	12	5	453
04:30 PM	58	137	27	41	27	43	2	101	56	5	9	3	509
04:45 PM	79	159	21	34	26	34	5	96	57	4	7	2	524
Total	262	523	77	161	104	145	19	376	196	21	47	12	1943
05:00 PM	91	125	16	45	32	45	6	94	55	9	8	5	531
05:15 PM	79	150	14	37	34	46	8	80	60	6	7	6	527
05:30 PM	78	148	24	36	28	36	10	84	58	7	6	8	523
05:45 PM	65	145	17	37	18	38	7	84	49	10	17	5	492
Total	313	568	71	155	112	165	31	342	222	32	38	24	2073
Grand Total	575	1091	148	316	216	310	50	718	418	53	85	36	4016
Apprch %	31.7	60.1	8.2	37.5	25.7	36.8	4.2	60.5	35.2	30.5	48.9	20.7	
Total %	14.3	27.2	3.7	7.9	5.4	7.7	1.2	17.9	10.4	1.3	2.1	0.9	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North			Elm St From East			Washington St From South			Storrs St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	4
04:15 PM	0	1	0	0	0	0	0	1	2	0	0	0	4
04:30 PM	1	1	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	2	0	1	1	0	0	1	0	0	0	0	5
Total	1	6	0	3	1	0	0	2	2	0	0	0	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
05:30 PM	1	2	0	0	0	0	0	0	0	0	0	0	3
05:45 PM	0	2	0	0	1	0	0	2	0	0	0	0	5
Total	1	6	0	0	1	0	0	3	0	0	0	0	11
Grand Total	2	12	0	3	2	0	0	5	2	0	0	0	26
Apprch %	14.3	85.7	0	60	40	0	0	71.4	28.6	0	0	0	
Total %	7.7	46.2	0	11.5	7.7	0	0	19.2	7.7	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Washington St From North				Elm St From East				Washington St From South				Storrs St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	1	4	0	4
04:15 PM	0	0	0	5	0	0	0	0	0	0	0	1	0	0	0	1	7	0	7
04:30 PM	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	8	0	8
04:45 PM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	4	7	0	7
Total	0	0	0	9	0	0	0	3	0	0	0	5	0	0	0	9	26	0	26
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0	2
05:30 PM	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	3	1	4
05:45 PM	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	1	5	0	5
Total	0	0	0	2	0	0	0	4	0	0	1	3	0	0	0	3	12	1	13
Grand Total	0	0	0	11	0	0	0	7	0	0	1	8	0	0	0	12	38	1	39
Apprch %	0	0	0		0	0	0		0	0	100		0	0	0				
Total %	0	0	0		0	0	0		0	0	100		0	0	0		97.4	2.6	

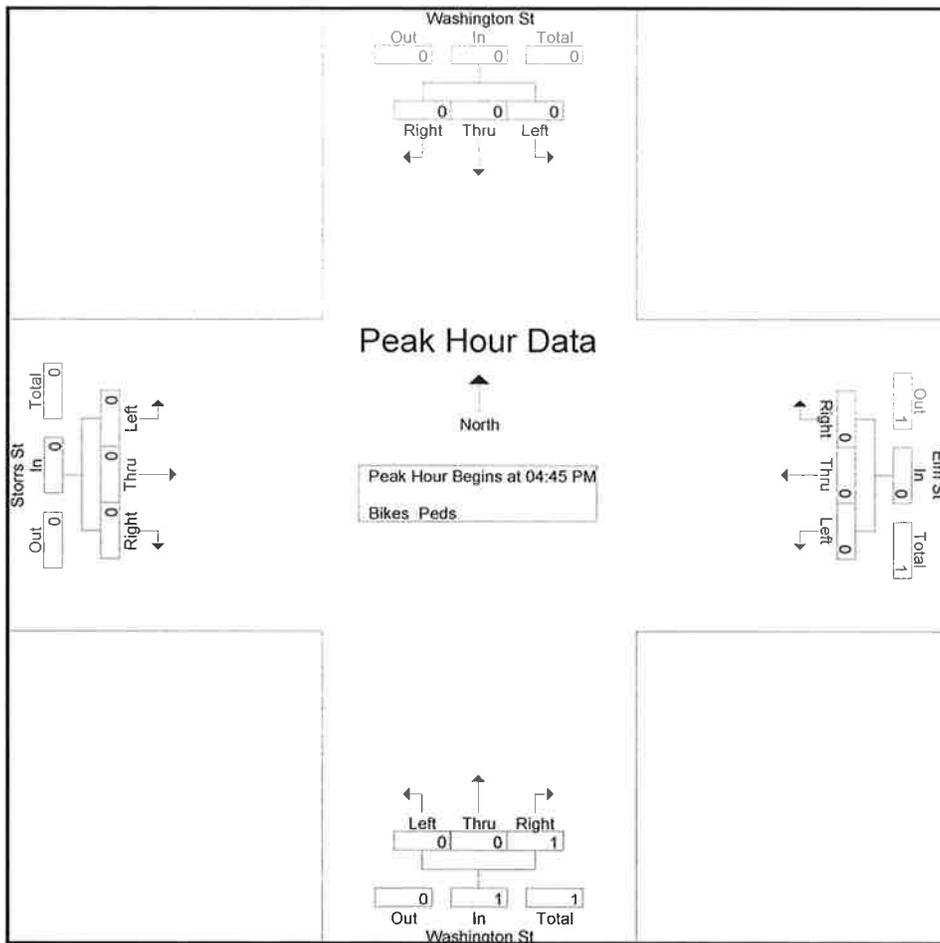
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Elm St / Storrs Ave
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 12/20/2016
 Page No : 11

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



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	100	1	2	0	1	1	163	0	2	0	0	271
07:15 AM	1	101	1	1	3	3	4	200	2	7	0	3	326
07:30 AM	1	88	3	2	0	3	0	193	0	6	0	2	298
07:45 AM	0	123	6	2	0	1	0	170	1	5	0	0	308
Total	3	412	11	7	3	8	5	726	3	20	0	5	1203
08:00 AM	1	96	4	1	0	1	1	174	0	4	0	2	284
08:15 AM	2	99	2	0	0	2	0	163	1	5	0	2	276
08:30 AM	1	110	5	1	0	3	1	167	1	2	0	4	295
08:45 AM	2	117	4	0	0	1	1	206	1	2	0	3	337
Total	6	422	15	2	0	7	3	710	3	13	0	11	1192
Grand Total	9	834	26	9	3	15	8	1436	6	33	0	16	2395
Apprch %	1	96	3	33.3	11.1	55.6	0.6	99	0.4	67.3	0	32.7	
Total %	0.4	34.8	1.1	0.4	0.1	0.6	0.3	60	0.3	1.4	0	0.7	
Cars	9	807	25	9	3	14	8	1400	6	31	0	15	2327
% Cars	100	96.8	96.2	100	100	93.3	100	97.5	100	93.9	0	93.8	97.2
Trucks	0	27	1	0	0	1	0	36	0	2	0	1	68
% Trucks	0	3.2	3.8	0	0	6.7	0	2.5	0	6.1	0	6.2	2.8

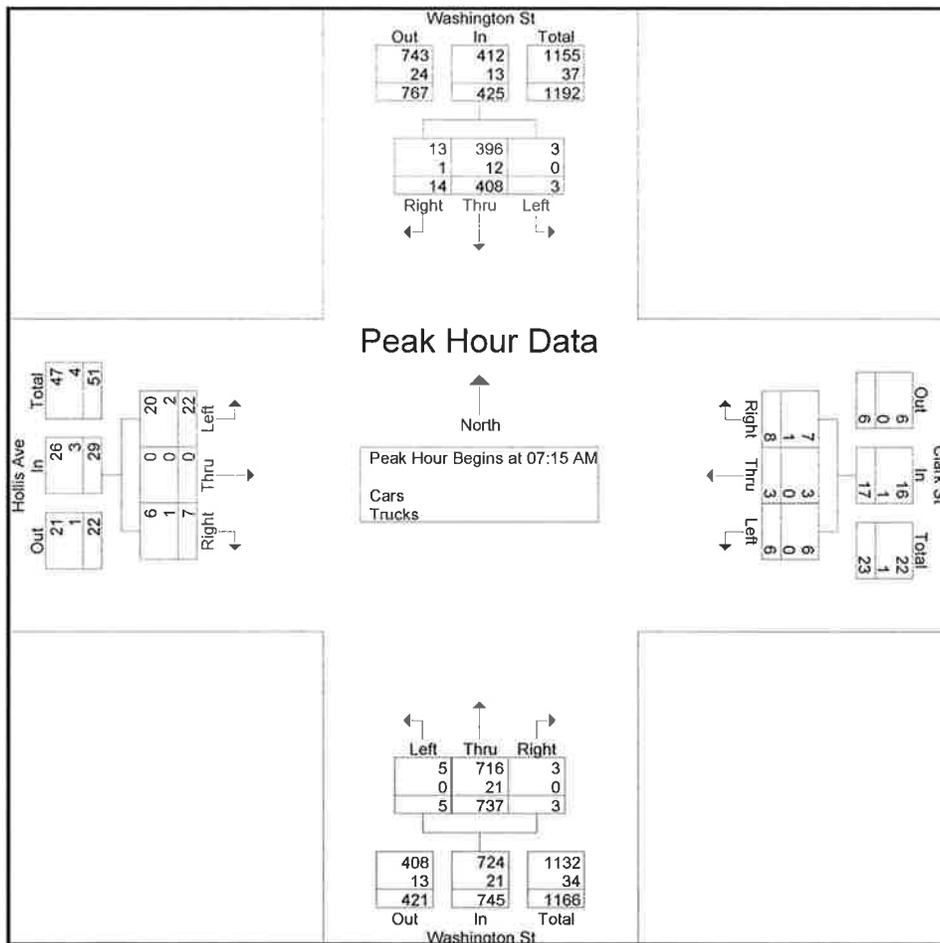
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 2

Start Time	Washington St From North				Clark St From East				Washington St From South				Hollis Ave From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	101	1	103	1	3	3	7	4	200	2	206	7	0	3	10	326
07:30 AM	1	88	3	92	2	0	3	5	0	193	0	193	6	0	2	8	298
07:45 AM	0	123	6	129	2	0	1	3	0	170	1	171	5	0	0	5	308
08:00 AM	1	96	4	101	1	0	1	2	1	174	0	175	4	0	2	6	284
Total Volume	3	408	14	425	6	3	8	17	5	737	3	745	22	0	7	29	1216
% App. Total	0.7	96	3.3		35.3	17.6	47.1		0.7	98.9	0.4		75.9	0	24.1		
PHF	.750	.829	.583	.824	.750	.250	.667	.607	.313	.921	.375	.904	.786	.000	.583	.725	.933
Cars	3	396	13	412	6	3	7	16	5	716	3	724	20	0	6	26	1178
% Cars	100	97.1	92.9	96.9	100	100	87.5	94.1	100	97.2	100	97.2	90.9	0	85.7	89.7	96.9
Trucks	0	12	1	13	0	0	1	1	0	21	0	21	2	0	1	3	38
% Trucks	0	2.9	7.1	3.1	0	0	12.5	5.9	0	2.8	0	2.8	9.1	0	14.3	10.3	3.1



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	95	1	2	0	1	1	160	0	2	0	0	263
07:15 AM	1	97	1	1	3	3	4	193	2	5	0	2	312
07:30 AM	1	83	3	2	0	2	0	184	0	6	0	2	283
07:45 AM	0	121	5	2	0	1	0	169	1	5	0	0	304
Total	3	396	10	7	3	7	5	706	3	18	0	4	1162
08:00 AM	1	95	4	1	0	1	1	170	0	4	0	2	279
08:15 AM	2	97	2	0	0	2	0	161	1	5	0	2	272
08:30 AM	1	106	5	1	0	3	1	161	1	2	0	4	285
08:45 AM	2	113	4	0	0	1	1	202	1	2	0	3	329
Total	6	411	15	2	0	7	3	694	3	13	0	11	1165
Grand Total	9	807	25	9	3	14	8	1400	6	31	0	15	2327
Apprch %	1.1	96	3	34.6	11.5	53.8	0.6	99	0.4	67.4	0	32.6	
Total %	0.4	34.7	1.1	0.4	0.1	0.6	0.3	60.2	0.3	1.3	0	0.6	

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Hollis Ave / Clark St
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 12/20/2016
Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	5	0	0	0	0	0	3	0	0	0	0	8
07:15 AM	0	4	0	0	0	0	0	7	0	2	0	1	14
07:30 AM	0	5	0	0	0	1	0	9	0	0	0	0	15
07:45 AM	0	2	1	0	0	0	0	1	0	0	0	0	4
Total	0	16	1	0	0	1	0	20	0	2	0	1	41
08:00 AM	0	1	0	0	0	0	0	4	0	0	0	0	5
08:15 AM	0	2	0	0	0	0	0	2	0	0	0	0	4
08:30 AM	0	4	0	0	0	0	0	6	0	0	0	0	10
08:45 AM	0	4	0	0	0	0	0	4	0	0	0	0	8
Total	0	11	0	0	0	0	0	16	0	0	0	0	27
Grand Total	0	27	1	0	0	1	0	36	0	2	0	1	68
Apprch %	0	96.4	3.6	0	0	100	0	100	0	66.7	0	33.3	
Total %	0	39.7	1.5	0	0	1.5	0	52.9	0	2.9	0	1.5	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Washington St From North				Clark St From East				Washington St From South				Hollis Ave From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
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	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1	3
Total	0	2	0	1	0	0	0	0	0	0	0	2	0	0	0	2	5	2	7
08:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
08:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	3	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
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	1	0	0	0	0	1	0	0	0	0	0	0	0	3	4	1	5
Grand Total	0	2	1	1	0	0	0	1	0	0	0	2	0	0	0	5	9	3	12
Apprch %	0	66.7	33.3		0	0	0		0	0	0		0	0	0				
Total %	0	66.7	33.3		0	0	0		0	0	0		0	0	0		75	25	

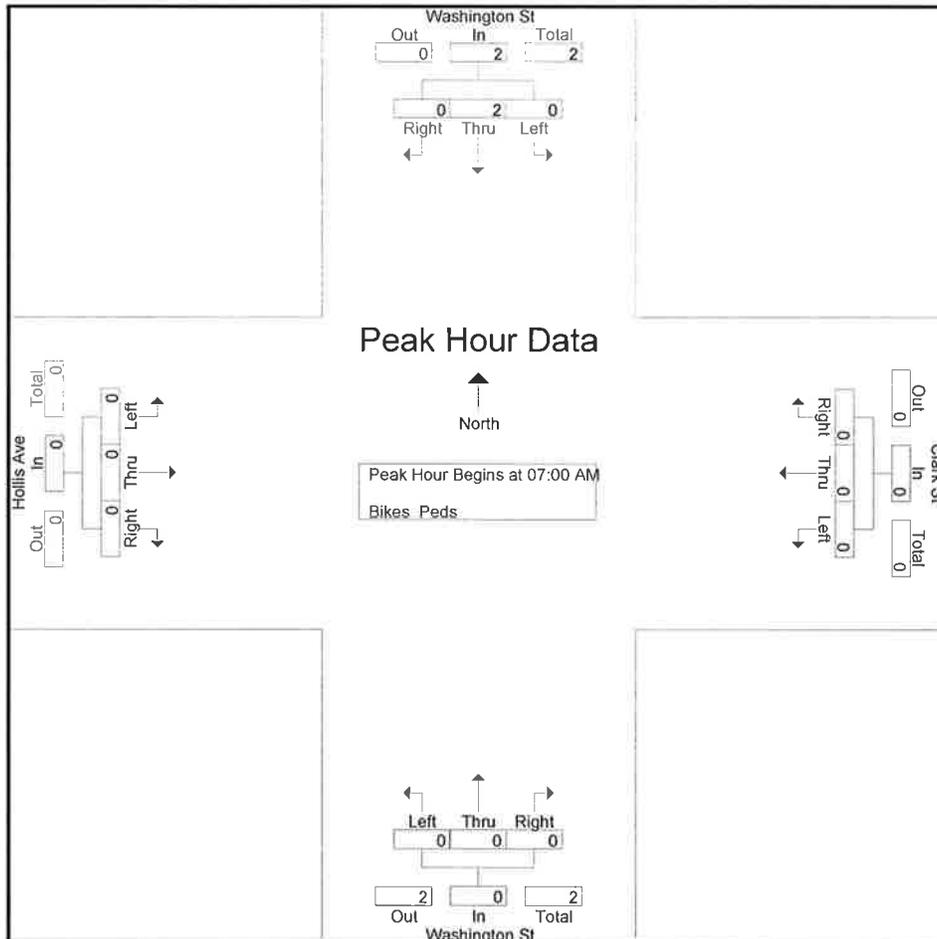
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 11

Start Time	Washington St From North				Clark St From East				Washington St From South				Hollis Ave From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
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	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	201	6	2	0	1	2	135	1	2	0	1	351
04:15 PM	1	164	11	2	1	1	2	129	1	0	2	3	317
04:30 PM	0	177	17	1	0	3	11	142	0	3	1	2	357
04:45 PM	1	162	17	1	1	1	4	121	2	2	2	0	314
Total	2	704	51	6	2	6	19	527	4	7	5	6	1339
05:00 PM	9	159	17	3	2	6	4	152	2	3	0	0	357
05:15 PM	4	140	14	3	1	2	3	143	0	3	1	1	315
05:30 PM	1	154	11	1	1	1	9	121	2	3	1	0	305
05:45 PM	3	181	14	1	0	3	5	118	0	4	2	3	334
Total	17	634	56	8	4	12	21	534	4	13	4	4	1311
Grand Total	19	1338	107	14	6	18	40	1061	8	20	9	10	2650
Apprch %	1.3	91.4	7.3	36.8	15.8	47.4	3.6	95.7	0.7	51.3	23.1	25.6	
Total %	0.7	50.5	4	0.5	0.2	0.7	1.5	40	0.3	0.8	0.3	0.4	
Cars	19	1324	106	14	6	18	39	1050	8	20	9	10	2623
% Cars	100	99	99.1	100	100	100	97.5	99	100	100	100	100	99
Trucks	0	14	1	0	0	0	1	11	0	0	0	0	27
% Trucks	0	1	0.9	0	0	0	2.5	1	0	0	0	0	1

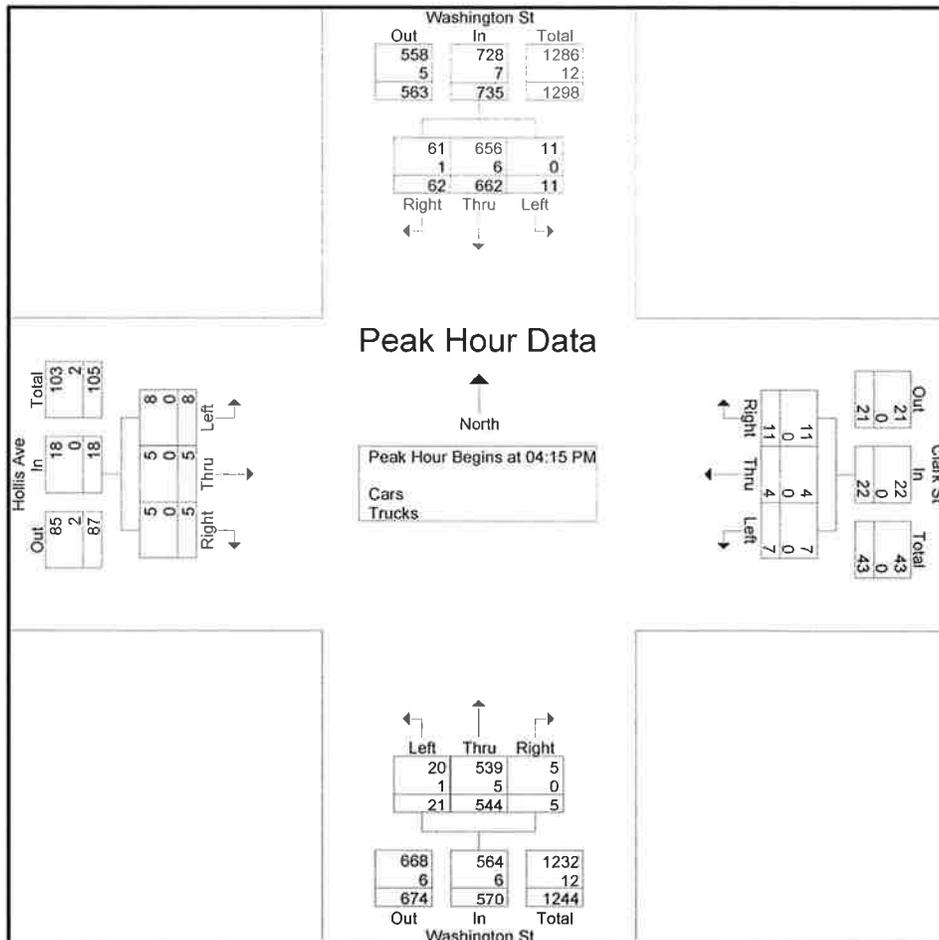
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 2

Start Time	Washington St From North				Clark St From East				Washington St From South				Hollis Ave From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	1	164	11	176	2	1	1	4	2	129	1	132	0	2	3	5	317
04:30 PM	0	177	17	194	1	0	3	4	11	142	0	153	3	1	2	6	357
04:45 PM	1	162	17	180	1	1	1	3	4	121	2	127	2	2	0	4	314
05:00 PM	9	159	17	185	3	2	6	11	4	152	2	158	3	0	0	3	357
Total Volume	11	662	62	735	7	4	11	22	21	544	5	570	8	5	5	18	1345
% App. Total	1.5	90.1	8.4		31.8	18.2	50		3.7	95.4	0.9		44.4	27.8	27.8		
PHF	.306	.935	.912	.947	.583	.500	.458	.500	.477	.895	.625	.902	.667	.625	.417	.750	.942
Cars	11	656	61	728	7	4	11	22	20	539	5	564	8	5	5	18	1332
% Cars	100	99.1	98.4	99.0	100	100	100	100	95.2	99.1	100	98.9	100	100	100	100	99.0
Trucks	0	6	1	7	0	0	0	0	1	5	0	6	0	0	0	0	13
% Trucks	0	0.9	1.6	1.0	0	0	0	0	4.8	0.9	0	1.1	0	0	0	0	1.0



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	199	6	2	0	1	2	130	1	2	0	1	344
04:15 PM	1	162	10	2	1	1	2	128	1	0	2	3	313
04:30 PM	0	177	17	1	0	3	10	140	0	3	1	2	354
04:45 PM	1	159	17	1	1	1	4	121	2	2	2	0	311
Total	2	697	50	6	2	6	18	519	4	7	5	6	1322
05:00 PM	9	158	17	3	2	6	4	150	2	3	0	0	354
05:15 PM	4	138	14	3	1	2	3	142	0	3	1	1	312
05:30 PM	1	151	11	1	1	1	9	121	2	3	1	0	302
05:45 PM	3	180	14	1	0	3	5	118	0	4	2	3	333
Total	17	627	56	8	4	12	21	531	4	13	4	4	1301
Grand Total	19	1324	106	14	6	18	39	1050	8	20	9	10	2623
Apprch %	1.3	91.4	7.3	36.8	15.8	47.4	3.6	95.7	0.7	51.3	23.1	25.6	
Total %	0.7	50.5	4	0.5	0.2	0.7	1.5	40	0.3	0.8	0.3	0.4	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North			Clark St From East			Washington St From South			Hollis Ave From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	2	0	0	0	0	0	5	0	0	0	0	7
04:15 PM	0	2	1	0	0	0	0	1	0	0	0	0	4
04:30 PM	0	0	0	0	0	0	1	2	0	0	0	0	3
04:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	7	1	0	0	0	1	8	0	0	0	0	17
05:00 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
05:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
05:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
05:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	7	0	0	0	0	0	3	0	0	0	0	10
Grand Total	0	14	1	0	0	0	1	11	0	0	0	0	27
Apprch %	0	93.3	6.7	0	0	0	8.3	91.7	0	0	0	0	
Total %	0	51.9	3.7	0	0	0	3.7	40.7	0	0	0	0	

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Washington St From North				Clark St From East				Washington St From South				Hollis Ave From West				Exclu. Total	Inclu. Total	Int. Total			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds						
04:00 PM	0	0	0	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	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	2	4	1	0	5	1	5
04:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	2	0	2
Total	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	2	7	1	0	8	1	8
05:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3	0	0	3	0	3
Grand Total	0	0	0	0	0	0	0	6	0	1	0	1	0	0	0	3	10	1	0	11	1	11
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0							
Total %	0	0	0		0	0	0		0	100	0		0	0	0		90.9	9.1				

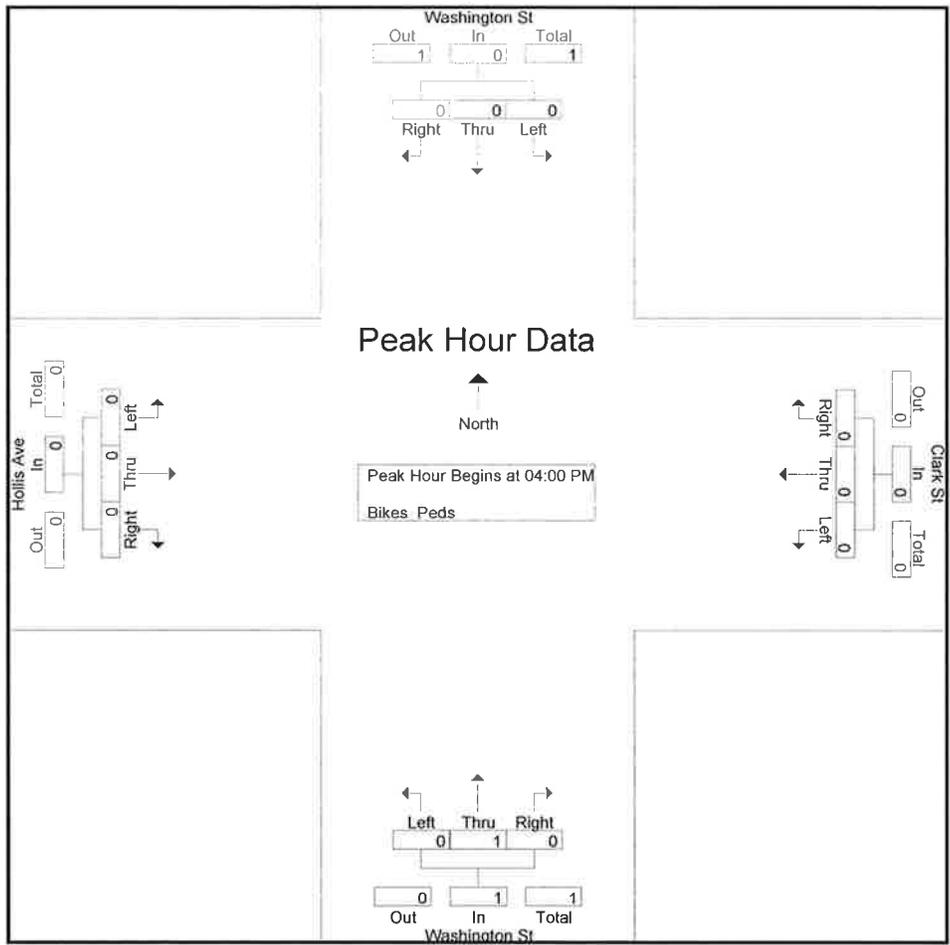
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Hollis Ave / Clark St
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 12/20/2016
 Page No : 11

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



Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	3	3	17	1	7	5	36
07:15 AM	1	4	20	1	10	19	55
07:30 AM	4	2	9	0	19	33	67
07:45 AM	1	3	15	1	7	23	50
Total	9	12	61	3	43	80	208
08:00 AM	4	4	14	2	4	23	51
08:15 AM	5	5	10	1	5	16	42
08:30 AM	7	7	15	2	6	24	61
08:45 AM	1	2	17	2	5	16	43
Total	17	18	56	7	20	79	197
Grand Total	26	30	117	10	63	159	405
Apprch %	46.4	53.6	92.1	7.9	28.4	71.6	
Total %	6.4	7.4	28.9	2.5	15.6	39.3	
Cars	26	29	115	10	63	156	399
% Cars	100	96.7	98.3	100	100	98.1	98.5
Trucks	0	1	2	0	0	3	6
% Trucks	0	3.3	1.7	0	0	1.9	1.5

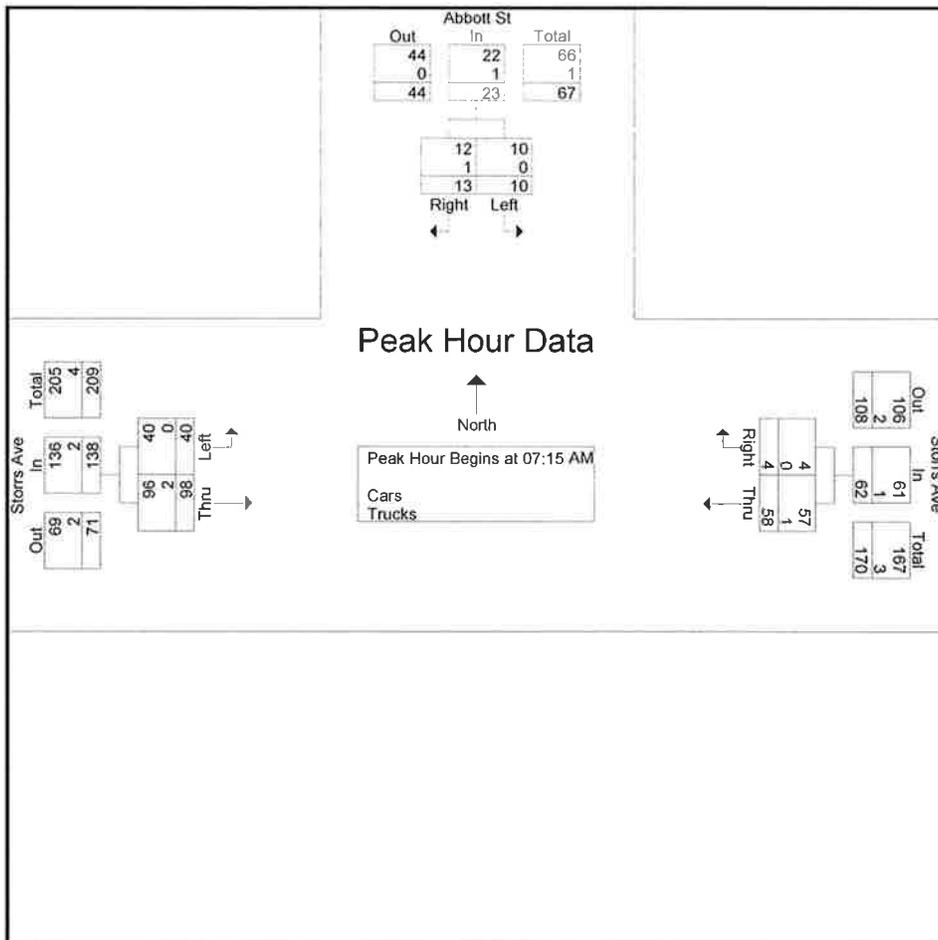
Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 2

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	1	4	5	20	1	21	10	19	29	55
07:30 AM	4	2	6	9	0	9	19	33	52	67
07:45 AM	1	3	4	15	1	16	7	23	30	50
08:00 AM	4	4	8	14	2	16	4	23	27	51
Total Volume	10	13	23	58	4	62	40	98	138	223
% App. Total	43.5	56.5		93.5	6.5		29	71		
PHF	.625	.813	.719	.725	.500	.738	.526	.742	.663	.832
Cars	10	12	22	57	4	61	40	96	136	219
% Cars	100	92.3	95.7	98.3	100	98.4	100	98.0	98.6	98.2
Trucks	0	1	1	1	0	1	0	2	2	4
% Trucks	0	7.7	4.3	1.7	0	1.6	0	2.0	1.4	1.8



Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	3	3	16	1	7	5	35
07:15 AM	1	4	19	1	10	19	54
07:30 AM	4	2	9	0	19	33	67
07:45 AM	1	2	15	1	7	22	48
Total	9	11	59	3	43	79	204
08:00 AM	4	4	14	2	4	22	50
08:15 AM	5	5	10	1	5	16	42
08:30 AM	7	7	15	2	6	23	60
08:45 AM	1	2	17	2	5	16	43
Total	17	18	56	7	20	77	195
Grand Total	26	29	115	10	63	156	399
Apprch %	47.3	52.7	92	8	28.8	71.2	
Total %	6.5	7.3	28.8	2.5	15.8	39.1	

Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00 AM	0	0	1	0	0	0	1
07:15 AM	0	0	1	0	0	0	1
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	0	1	2
Total	0	1	2	0	0	1	4
08:00 AM	0	0	0	0	0	1	1
08:15 AM	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	1	1
08:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	2
Grand Total :	0	1	2	0	0	3	6
Apprch % :	0	100	100	0	0	100	
Total % :	0	16.7	33.3	0	0	50	

Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 10

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
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	1	1	0	1
07:30 AM	0	0	3	0	0	8	0	0	0	11	0	11
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	3	0	0	8	0	0	1	12	0	12
08:00 AM	0	0	0	0	0	1	0	0	1	2	0	2
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	1	0	0	1	2	0	2
Grand Total	0	0	3	0	0	9	0	0	2	14	0	14
Apprch %	0	0		0	0		0	0				
Total %										100	0	

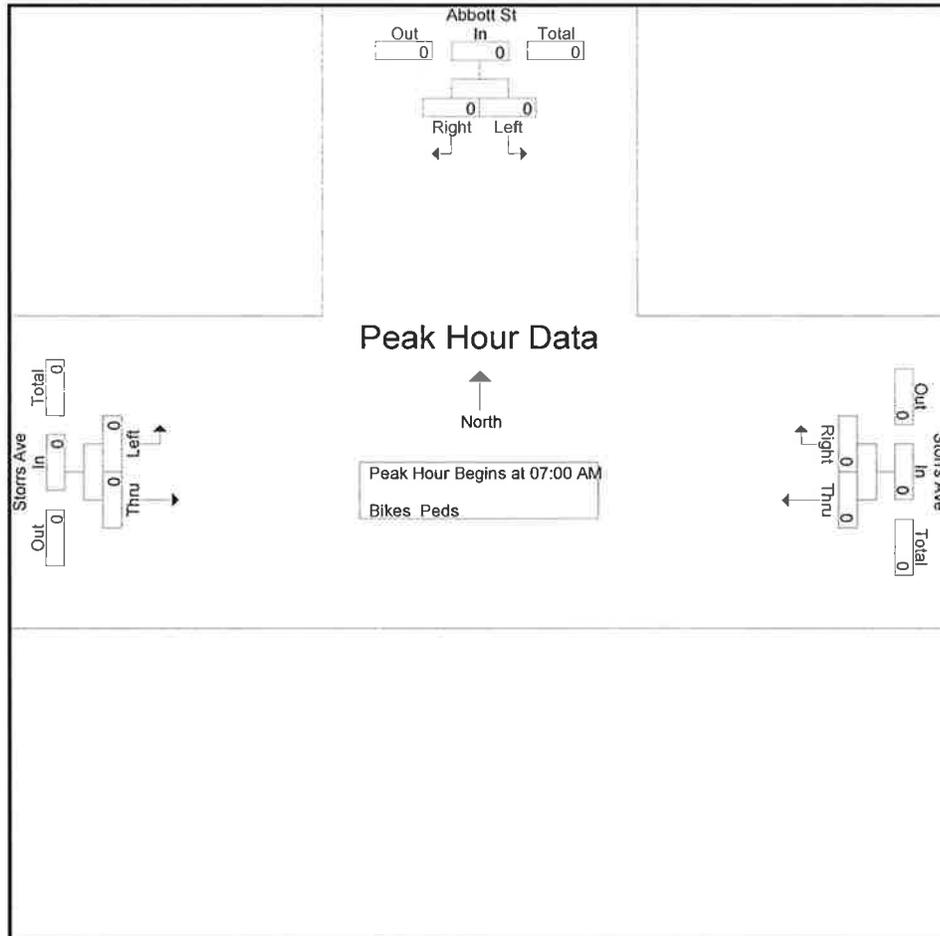
Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 11

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
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
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
04:00 PM	4	9	42	5	6	22	88
04:15 PM	3	6	46	4	2	22	83
04:30 PM	2	9	42	7	11	10	81
04:45 PM	2	12	54	4	6	8	86
Total	11	36	184	20	25	62	338
05:00 PM	1	10	44	4	6	13	78
05:15 PM	2	10	55	5	7	15	94
05:30 PM	7	10	51	5	5	9	87
05:45 PM	2	11	34	8	7	21	83
Total	12	41	184	22	25	58	342
Grand Total	23	77	368	42	50	120	680
Apprch %	23	77	89.8	10.2	29.4	70.6	
Total %	3.4	11.3	54.1	6.2	7.4	17.6	
Cars	23	77	368	42	50	120	680
% Cars	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

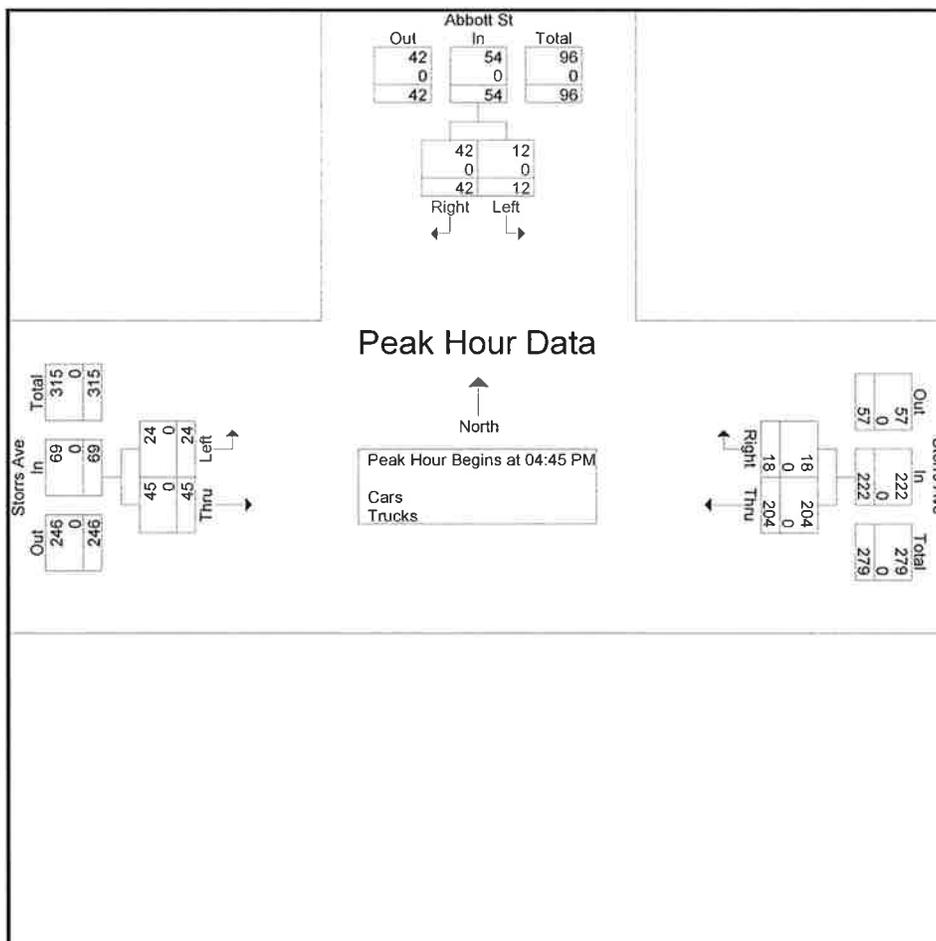
Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 2

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	2	12	14	54	4	58	6	8	14	86
05:00 PM	1	10	11	44	4	48	6	13	19	78
05:15 PM	2	10	12	55	5	60	7	15	22	94
05:30 PM	7	10	17	51	5	56	5	9	14	87
Total Volume	12	42	54	204	18	222	24	45	69	345
% App. Total	22.2	77.8		91.9	8.1		34.8	65.2		
PHF	.429	.875	.794	.927	.900	.925	.857	.750	.784	.918
Cars	12	42	54	204	18	222	24	45	69	345
% Cars	100	100	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 4

Groups Printed- Cars

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
04:00 PM	4	9	42	5	6	22	88
04:15 PM	3	6	46	4	2	22	83
04:30 PM	2	9	42	7	11	10	81
04:45 PM	2	12	54	4	6	8	86
Total	11	36	184	20	25	62	338
05:00 PM	1	10	44	4	6	13	78
05:15 PM	2	10	55	5	7	15	94
05:30 PM	7	10	51	5	5	9	87
05:45 PM	2	11	34	8	7	21	83
Total	12	41	184	22	25	58	342
Grand Total	23	77	368	42	50	120	680
Apprch %	23	77	89.8	10.2	29.4	70.6	
Total %	3.4	11.3	54.1	6.2	7.4	17.6	

Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 7

Groups Printed- Trucks

Start Time	Abbott St From North		Storrs Ave From East		Storrs Ave From West		Int. Total
	Left	Right	Thru	Right	Left	Thru	
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	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
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	1	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	1
Grand Total	0	0	0	0	0	1	0	0	0	1	0	1
Apprch %	0	0		0	0		0	0				
Total %										100	0	

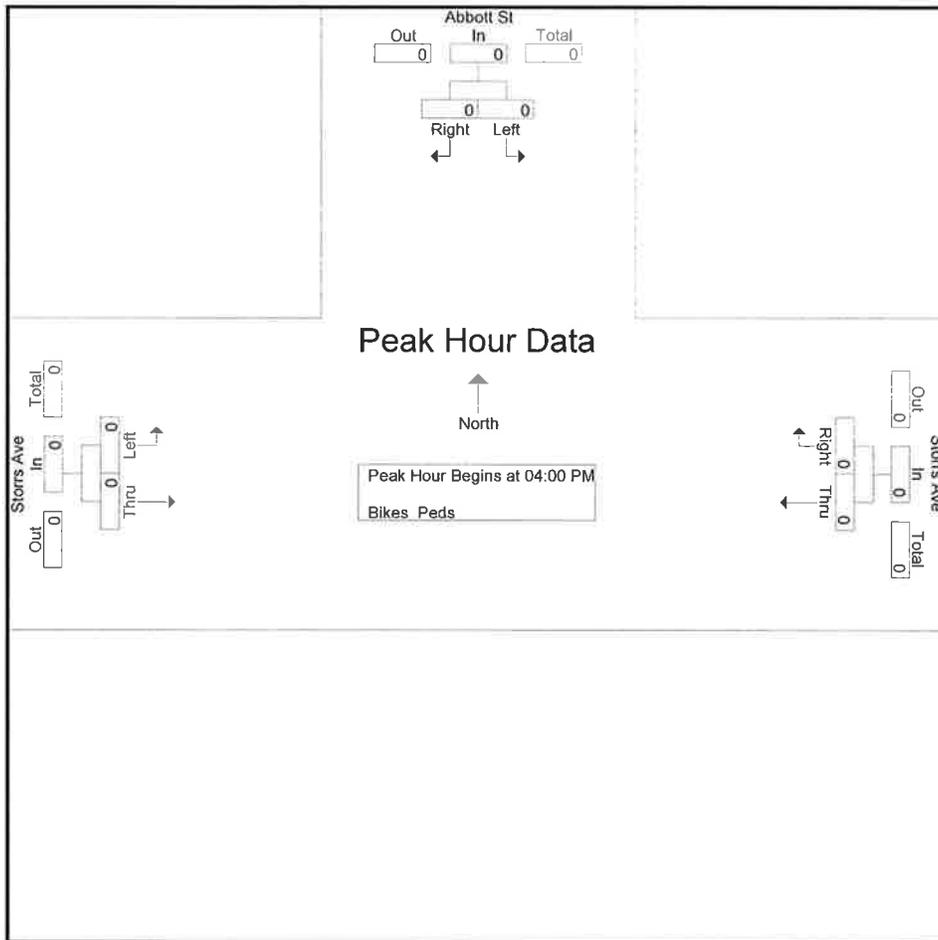
Accurate Counts

978-664-2565

N/S Street : Abbott Street
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470003
 Site Code : 75470003
 Start Date : 12/20/2016
 Page No : 11

Start Time	Abbott St From North			Storrs Ave From East			Storrs Ave From West			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkingway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Washington St From North		Washington St From South		Parkingway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	0	0	1	0	1	1	3
07:15 AM	0	1	1	0	0	0	2
07:30 AM	0	1	1	0	1	0	3
07:45 AM	0	1	2	0	2	1	6
Total	0	3	5	0	4	2	14
08:00 AM	0	1	3	0	3	1	8
08:15 AM	0	5	3	0	0	1	9
08:30 AM	0	4	4	0	0	3	11
08:45 AM	0	0	4	0	0	1	5
Total	0	10	14	0	3	6	33
Grand Total	0	13	19	0	7	8	47
Apprch %	0	100	100	0	46.7	53.3	
Total %	0	27.7	40.4	0	14.9	17	
Cars	0	13	19	0	7	8	47
% Cars	0	100	100	0	100	100	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

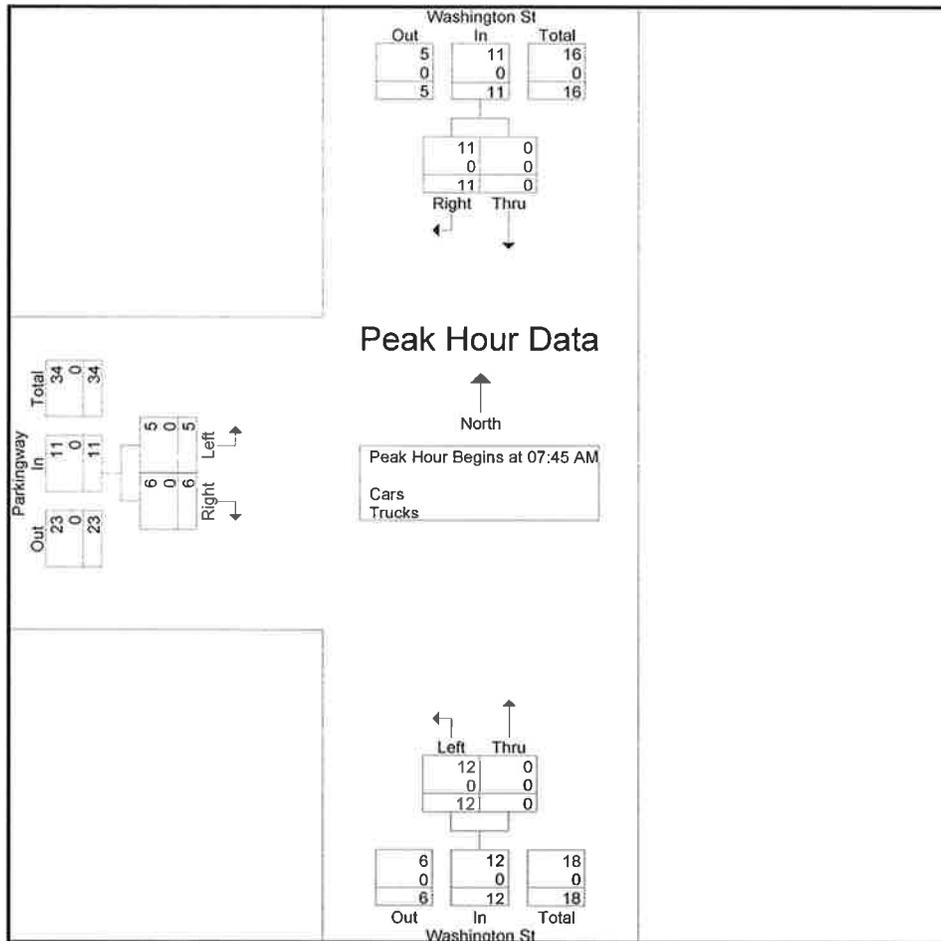
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 2

Start Time	Washington St From North			Washington St From South			Parkway From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	1	1	2	0	2	2	1	3	6
08:00 AM	0	1	1	3	0	3	3	1	4	8
08:15 AM	0	5	5	3	0	3	0	1	1	9
08:30 AM	0	4	4	4	0	4	0	3	3	11
Total Volume	0	11	11	12	0	12	5	6	11	34
% App. Total	0	100		100	0		45.5	54.5		
PHF	.000	.550	.550	.750	.000	.750	.417	.500	.688	.773
Cars	0	11	11	12	0	12	5	6	11	34
% Cars	0	100	100	100	0	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North		Washington St From South		Parkway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	0	0	1	0	1	1	3
07:15 AM	0	1	1	0	0	0	2
07:30 AM	0	1	1	0	1	0	3
07:45 AM	0	1	2	0	2	1	6
Total	0	3	5	0	4	2	14
08:00 AM	0	1	3	0	3	1	8
08:15 AM	0	5	3	0	0	1	9
08:30 AM	0	4	4	0	0	3	11
08:45 AM	0	0	4	0	0	1	5
Total	0	10	14	0	3	6	33
Grand Total	0	13	19	0	7	8	47
Apprch %	0	100	100	0	46.7	53.3	
Total %	0	27.7	40.4	0	14.9	17	

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Parkway
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 2/16/2017
Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North		Washington St From South		Parkway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
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	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkingway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Washington St From North			Washington St From South			Parkingway From West			Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds			
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	6	6	0	6
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	2	2	0	2
Total	0	0	0	0	0	0	0	0	8	8	0	8
08:00 AM	0	0	0	0	0	0	0	0	3	3	0	3
08:15 AM	0	0	0	0	0	0	0	0	7	7	0	7
08:30 AM	0	0	0	0	0	0	0	0	2	2	0	2
08:45 AM	0	0	0	0	0	0	0	0	2	2	0	2
Total	0	0	0	0	0	0	0	0	14	14	0	14
Grand Total	0	0	0	0	0	0	0	0	22	22	0	22
Apprch %	0	0		0	0		0	0				
Total %										100	0	

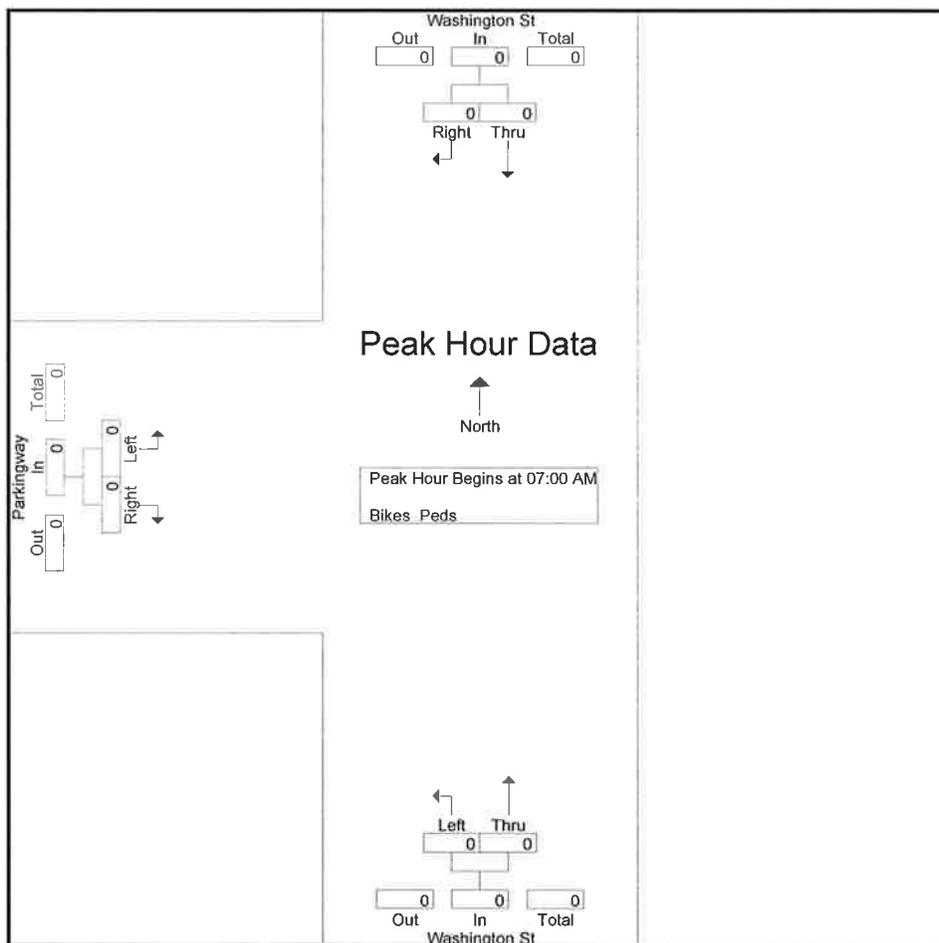
Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 11

Start Time	Washington St From North			Washington St From South			Parkway From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM :	0	0	0	0	0	0	0	0	0	0
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
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF :	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Parkway
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 2/16/2017
Page No : 1

Groups Printed- Cars - Trucks

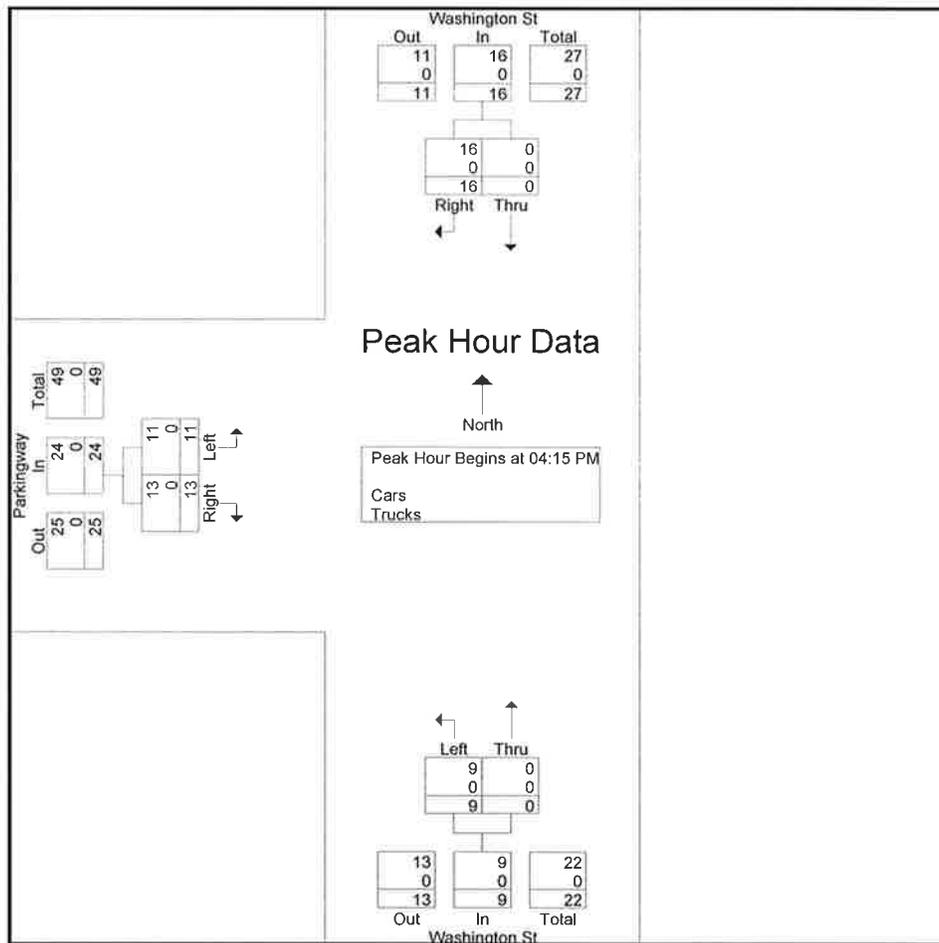
Start Time	Washington St From North		Washington St From South		Parkway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	0	2	3	0	1	3	9
04:15 PM	0	2	4	0	1	3	10
04:30 PM	0	6	2	0	5	3	16
04:45 PM	0	1	1	0	0	3	5
Total	0	11	10	0	7	12	40
05:00 PM	0	7	2	0	5	4	18
05:15 PM	0	2	1	0	2	4	9
05:30 PM	0	1	3	0	1	1	6
05:45 PM	0	1	0	0	1	4	6
Total	0	11	6	0	9	13	39
Grand Total	0	22	16	0	16	25	79
Apprch %	0	100	100	0	39	61	
Total %	0	27.8	20.3	0	20.3	31.6	
Cars	0	22	16	0	16	25	79
% Cars	0	100	100	0	100	100	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Parkway
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 2/16/2017
Page No : 2

Start Time	Washington St From North			Washington St From South			Parkway From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	2	2	4	0	4	1	3	4	10
04:30 PM	0	6	6	2	0	2	5	3	8	16
04:45 PM	0	1	1	1	0	1	0	3	3	5
05:00 PM	0	7	7	2	0	2	5	4	9	18
Total Volume	0	16	16	9	0	9	11	13	24	49
% App. Total	0	100		100	0		45.8	54.2		
PHF	.000	.571	.571	.563	.000	.563	.550	.813	.667	.681
Cars	0	16	16	9	0	9	11	13	24	49
% Cars	0	100	100	100	0	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 4

Groups Printed- Cars

Start Time	Washington St From North		Washington St From South			Parkway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right		
04:00 PM	0	2	3	0	1	3	9	
04:15 PM	0	2	4	0	1	3	10	
04:30 PM	0	6	2	0	5	3	16	
04:45 PM	0	1	1	0	0	3	5	
Total	0	11	10	0	7	12	40	
05:00 PM	0	7	2	0	5	4	18	
05:15 PM	0	2	1	0	2	4	9	
05:30 PM	0	1	3	0	1	1	6	
05:45 PM	0	1	0	0	1	4	6	
Total	0	11	6	0	9	13	39	
Grand Total	0	22	16	0	16	25	79	
Apprch %	0	100	100	0	39	61		
Total %	0	27.8	20.3	0	20.3	31.6		

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Parkway
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 2/16/2017
Page No : 7

Groups Printed- Trucks

Start Time	Washington St From North		Washington St From South		Parkway From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
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	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

N/S Street : Washington Street
 E/W Street : Parkway
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470002
 Site Code : 75470002
 Start Date : 2/16/2017
 Page No : 10

Groups Printed- Bikes Peds

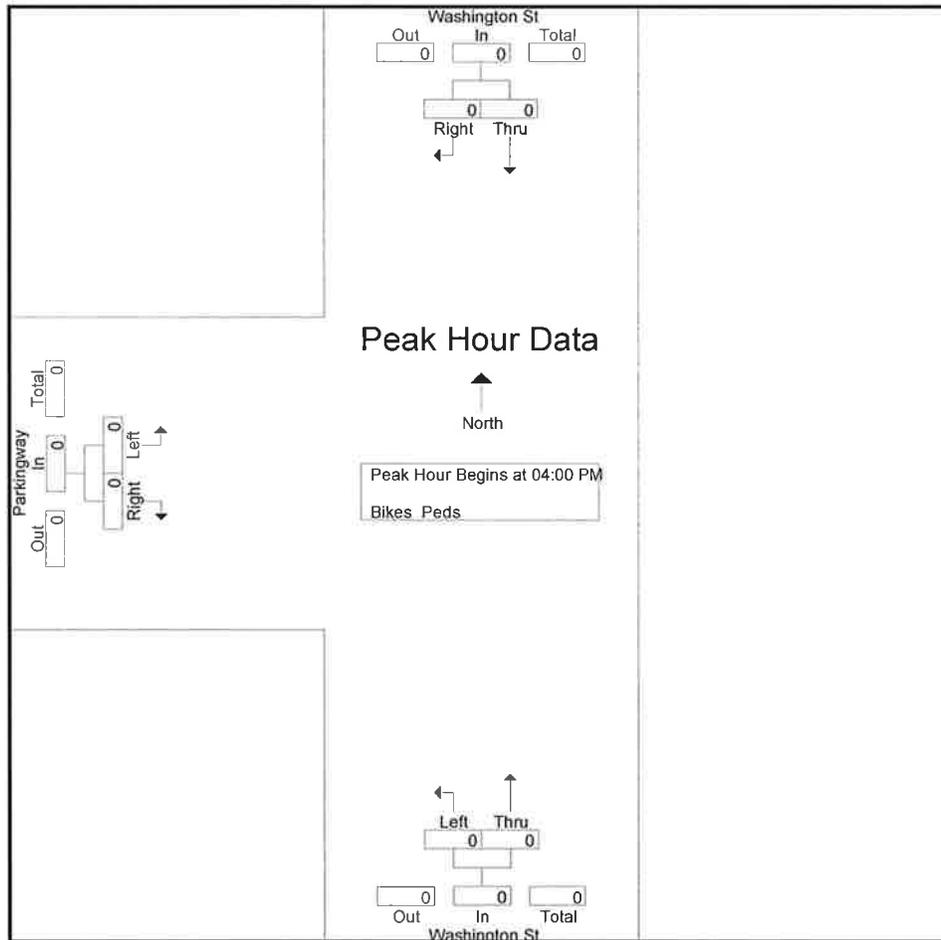
Start Time	Washington St From North			Washington St From South			Parkway From West			Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	3	3	0	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	2	2	0	2
Total	0	0	0	0	0	0	0	0	6	6	0	6
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	2	2	0	2
05:30 PM	0	0	0	0	0	0	0	0	2	2	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	4	4	0	4
Grand Total	0	0	0	0	0	0	0	0	10	10	0	10
Apprch %	0	0		0	0		0	0				
Total %										100	0	

Accurate Counts
978-664-2565

N/S Street : Washington Street
E/W Street : Parkway
City/State : Braintree, MA
Weather : Clear

File Name : 75470002
Site Code : 75470002
Start Date : 2/16/2017
Page No : 11

Start Time	Washington St From North			Washington St From South			Parkway From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 1

Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0	0	0	0	0	0
07:15 AM	1	0	0	1	0	0	2
07:30 AM	1	0	0	0	0	0	1
07:45 AM	1	0	0	0	0	1	2
Total	3	0	0	1	0	1	5
08:00 AM	2	0	0	1	0	0	3
08:15 AM	6	0	1	0	0	2	9
08:30 AM	2	0	0	2	0	1	5
08:45 AM	2	0	0	0	0	1	3
Total	12	0	1	3	0	4	20
Grand Total	15	0	1	4	0	5	25
Apprch %	100	0	20	80	0	100	
Total %	60	0	4	16	0	20	
Cars	15	0	1	4	0	5	25
% Cars	100	0	100	100	0	100	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

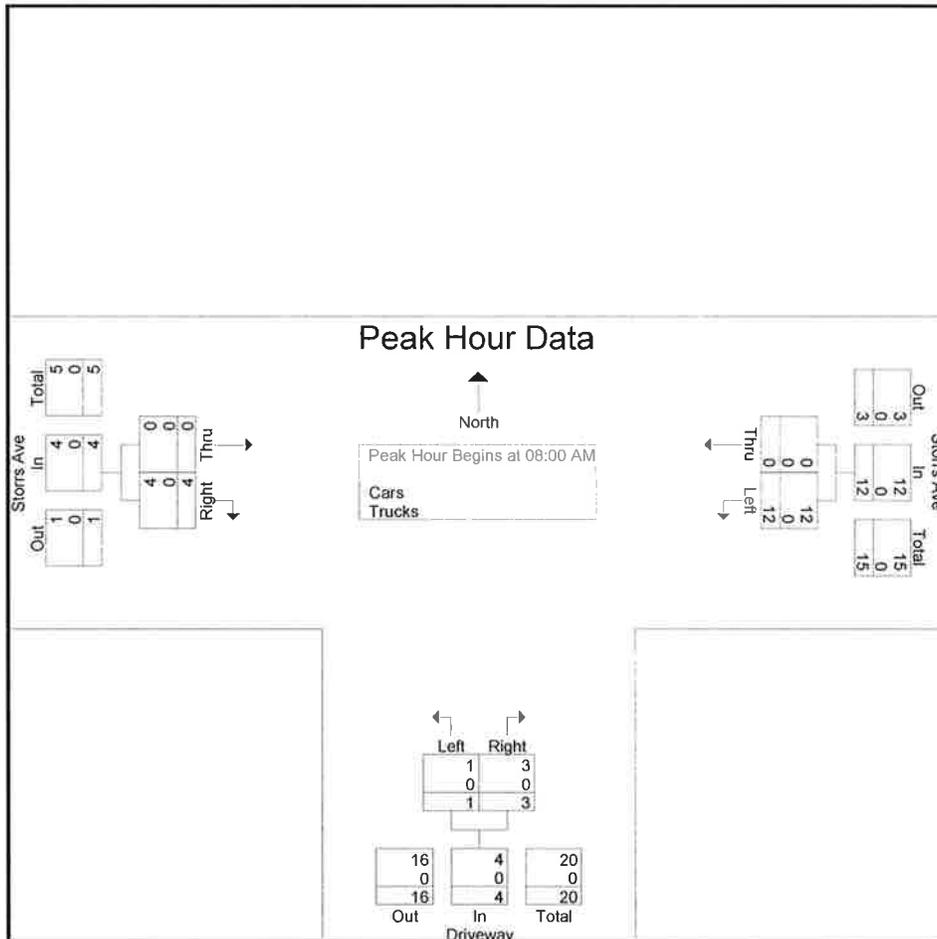
Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 2

Start Time	Storrs Ave From East			Driveway From South			Storrs Ave From West			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	2	0	2	0	1	1	0	0	0	3
08:15 AM	6	0	6	1	0	1	0	2	2	9
08:30 AM	2	0	2	0	2	2	0	1	1	5
08:45 AM	2	0	2	0	0	0	0	1	1	3
Total Volume	12	0	12	1	3	4	0	4	4	20
% App. Total	100	0		25	75		0	100		
PHF	.500	.000	.500	.250	.375	.500	.000	.500	.500	.556
Cars	12	0	12	1	3	4	0	4	4	20
% Cars	100	0	100	100	100	100	0	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 4

Groups Printed- Cars

Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0	0	0	0	0	0
07:15 AM	1	0	0	1	0	0	2
07:30 AM	1	0	0	0	0	0	1
07:45 AM	1	0	0	0	0	1	2
Total	3	0	0	1	0	1	5
08:00 AM	2	0	0	1	0	0	3
08:15 AM	6	0	1	0	0	2	9
08:30 AM	2	0	0	2	0	1	5
08:45 AM	2	0	0	0	0	1	3
Total	12	0	1	3	0	4	20
Grand Total	15	0	1	4	0	5	25
Approch %	100	0	20	80	0	100	
Total %	60	0	4	16	0	20	

Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 7

Groups Printed- Trucks

Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
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	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 10

Groups Printed- Bikes Peds

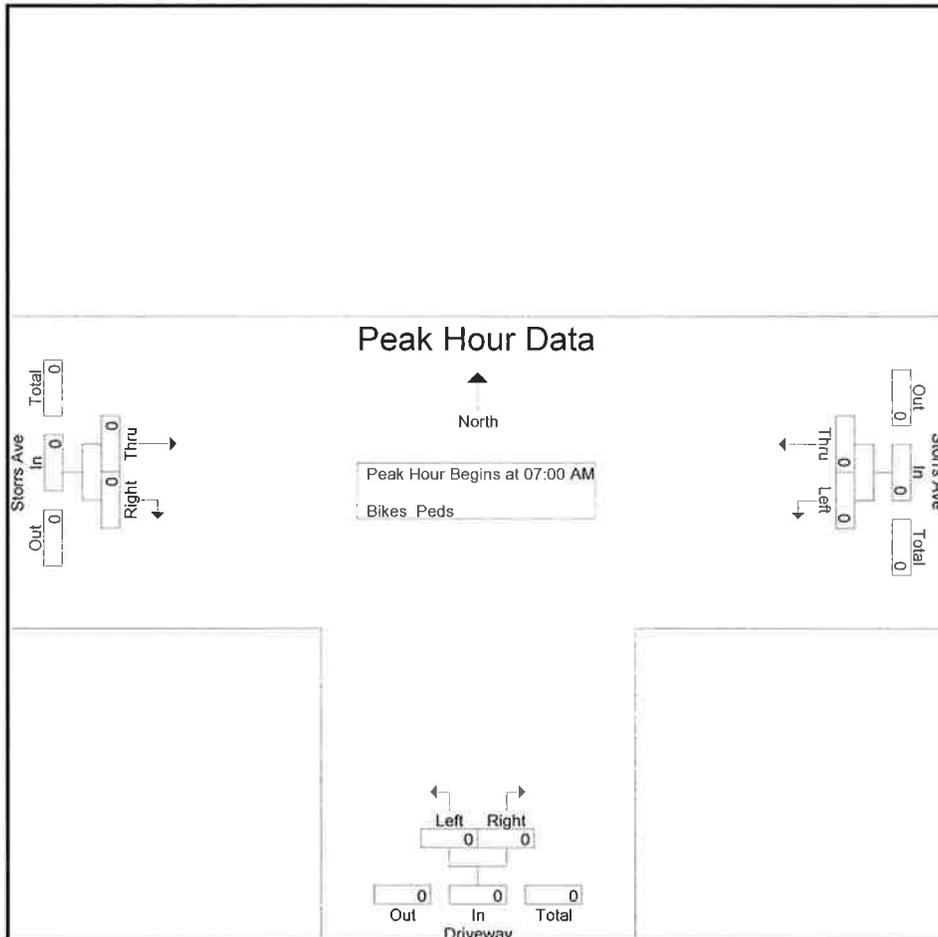
Start Time	Storrs Ave From East			Driveway From South			Storrs Ave From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	2	0	0	0	2	0	2
07:30 AM	0	0	0	0	0	2	0	0	0	2	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	0	0	0	4	0	4
08:00 AM	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
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	0	0	0	0	0	0
Grand Total	0	0	0	0	0	4	0	0	0	4	0	4
Apprch %	0	0		0	0		0	0				
Total %										100	0	

Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 11

Start Time	Storrs Ave From East			Driveway From South			Storrs Ave From West			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
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
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 1

Groups Printed- Cars - Trucks

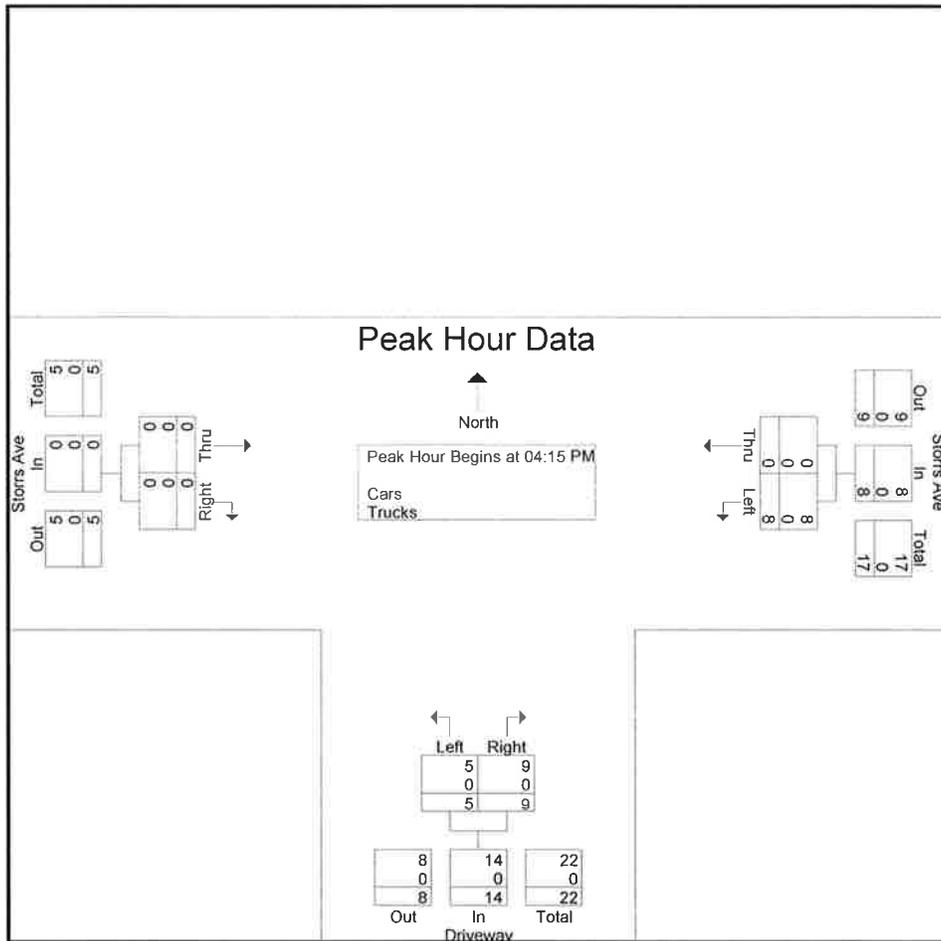
Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	1	0	1	2	0	0	4
04:15 PM	4	0	1	0	0	0	5
04:30 PM	1	0	1	5	0	0	7
04:45 PM	1	0	1	2	0	0	4
Total	7	0	4	9	0	0	20
05:00 PM	2	0	2	2	0	0	6
05:15 PM	0	0	1	3	0	0	4
05:30 PM	1	0	0	1	0	0	2
05:45 PM	1	0	2	0	0	0	3
Total	4	0	5	6	0	0	15
Grand Total	11	0	9	15	0	0	35
Apprch %	100	0	37.5	62.5	0	0	
Total %	31.4	0	25.7	42.9	0	0	
Cars	11	0	9	15	0	0	35
% Cars	100	0	100	100	0	0	100
Trucks	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 2

Start Time	Storrs Ave From East			Driveway From South			Storrs Ave From West			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	4	0	4	1	0	1	0	0	0	5
04:30 PM	1	0	1	1	5	6	0	0	0	7
04:45 PM	1	0	1	1	2	3	0	0	0	4
05:00 PM	2	0	2	2	2	4	0	0	0	6
Total Volume	8	0	8	5	9	14	0	0	0	22
% App. Total	100	0		35.7	64.3		0	0		
PHF	.500	.000	.500	.625	.450	.583	.000	.000	.000	.786
Cars	8	0	8	5	9	14	0	0	0	22
% Cars	100	0	100	100	100	100	0	0	0	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



Accurate Counts
978-664-2565

N/S Street : Driveway
E/W Street : Storrs Avenue
City/State : Braintree, MA
Weather : Clear

File Name : 75470001
Site Code : 75470001
Start Date : 2/16/2017
Page No : 4

Groups Printed- Cars

Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	1	0	1	2	0	0	4
04:15 PM	4	0	1	0	0	0	5
04:30 PM	1	0	1	5	0	0	7
04:45 PM	1	0	1	2	0	0	4
Total	7	0	4	9	0	0	20
05:00 PM	2	0	2	2	0	0	6
05:15 PM	0	0	1	3	0	0	4
05:30 PM	1	0	0	1	0	0	2
05:45 PM	1	0	2	0	0	0	3
Total	4	0	5	6	0	0	15
Grand Total	11	0	9	15	0	0	35
Apprch %	100	0	37.5	62.5	0	0	
Total %	31.4	0	25.7	42.9	0	0	

Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 7

Groups Printed- Trucks

Start Time	Storrs Ave From East		Driveway From South		Storrs Ave From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
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	0	0	0	0	
Total %							

Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Storrs Ave From East			Driveway From South			Storrs Ave From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
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	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

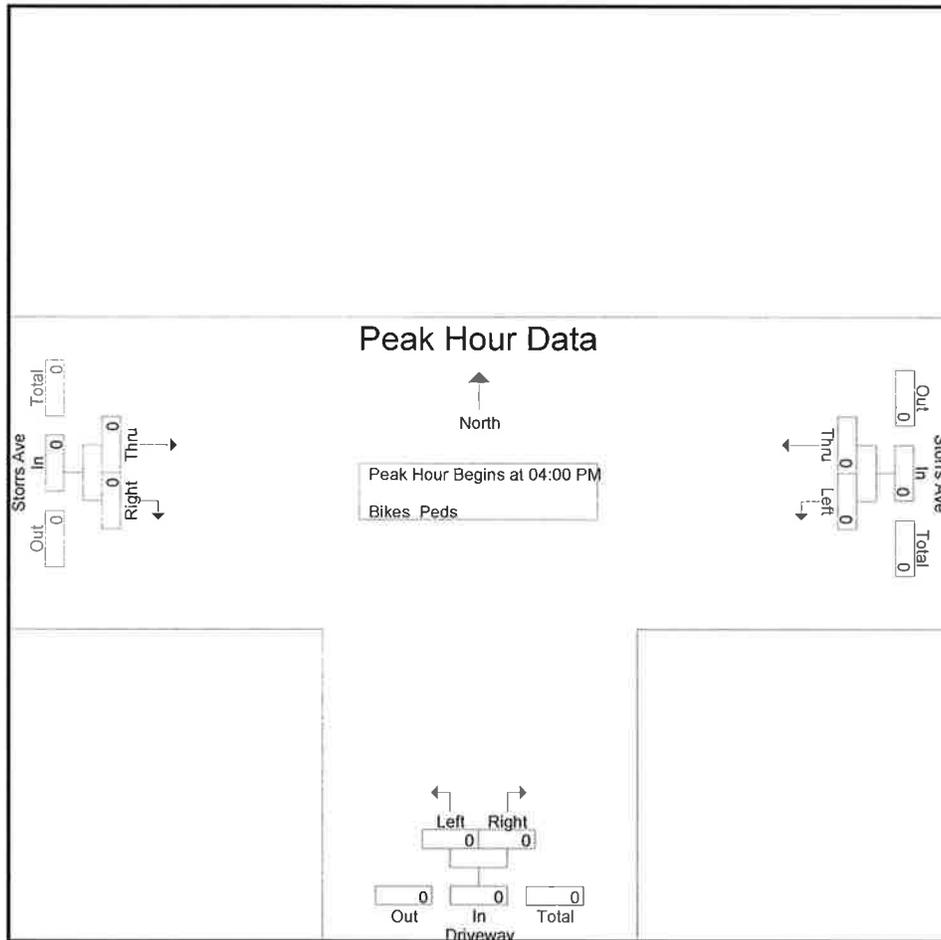
Accurate Counts

978-664-2565

N/S Street : Driveway
 E/W Street : Storrs Avenue
 City/State : Braintree, MA
 Weather : Clear

File Name : 75470001
 Site Code : 75470001
 Start Date : 2/16/2017
 Page No : 11

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



SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department

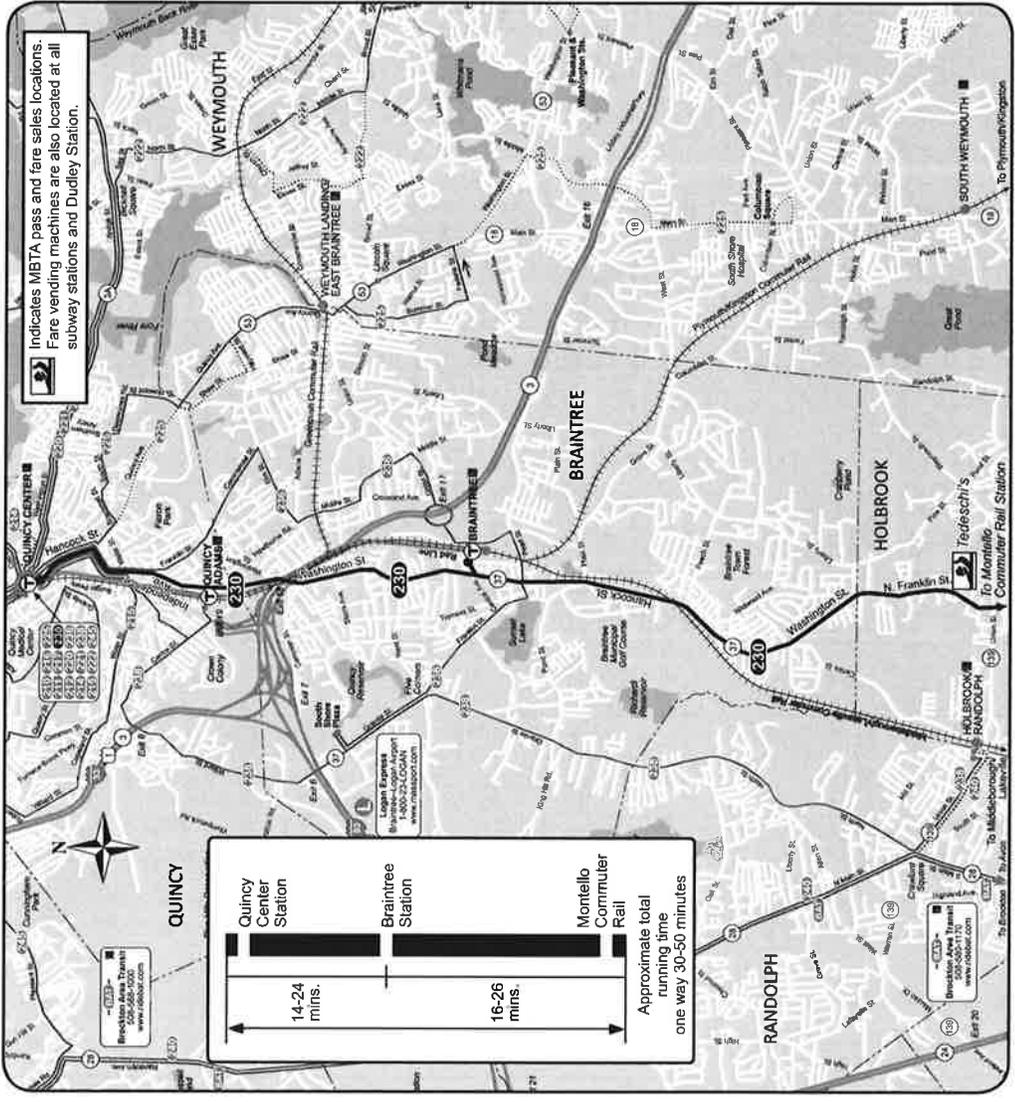
7318: Monthly Hourly Volume for December 2016

Location ID:	7318		Seasonal Factor Group: U2																								TOTAL		
	County:	Function/Class	PLYMOUTH		Daily Factor Group: U2																								
			2	PILGRIM HIGHWAY	Axle Factor Group: U2																								
					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	24:00					
1	545	287	226	303	1202	4153	4842	5091	5741	5339	5479	5472	5702	5939	6543	7278	7286	7127	5642	4659	3601	2946	2028	1277	98708				
2	740	355	266	322	1172	3912	5041	5828	5784	5475	5534	5859	6202	6408	6655	7151	6982	6972	6008	4247	3246	2589	2338	1688	100774				
3	939	607	381	317	479	1312	2319	3329	4687	5763	6227	6404	6498	6622	6735	6701	6576	6221	4943	3612	3108	2895	2503	1818	90996				
4	1092	602	357	226	294	630	1253	1916	2755	3980	5345	6153	6370	5836	5379	5434	5698	5348	4270	3396	2653	1735	1167	748	72637				
5	391	262	196	305	1332	4429	4908	4479	4803	4776	4776	4857	5079	5400	6228	6680	6411	5732	5480	3716	2822	2044	1628	964	87698				
6	511	237	198	309	1193	4265	4635	4650	5156	5202	5336	5461	5510	5677	6573	7016	6894	6775	5709	4646	3308	2380	1585	1035	94261				
7	541	278	170	315	1197	4157	4459	4437	5005	5081	5305	5448	5410	5704	6553	6755	6803	6904	5893	4456	3464	2612	1731	1072	93750				
8																													
9	748	380	245	346	1172	3797	4857	5661	5760	5531	5638	6021	6488	6381	6966	6957	7100	6968	5975	4579	3232	2628	2499	2326	102285				
10	1139	934	566	456	604	1481	2516	3819	5575	5954	7079	7465	6714	7011	6710	6839	6700	7188	6070	4662	4229	4017	4138	2885	104751				
11	1709	1064	472	410	515	982	2004	2959	3293	5224	6541	7006	6313	6682	6495	6321	6068	5344	4421	3534	2714	1858	1405	825	84139				
12	398	326	223	338	1273	3837	4473	5003	5078	4774	4581	4874	4994	5477	6242	6523	6666	6643	5265	3763	2771	1806	1400	912	87640				
13	769	509	319	363	1202	4233	5146	5620	5687	5474	5662	5689	5838	5728	6664	7220	6996	6920	5792	4546	3411	2554	1704	1033	99079				
14	541	291	218	311	1208	4183	5107	5781	5797	5364	5649	5673	5793	6125	5982	7169	7070	6866	5781	4958	3757	2683	1987	1321	99615				
15	754	368	269	374	1204	4166	5416	6301	5953	5603	5846	5971	6088	6492	7423	8258	8791	8196	6312	5237	4922	3751	3242	1965	112902				
16	1184	598	516	527	1544	4969	6126	6852	6631	8055	6973	7528	7672	6542	6632	8193	7941	8941	8053	6091	4929	4685	4476	3097	128755				
17	1369	787	425	358	466	1190	1764	2195	3132	3206	3218	3908	4446	5086	5468	5445	5573	5442	4613	3612	3122	2800	2629	2139	72393				
18	1335	761	403	255	278	572	1132	1652	2528	4070	5390	6154	6165	6104	6200	6303	5829	5073	4044	3506	3459	2056	1311	849	75429				
19	490	280	237	348	1267	4188	4829	5577	6274	5701	6023	6432	6105	6064	6518	6981	7274	7842	6838	6007	4650	3327	2270	1618	107140				
20	932	424	315	429	1408	4624	5907	7074	6978	6788	6926	6411	6086	6282	6774	7168	6991	7090	6061	4732	3718	2757	2153	1314	109342				
21	649	367	205	322	1144	4018	4829	5954	6085	5545	5776	6216	6224	6333	6664	7219	7241	5989	6208	5197	3652	2306	2098	1581	101822				
22	934	424	269	343	1080	3824	4512	5612	5704	5642	5917	5865	6448	6343	6814	6916	7001	6838	5748	5018	3794	2945	2156	1542	101689				
23	919	491	300	373	1000	2993	3927	4808	5177	5171	6340	6894	7157	7206	7095	6925	6628	5846	4858	4030	3311	2857	2548	1895	98749				
24	1035	596	329	290	371	708	1408	1991	3300	4328	5318	6051	6184	5570	5631	5559	5859	5678	4422	3352	3769	4474	3895	2267	82385				
25	978	501	213	149	152	296	609	881	1337	2406	3755	5391	6677	6423	6119	5062	4542	4768	5571	5424	5195	3713	2356	1244	73762				
26	588	257	161	210	394	881	1568	2166	2526	3505	5278	6156	6063	5860	5957	6336	5737	4949	4096	3455	2870	2090	1491	966	73570				
27	529	290	214	375	1073	3234	3742	4524	4994	5162	5974	6443	6576	6671	6928	7144	7035	6842	5483	3722	3068	2416	1840	1258	95537				
28	637	299	222	358	1089	3350	3910	4773	5216	5332	5871	6050	6403	6709	7131	7181	7100	6926	5764	4197	3214	2677	1738	1091	97238				
29	659	347	236	330	1043	3357	4139	4668	5172	5175	5829	6192	6268	6282	6307	6443	5958	4816	4962	3176	2480	2082	1540	1134	88595				
30	693	371	264	333	918	2744	3369	4190	4794	4990	5841	6645	7061	7031	6912	7067	6743	6201	5146	3758	3088	2553	2139	1489	94340				
31	906	602	308	261	415	794	1503	2189	2509	3912	5043	5799	6238	5938	6174	5880	5404	4726	3668	2649	2100	1565	1419	1052	71454				

Average = 93381.17
 Yearly Average = 85,188
 85188/93381 = 0.91

PUBLIC TRANSPORTATION INFORMATION

Route 230 Montello Commuter Rail Station - Quincy Center Station



230

Winter December 31, 2016 - March 24, 2017

Montello Commuter Rail Station - Quincy Center Station

Serving

- Braintree Station
- South Braintree Square
- Holbrook Square
- Linwood Housing
- Red Line

Massachusetts Bay Transportation Authority **massDOT**

Information 617-222-3200 • 1-800-392-6100
 (TTY) 617-222-5146 • www.mbta.com

230

Weekday

Inbound			Outbound		
Leave Montello Commuter Rail	Arrive Braintree Station	Arrive Quincy Center Station	Leave Quincy Center Station	Lv/Arrive Braintree Station	Arrive Montello Commuter Rail
5:30A	5:51A	6:07A	5:05A	5:17A	5:36A
b 5:40	6:01	6:17	5:30	5:42	6:02
6:10	6:31	6:52	b 6:10	6:31	6:52
6:30	6:54	7:15	6:30	6:44	7:03
6:50	7:14	7:35	6:50	7:05	7:28
7:10	7:34	7:55	7:10	7:32	7:54
7:35	7:59	8:19	7:35	7:55	8:17
8:00	8:22	8:42	8:00	8:16	8:37
8:25	8:47	9:05	8:30	8:46	9:07
8:45	9:06	9:22	9:00	9:16	9:37
9:15	9:36	9:52	10:00	10:16	10:37
a 9:45	10:09	10:24	11:00	11:16	11:37
a 10:45	11:09	11:27	12:00N	12:18P	12:39P
a 11:45	12:10P	12:29P			
a 12:45P	1:09P	1:28P	1:10P	1:28P	1:49P
a 2:10	2:39	2:56	a 2:20	2:40	3:07
a 3:17	3:43	4:01	a 3:00	3:20	3:46
3:56	4:17	4:36	3:30	3:50	4:17
4:27	4:49	5:07	4:00	4:20	4:47
4:57	5:18	5:36	4:30	4:50	5:17
5:27	5:48	6:06	5:00	5:20	5:47
5:57	6:18	6:36	5:30	5:50	6:17
6:28	6:49	7:07	6:00	6:20	6:47
6:57	7:14	7:31	6:30	6:47	7:12
7:22	7:39	7:56	7:01	7:18	7:39
7:47	8:04	8:21	8:01	8:15	8:34
8:42	8:58	9:12	9:01	9:15	9:34
9:42	9:58	10:12	10:01	10:15	10:34
10:42	10:58	11:12	11:01	11:15	11:34
11:42	11:58	12:12A			

a - Serves Linwood Housing Area
b - To/From Braintree Station

230

Saturday

Inbound			Outbound		
Leave Montello Commuter Rail	Arrive Braintree Station	Arrive Quincy Center Station	Leave Quincy Center Station	Arrive Braintree Station	Arrive Montello Commuter Rail
6:50A	7:08A	7:22A	6:05A	6:17A	6:35A
7:50	8:08	8:22	7:05	7:19	7:39
8:50	9:11	9:29	8:05	8:19	8:41
a 9:50	10:16	10:37	9:05	9:20	9:42
a 10:50	11:12	11:33	10:05	10:20	10:44
a 11:55	12:19P	12:40P	11:05	11:22	11:48
a 12:58	1:22	1:43	12:05P	12:23P	12:50P
a 1:58	2:22	2:43	1:05	1:23	1:50
2:56	3:15	3:34	a 2:05	2:25	2:48
3:58	4:17	4:36	a 3:05	3:24	3:52
4:54	5:13	5:32	4:05	4:22	4:46
5:50	6:10	6:28	5:05	5:21	5:44
6:50	7:06	7:21	6:05	6:21	6:44
7:50	8:06	8:21	7:05	7:21	7:42
8:48	9:05	9:20	8:05	8:19	8:40
9:44	10:01	10:16	9:05	9:18	9:38
10:44	11:01	11:14	10:05	10:18	10:38
11:44	12:00M	12:13A	11:05	11:18	11:38

a - Serves Linwood Housing Area

230

Sunday

Inbound			Outbound		
Leave Montello Commuter Rail	Arrive Braintree Station	Arrive Quincy Center Station	Leave Quincy Center Station	Arrive Braintree Station	Arrive Montello Commuter Rail
7:45A	8:03A	8:26A	7:00A	7:12A	7:36A
9:15	9:33	9:56	8:30	8:42	9:08
10:45	11:03	11:26	10:00	10:12	10:41
12:15P	12:33P	12:56P	11:30	11:42	12:11P
1:45	2:03	2:28	1:00P	1:12P	1:41P
3:15	3:33	3:58	2:30	2:42	3:11
4:45	5:03	5:28	4:00	4:12	4:41
6:15	6:32	6:54	5:30	5:42	6:11
7:45	8:02	8:24	7:00	7:12	7:41
9:15	9:32	9:54	8:30	8:42	9:11
10:45	11:02	11:24	10:00	10:12	10:41
12:15A	12:32A	12:54A	11:30	11:42	12:11A



Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	\$1.70	\$1.70	\$2.25	\$2.25
Charlie Ticket	\$2.00	\$2.00	\$2.75	\$4.75
Cash-on-Board	\$2.00	\$4.00	\$2.75	\$4.75
Student*	\$0.85	\$0.85	\$1.10	\$1.10
Senior/TAP**	\$0.85	\$0.85	\$1.10	\$1.10

VALID PASSES: LinkPass (\$84.50/mo.); Local Bus (\$55/mo.); *Student LinkPass (\$30.00/mo.); **Senior/TAP LinkPass (\$30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
 * Requires Student CharlieCard, available to students through participating middle schools and high schools.
 ** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

All buses are accessible to persons with disabilities

Route 230
Montello Commuter Rail Station-
Quincy Center Station

January 2, see Sunday
 Winter 2017 Holidays
 January 16 & February 20, see Saturday

VEHICLE SPEED MEASUREMENTS

Accurate Counts
978-664-2565

Location : Washington Street
Location : South of Storrs Avenue
City/State: Braintree, MA

7547SPD1

SB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/20/16	0	0	0	0	0	0	1	1	3	9	6	3	2	7		32
01:00	1	1	0	0	0	0	0	0	1	8	4	7	1	1		24
02:00	0	0	0	0	1	0	2	0	1	3	1	1	1	3		13
03:00	2	0	0	0	0	0	0	3	0	2	3	0	2	0		12
04:00	4	0	0	2	1	1	3	5	3	4	6	3	1	0		33
05:00	17	0	6	4	8	5	6	9	18	16	7	6	2	1		105
06:00	32	0	3	4	8	20	21	35	27	36	23	4	1	0		214
07:00	106	1	11	18	42	40	63	64	43	28	10	5	0	1		432
08:00	92	2	5	24	43	72	59	61	47	24	10	2	1	0		442
09:00	74	4	9	13	38	74	86	87	59	36	17	3	0	1		501
10:00	86	5	8	23	39	79	92	73	61	32	9	0	1	0		508
11:00	128	0	18	34	73	93	91	82	36	15	5	2	0	0		577
12 PM	132	1	8	33	55	78	83	83	45	8	9	0	0	0		535
13:00	166	6	16	48	67	105	101	63	36	8	2	0	0	0		618
14:00	94	5	10	29	39	65	128	127	81	31	10	4	0	0		623
15:00	159	5	12	25	69	101	122	114	67	33	9	1	0	0		717
16:00	151	6	13	45	64	104	151	119	83	23	5	4	0	0		768
17:00	120	1	12	26	49	139	128	132	62	29	5	0	0	0		703
18:00	71	2	7	7	30	100	172	168	115	54	18	4	0	0		748
19:00	48	1	8	13	36	96	102	122	85	35	20	4	1	0		571
20:00	22	0	5	5	8	20	38	85	83	66	23	3	3	0		361
21:00	13	0	0	0	4	4	15	37	38	62	35	13	2	1		224
22:00	7	0	0	1	1	3	14	18	27	28	24	11	5	1		140
23:00	3	1	0	0	0	1	0	2	7	28	22	19	12	7		102
Total	1528	41	151	354	675	1200	1478	1490	1028	618	283	99	35	23		9003

Daily
 15th Percentile : 2 MPH
 50th Percentile : 19 MPH
 85th Percentile : 26 MPH
 95th Percentile : 29 MPH

 Mean Speed(Average) : 18 MPH
 10 MPH Pace Speed : 16-25 MPH
 Number in Pace : 4511
 Percent in Pace : 50.1%
 Number of Vehicles > 20 MPH : 4069
 Percent of Vehicles > 20 MPH : 45.2%

Grand Total	1528	41	151	354	675	1200	1478	1490	1028	618	283	99	35	23		9003
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Overall
 15th Percentile : 2 MPH
 50th Percentile : 19 MPH
 85th Percentile : 26 MPH
 95th Percentile : 29 MPH

 Mean Speed(Average) : 18 MPH
 10 MPH Pace Speed : 16-25 MPH
 Number in Pace : 4511
 Percent in Pace : 50.1%
 Number of Vehicles > 20 MPH : 4069
 Percent of Vehicles > 20 MPH : 45.2%

Accurate Counts

978-664-2565

Location : Washington Street
 Location : South of Storrs Avenue
 City/State: Braintree, MA

7547SPD1

NB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	Total
12/20/16	0	0	0	0	0	0	1	2	0	5	5	2	3	3	21
01:00	0	0	0	1	0	0	1	1	2	2	4	3	1	2	17
02:00	2	0	0	0	0	0	1	0	0	0	0	0	2	1	6
03:00	0	0	0	0	0	0	1	0	0	1	8	2	0	2	14
04:00	2	0	0	0	0	1	1	3	3	8	13	7	8	6	52
05:00	11	0	0	0	7	19	20	26	34	46	49	51	18	11	292
06:00	35	1	3	10	16	25	62	76	89	78	60	37	7	3	502
07:00	138	3	23	41	65	111	142	84	43	25	17	8	3	2	705
08:00	147	9	20	35	61	102	111	83	50	28	11	4	2	0	663
09:00	71	3	9	20	22	52	91	104	90	47	14	5	3	0	531
10:00	101	3	18	25	53	73	83	81	58	27	11	0	0	0	533
11:00	172	8	33	61	56	93	69	51	21	12	2	0	0	0	578
12 PM	206	16	37	42	63	107	80	35	29	37	4	2	0	0	658
13:00	157	9	14	21	44	59	81	62	50	23	8	2	0	1	531
14:00	138	3	25	26	41	80	90	71	57	35	7	2	0	0	575
15:00	168	4	10	26	51	91	63	56	33	18	6	0	0	0	526
16:00	142	9	13	24	49	67	96	64	54	14	6	0	0	0	538
17:00	116	6	13	25	35	70	94	70	31	10	2	1	0	0	543
18:00	58	1	1	5	26	43	81	70	75	53	13	5	1	0	432
19:00	45	0	5	8	12	20	50	66	75	59	25	9	3	0	377
20:00	22	0	3	5	12	14	45	78	66	56	48	11	3	0	363
21:00	15	0	0	0	0	6	12	34	51	54	32	30	1	1	236
22:00	4	0	0	0	0	1	5	12	14	23	28	11	5	3	106
23:00	2	0	0	0	0	2	0	4	10	18	9	13	4	2	64
Total	1752	75	227	375	613	1036	1280	1133	974	700	390	206	65	37	8863

Daily

- 15th Percentile : 2 MPH
- 50th Percentile : 18 MPH
- 85th Percentile : 27 MPH
- 95th Percentile : 31 MPH
- Mean Speed(Average) : 18 MPH
- 10 MPH Pace Speed : 16-25 MPH
- Number in Pace : 3774
- Percent in Pace : 42.6%
- Number of Vehicles > 20 MPH : 3932
- Percent of Vehicles > 20 MPH : 44.4%

Grand Total	1752	75	227	375	613	1036	1280	1133	974	700	390	206	65	37	8863
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Overall

- 15th Percentile : 2 MPH
- 50th Percentile : 18 MPH
- 85th Percentile : 27 MPH
- 95th Percentile : 31 MPH
- Mean Speed(Average) : 18 MPH
- 10 MPH Pace Speed : 16-25 MPH
- Number in Pace : 3774
- Percent in Pace : 42.6%
- Number of Vehicles > 20 MPH : 3932
- Percent of Vehicles > 20 MPH : 44.4%

Accurate Counts

978-664-2565

Location : Washington Street
 Location : South of Storrs Avenue
 City/State: Braintree, MA

7547SPD1

SB, NB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/20/16	0	0	0	0	0	0	2	3	3	14	11	5	5	10		53
01:00	1	1	0	1	0	0	1	1	3	10	8	10	2	3		41
02:00	2	0	0	0	1	0	3	0	1	3	1	1	3	4		19
03:00	2	0	0	0	0	0	1	3	0	3	11	2	2	2		26
04:00	6	0	0	2	1	2	4	8	6	12	19	10	9	6		85
05:00	28	0	6	4	15	24	26	35	52	62	56	57	20	12		397
06:00	67	1	6	14	24	45	83	111	116	114	83	41	8	3		716
07:00	244	4	34	59	107	151	205	148	86	53	27	13	3	3		1137
08:00	239	11	25	59	104	174	170	144	97	52	21	6	3	0		1105
09:00	145	7	18	33	60	126	177	191	149	83	31	8	3	1		1032
10:00	187	8	26	48	92	152	175	154	119	59	20	0	1	0		1041
11:00	300	8	51	95	129	186	160	133	57	27	7	2	0	0		1155
12 PM	338	17	45	75	118	185	163	118	74	45	13	2	0	0		1193
13:00	323	15	30	69	111	164	182	125	86	31	10	2	0	1		1149
14:00	232	8	35	55	80	145	218	198	138	66	17	6	0	0		1198
15:00	327	9	22	51	120	192	185	170	100	51	15	1	0	0		1243
16:00	293	15	26	69	113	171	247	183	137	37	11	4	0	0		1306
17:00	236	7	25	51	84	209	222	202	132	60	15	2	1	0		1248
18:00	129	3	8	12	56	143	253	238	190	107	31	9	1	0		1180
19:00	93	1	13	21	48	116	152	188	160	94	45	13	4	0		948
20:00	44	0	8	10	20	34	83	163	149	122	71	14	6	0		724
21:00	28	0	0	0	4	10	27	71	89	116	67	43	3	2		460
22:00	11	0	0	1	1	4	19	30	41	51	52	22	10	4		246
23:00	5	1	0	0	0	3	0	6	17	46	31	32	16	9		166
Total	3280	116	378	729	1288	2236	2758	2623	2002	1318	673	305	100	60		17866

Daily

- 15th Percentile : 2 MPH
- 50th Percentile : 18 MPH
- 85th Percentile : 26 MPH
- 95th Percentile : 30 MPH

Mean Speed(Average) : 18 MPH

10 MPH Pace Speed : 16-25 MPH

- Number in Pace : 8284
- Percent in Pace : 46.4%
- Number of Vehicles > 20 MPH : 8000
- Percent of Vehicles > 20 MPH : 44.8%

Grand Total	3280	116	378	729	1288	2236	2758	2623	2002	1318	673	305	100	60		17866
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Overall

- 15th Percentile : 2 MPH
- 50th Percentile : 18 MPH
- 85th Percentile : 26 MPH
- 95th Percentile : 30 MPH

Mean Speed(Average) : 18 MPH

10 MPH Pace Speed : 16-25 MPH

- Number in Pace : 8284
- Percent in Pace : 46.4%
- Number of Vehicles > 20 MPH : 8000
- Percent of Vehicles > 20 MPH : 44.8%

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547SPD2

WB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/20/16	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
01:00	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
05:00	0	0	0	0	0	0	0	0	1	1	3	1	0	0	0	6
06:00	0	0	0	0	0	1	0	0	4	3	4	1	0	0	0	13
07:00	7	0	0	0	0	0	0	3	5	20	18	14	5	0	0	72
08:00	3	0	0	0	2	3	3	12	13	22	21	4	1	0	0	84
09:00	5	0	0	3	0	2	2	6	12	11	14	3	0	0	0	58
10:00	4	0	0	0	1	3	5	4	13	13	5	6	3	1	1	58
11:00	8	0	1	1	1	1	6	3	8	14	11	14	2	1	1	71
12 PM	4	0	0	1	2	2	8	9	12	17	9	5	0	1	1	70
13:00	1	0	0	0	1	1	4	7	19	28	30	9	2	0	0	102
14:00	12	0	1	0	0	0	3	5	11	34	21	11	5	1	1	104
15:00	11	0	0	1	1	5	5	13	26	43	42	12	10	0	0	169
16:00	8	0	0	0	1	1	4	21	47	49	61	21	6	2	2	203
17:00	6	0	0	0	0	1	2	13	37	55	61	26	6	2	2	209
18:00	2	0	1	1	1	2	1	10	19	45	32	17	2	1	1	134
19:00	4	0	0	0	0	2	1	3	10	15	14	7	2	1	1	59
20:00	3	0	0	0	0	1	1	3	4	15	10	3	0	0	0	40
21:00	2	0	0	0	0	1	0	2	2	10	4	3	0	1	1	25
22:00	1	0	0	0	0	0	0	0	3	2	1	2	0	0	0	9
23:00	0	0	0	0	0	0	0	0	1	2	3	1	0	0	0	7
Total	81	0	3	7	10	26	45	114	248	400	352	161	45	11	1503	

Daily	15th Percentile :	22 MPH
	50th Percentile :	28 MPH
	85th Percentile :	32 MPH
	95th Percentile :	35 MPH
	Mean Speed(Average) :	27 MPH
	10 MPH Pace Speed :	25-34 MPH
	Number in Pace :	1054
	Percent in Pace :	70.1%
	Number of Vehicles > 30 MPH :	569
	Percent of Vehicles > 30 MPH :	37.9%

Accurate Counts
978-664-2565

Location : Storrs Avenue
Location : West of Washington Street
City/State: Braintree, MA

7547SPD2

WB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/21/16	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	4
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
05:00	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	3
06:00	0	0	0	0	0	0	1	0	2	3	2	2	0	0	0	10
07:00	3	0	0	0	0	0	0	4	6	16	21	13	5	0	0	68
08:00	7	0	2	1	0	3	8	10	25	17	15	7	0	0	0	95
09:00	10	0	0	1	2	1	9	18	14	16	15	3	0	0	0	89
10:00	6	0	0	3	2	5	8	7	10	15	17	3	0	0	0	76
11:00	0	0	0	0	1	4	4	10	6	21	19	3	3	2	2	73
12 PM	7	0	2	3	1	1	5	8	14	21	20	5	3	1	1	91
13:00	2	0	0	0	1	2	5	6	11	31	17	12	4	2	2	93
14:00	7	0	1	2	1	1	1	8	34	45	26	8	3	2	2	139
15:00	3	0	0	0	0	0	4	18	33	51	38	16	5	1	1	169
16:00	10	0	0	0	0	2	5	9	28	37	57	19	7	2	2	176
17:00	4	0	0	0	0	1	3	16	32	57	66	20	5	1	1	205
18:00	9	0	0	1	1	0	4	12	41	66	40	17	4	5	5	200
19:00	2	0	0	0	0	0	1	7	12	31	16	10	3	0	0	82
20:00	0	0	0	0	0	0	0	3	5	13	17	5	2	0	0	45
21:00	1	0	0	0	0	0	0	6	3	9	8	4	0	1	1	32
22:00	0	0	0	0	0	0	0	0	1	3	7	1	0	1	1	13
23:00	0	0	0	0	0	0	0	1	0	2	2	2	0	0	0	7
Total	73	1	5	11	9	20	58	143	277	457	409	150	44	18	1675	

Daily
 15th Percentile : 22 MPH
 50th Percentile : 28 MPH
 85th Percentile : 32 MPH
 95th Percentile : 35 MPH

 Mean Speed(Average) : 28 MPH
 10 MPH Pace Speed : 25-34 MPH
 Number in Pace : 1193
 Percent in Pace : 71.2%
 Number of Vehicles > 30 MPH : 621
 Percent of Vehicles > 30 MPH : 37.1%

Grand Total	154	1	8	18	19	46	103	257	525	857	761	311	89	29	3178
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Overall
 15th Percentile : 22 MPH
 50th Percentile : 28 MPH
 85th Percentile : 32 MPH
 95th Percentile : 35 MPH

 Mean Speed(Average) : 28 MPH
 10 MPH Pace Speed : 25-34 MPH
 Number in Pace : 2247
 Percent in Pace : 70.7%
 Number of Vehicles > 30 MPH : 1190
 Percent of Vehicles > 30 MPH : 37.4%

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547SPD2

EB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	Total
	3	6	9	12	15	18	21	24	27	30	33	36	39	999	
12/20/16	0	0	0	0	0	0	1	0	0	1	0	1	0	0	3
01:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
05:00	0	0	0	0	0	0	0	0	3	2	6	0	1	0	12
06:00	1	0	0	0	0	1	0	8	6	0	0	0	0	0	16
07:00	6	0	4	3	7	7	11	14	16	11	10	1	1	0	91
08:00	6	0	4	3	7	11	14	14	21	9	3	2	0	0	94
09:00	4	0	0	0	1	4	6	5	8	12	2	3	3	1	49
10:00	1	0	1	2	1	6	10	9	8	6	3	3	0	0	50
11:00	5	0	3	1	3	4	11	7	9	13	1	1	0	0	58
12 PM	9	0	2	0	3	5	12	14	9	9	1	1	0	0	65
13:00	4	0	0	2	7	6	8	8	12	10	6	2	1	0	66
14:00	5	0	2	1	5	7	5	15	14	11	6	4	1	0	76
15:00	14	0	1	2	5	5	9	11	17	15	4	0	0	0	83
16:00	9	0	1	5	6	8	13	19	13	6	5	1	1	0	87
17:00	5	0	2	2	7	9	13	11	15	10	7	1	0	0	82
18:00	1	0	0	1	2	3	9	15	14	9	7	1	0	0	62
19:00	2	0	2	1	1	3	2	10	5	7	5	0	2	0	40
20:00	0	0	0	0	2	2	8	4	4	3	0	0	0	0	23
21:00	1	0	0	0	1	1	0	2	4	1	1	1	0	0	12
22:00	0	0	0	0	0	0	2	3	1	2	0	0	0	0	8
23:00	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3
Total	73	0	22	23	58	82	135	169	181	139	68	22	10	1	983

Daily

- 15th Percentile : 13 MPH
- 50th Percentile : 22 MPH
- 85th Percentile : 28 MPH
- 95th Percentile : 32 MPH
- Mean Speed(Average) : 22 MPH
- 10 MPH Pace Speed : 21-30 MPH
- Number in Pace : 534
- Percent in Pace : 54.3%
- Number of Vehicles > 30 MPH : 101
- Percent of Vehicles > 30 MPH : 10.3%

Accurate Counts

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547SPD2

EB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	Total
	3	6	9	12	15	18	21	24	27	30	33	36	39	999	
12/21/16	0	0	0	0	0	0	0	0	1	1	0	1	0	0	3
01:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	1	1	0	1	0	0	0	0	0	3
05:00	0	0	0	0	0	0	1	0	4	2	2	1	0	0	10
06:00	2	0	0	0	0	1	3	2	8	4	1	1	1	0	23
07:00	2	0	0	3	5	9	14	10	20	13	6	2	0	0	84
08:00	6	0	0	0	5	14	14	23	23	17	7	1	1	0	111
09:00	7	0	1	4	2	4	17	12	8	11	6	3	2	0	77
10:00	7	0	3	3	5	13	12	9	12	8	1	1	0	1	75
11:00	0	0	0	0	2	2	7	14	6	4	8	3	1	0	47
12 PM	5	0	5	1	3	4	7	14	12	3	3	3	2	0	62
13:00	8	0	1	5	3	7	6	10	9	8	7	4	4	0	72
14:00	4	0	2	2	11	4	9	14	14	12	5	0	2	2	81
15:00	4	0	0	1	3	12	10	16	15	3	8	0	1	1	74
16:00	9	0	1	1	9	8	16	17	18	9	4	1	1	0	94
17:00	1	0	2	1	1	4	10	10	12	12	8	0	1	0	62
18:00	10	1	0	5	5	5	14	8	18	9	0	0	0	0	75
19:00	0	0	0	1	2	8	5	7	7	7	6	0	0	0	43
20:00	0	0	0	0	0	1	6	8	11	5	6	2	0	0	39
21:00	0	0	0	0	0	1	3	8	6	4	1	0	1	0	24
22:00	0	0	0	0	0	0	0	1	2	4	1	1	1	0	10
23:00	0	0	0	0	0	0	0	0	1	1	2	0	1	0	5
Total	65	1	15	27	56	98	156	183	209	137	82	24	19	4	1076

Daily

- 15th Percentile : 14 MPH
- 50th Percentile : 22 MPH
- 85th Percentile : 29 MPH
- 95th Percentile : 32 MPH
- Mean Speed(Average) : 22 MPH
- 10 MPH Pace Speed : 19-28 MPH
- Number in Pace : 594
- Percent in Pace : 55.2%
- Number of Vehicles > 30 MPH : 129
- Percent of Vehicles > 30 MPH : 12.0%

Grand Total	138	1	37	50	114	180	291	352	390	276	150	46	29	5	2059
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Overall

- 15th Percentile : 14 MPH
- 50th Percentile : 22 MPH
- 85th Percentile : 29 MPH
- 95th Percentile : 32 MPH
- Mean Speed(Average) : 22 MPH
- 10 MPH Pace Speed : 19-28 MPH
- Number in Pace : 1125
- Percent in Pace : 54.6%
- Number of Vehicles > 30 MPH : 230
- Percent of Vehicles > 30 MPH : 11.2%

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547SPD2

WB, EB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/20/16	0	0	0	0	0	0	1	0	0	1	5	1	0	0	0	8
01:00	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	3
02:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
05:00	0	0	0	0	0	0	0	0	4	3	9	1	1	0	0	18
06:00	1	0	0	0	0	2	0	8	10	3	4	1	0	0	0	29
07:00	13	0	4	3	7	7	11	17	21	31	28	15	6	0	0	163
08:00	9	0	4	3	9	14	17	26	34	31	24	6	1	0	0	178
09:00	9	0	0	3	1	6	8	11	20	23	16	6	3	1	0	107
10:00	5	0	1	2	2	9	15	13	21	19	8	9	3	1	0	108
11:00	13	0	4	2	4	5	17	10	17	27	12	15	2	1	0	129
12 PM	13	0	2	1	5	7	20	23	21	26	10	6	0	1	0	135
13:00	5	0	0	2	8	7	12	15	31	38	36	11	3	0	0	168
14:00	17	0	3	1	5	7	8	20	25	45	27	15	6	1	0	180
15:00	25	0	1	3	6	10	14	24	43	58	46	12	10	0	0	252
16:00	17	0	1	5	7	9	17	40	60	55	48	22	7	2	0	290
17:00	11	0	2	2	7	10	15	24	52	65	68	27	6	2	0	291
18:00	3	0	1	2	3	5	10	25	33	54	39	18	2	1	0	196
19:00	6	0	2	1	1	5	3	13	15	22	19	7	4	1	0	99
20:00	3	0	0	0	2	3	9	7	8	18	10	3	0	0	0	63
21:00	3	0	0	0	1	2	0	4	6	11	5	4	0	1	0	37
22:00	1	0	0	0	0	0	2	3	4	4	1	2	0	0	0	17
23:00	0	0	0	0	0	0	1	0	2	3	3	1	0	0	0	10
Total	154	0	25	30	68	108	180	283	429	539	420	183	55	12	0	2486

Daily

- 15th Percentile : 17 MPH
- 50th Percentile : 26 MPH
- 85th Percentile : 32 MPH
- 95th Percentile : 34 MPH

Mean Speed(Average) : 25 MPH

10 MPH Pace Speed : 24-33 MPH

- Number in Pace : 1482
- Percent in Pace : 59.6%
- Number of Vehicles > 30 MPH : 670
- Percent of Vehicles > 30 MPH : 27.0%

Accurate Counts

978-664-2565

Location : Storrs Avenue
 Location : West of Washington Street
 City/State: Braintree, MA

7547SPD2

WB, EB

Start Time	1	4	7	10	13	16	19	22	25	28	31	34	37	40	999	Total
12/21/16	0	0	0	0	0	0	0	0	1	1	2	1	0	0	0	5
01:00	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	5
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:00	2	0	0	0	0	1	1	0	1	1	0	0	0	0	0	6
05:00	0	1	0	0	0	0	1	0	4	2	4	1	0	0	0	13
06:00	2	0	0	0	0	1	4	2	10	7	3	3	1	0	0	33
07:00	5	0	0	3	5	9	14	14	26	29	27	15	5	0	0	152
08:00	13	0	2	1	5	17	22	33	48	34	22	8	1	0	0	206
09:00	17	0	1	5	4	5	26	30	22	27	21	6	2	0	0	166
10:00	13	0	3	6	7	18	20	16	22	23	18	4	0	1	1	151
11:00	0	0	0	0	3	6	11	24	12	25	27	6	4	2	2	120
12 PM	12	0	7	4	4	5	12	22	26	24	23	8	5	1	1	153
13:00	10	0	1	5	4	9	11	16	20	39	24	16	8	2	2	165
14:00	11	0	3	4	12	5	10	22	48	57	31	8	5	4	4	220
15:00	7	0	0	1	3	12	14	34	48	54	46	16	6	2	2	243
16:00	19	0	1	1	9	10	21	26	46	46	61	20	8	2	2	270
17:00	5	0	2	1	1	5	13	26	44	69	74	20	6	1	1	267
18:00	19	1	0	6	6	5	18	20	59	75	40	17	4	5	5	275
19:00	2	0	0	1	2	8	6	14	19	38	22	10	3	0	0	125
20:00	0	0	0	0	0	1	6	11	16	18	23	7	2	0	0	84
21:00	1	0	0	0	0	1	3	14	9	13	9	4	1	1	1	56
22:00	0	0	0	0	0	0	0	1	3	7	8	2	1	1	1	23
23:00	0	0	0	0	0	0	0	1	1	3	4	2	1	0	0	12
Total	138	2	20	38	65	118	214	326	486	594	491	174	63	22	22	2751

Daily

- 15th Percentile : 18 MPH
- 50th Percentile : 26 MPH
- 85th Percentile : 31 MPH
- 95th Percentile : 34 MPH

Mean Speed(Average) : 26 MPH

10 MPH Pace Speed : 24-33 MPH

- Number in Pace : 1680
- Percent in Pace : 61.1%
- Number of Vehicles > 30 MPH : 750
- Percent of Vehicles > 30 MPH : 27.3%

Grand Total	292	2	45	68	133	226	394	609	915	1133	911	357	118	34	34	5237
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Overall

- 15th Percentile : 18 MPH
- 50th Percentile : 26 MPH
- 85th Percentile : 31 MPH
- 95th Percentile : 34 MPH

Mean Speed(Average) : 25 MPH

10 MPH Pace Speed : 24-33 MPH

- Number in Pace : 3162
- Percent in Pace : 60.4%
- Number of Vehicles > 30 MPH : 1420
- Percent of Vehicles > 30 MPH : 27.1%

MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Braintree COUNT DATE : Dec-16

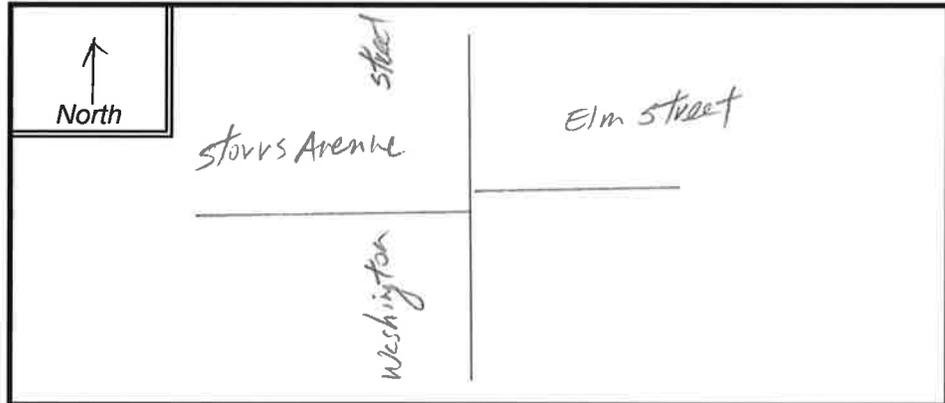
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Washington Street

MINOR STREET(S) : Elm Street/Storrs Avenue

**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) :	75	435	618	991		2,119

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

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

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

Comments : Below District 6 crash rate of 0.70 for signalized intersection
 Project Title & Date : Transportation Impact Assessment - 01/17

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Braintree COUNT DATE : Dec-16

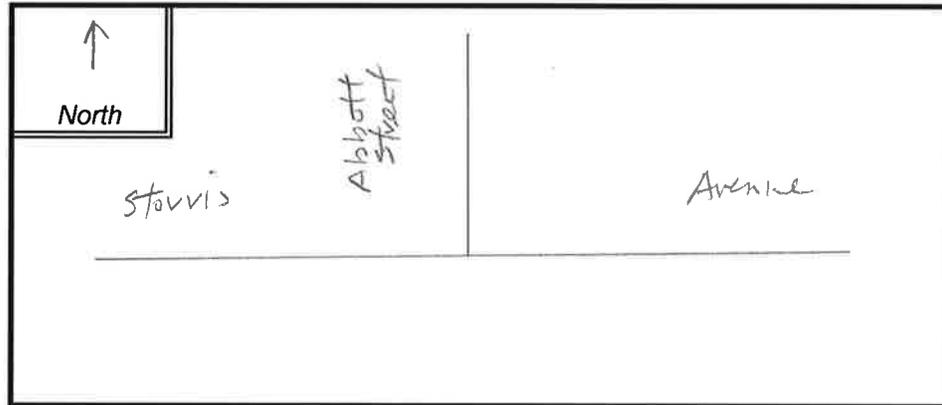
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Storrs Avenue

MINOR STREET(S) : Abbott Street

**INTERSECTION
 DIAGRAM**
 (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	69	222		54		345

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

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

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

Comments : Below District 6 crash rate of 0.53 for unsignalized intersection

Project Title & Date : Transportation Impact Assessment - 01/17

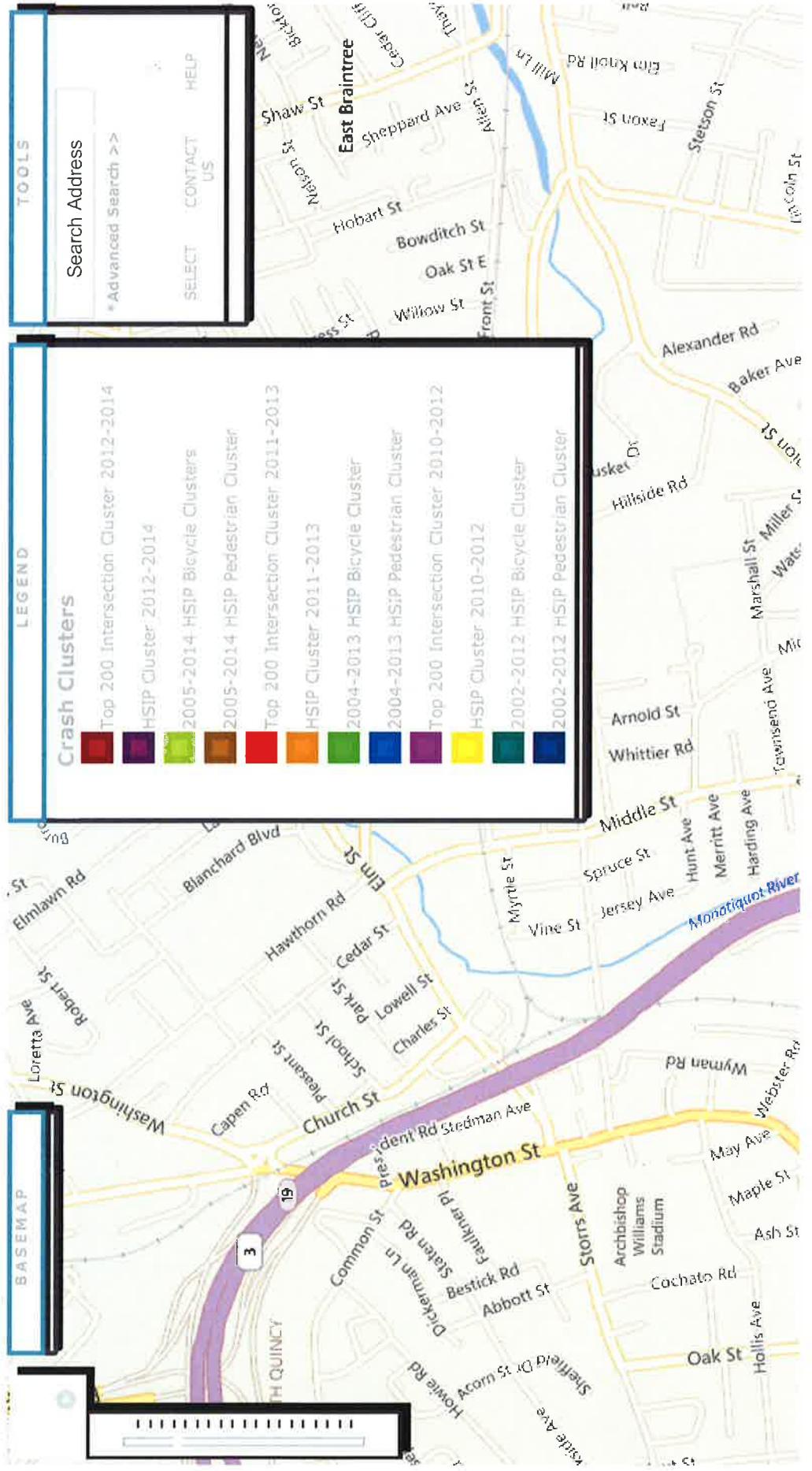


The Official Website of The Massachusetts Department of Transportation



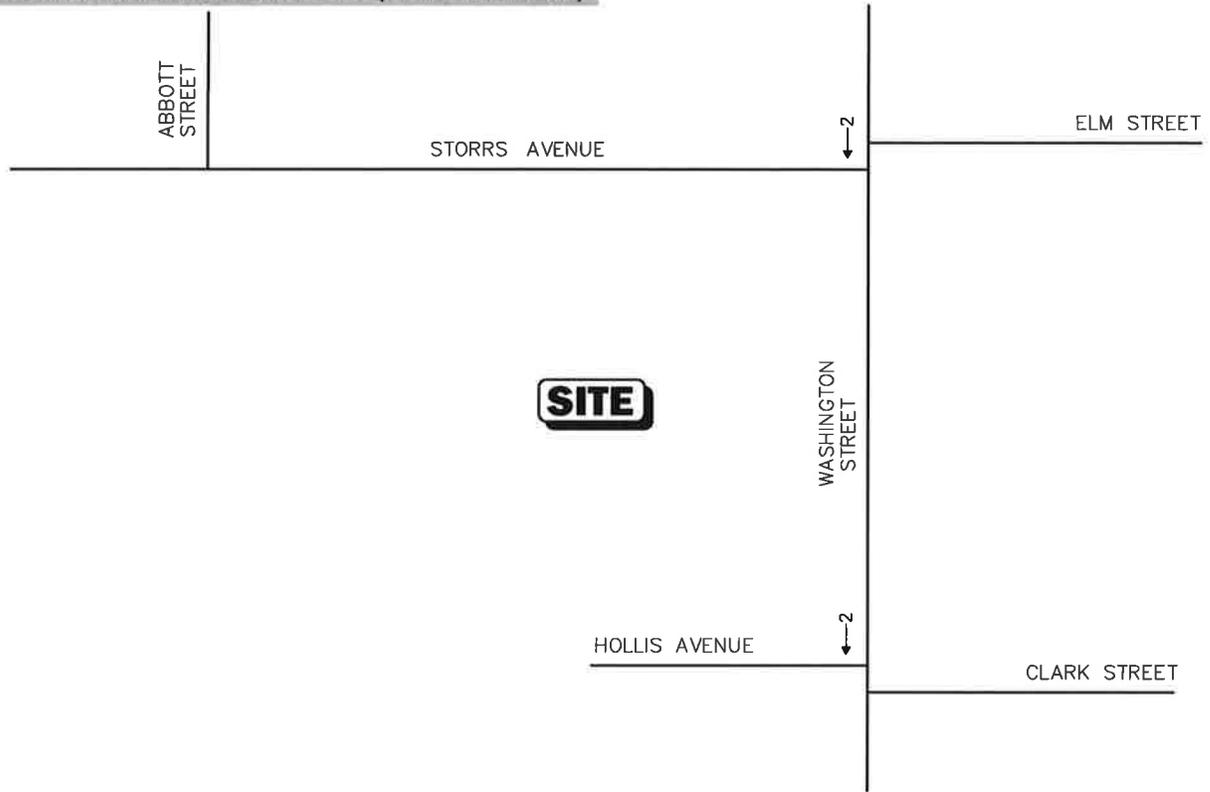
Top Crash Locations

[Home](#) > [GIS Maps And Data Products](#) > [Maps](#) > [Interactive Maps](#) > [Top Crash Locations](#)

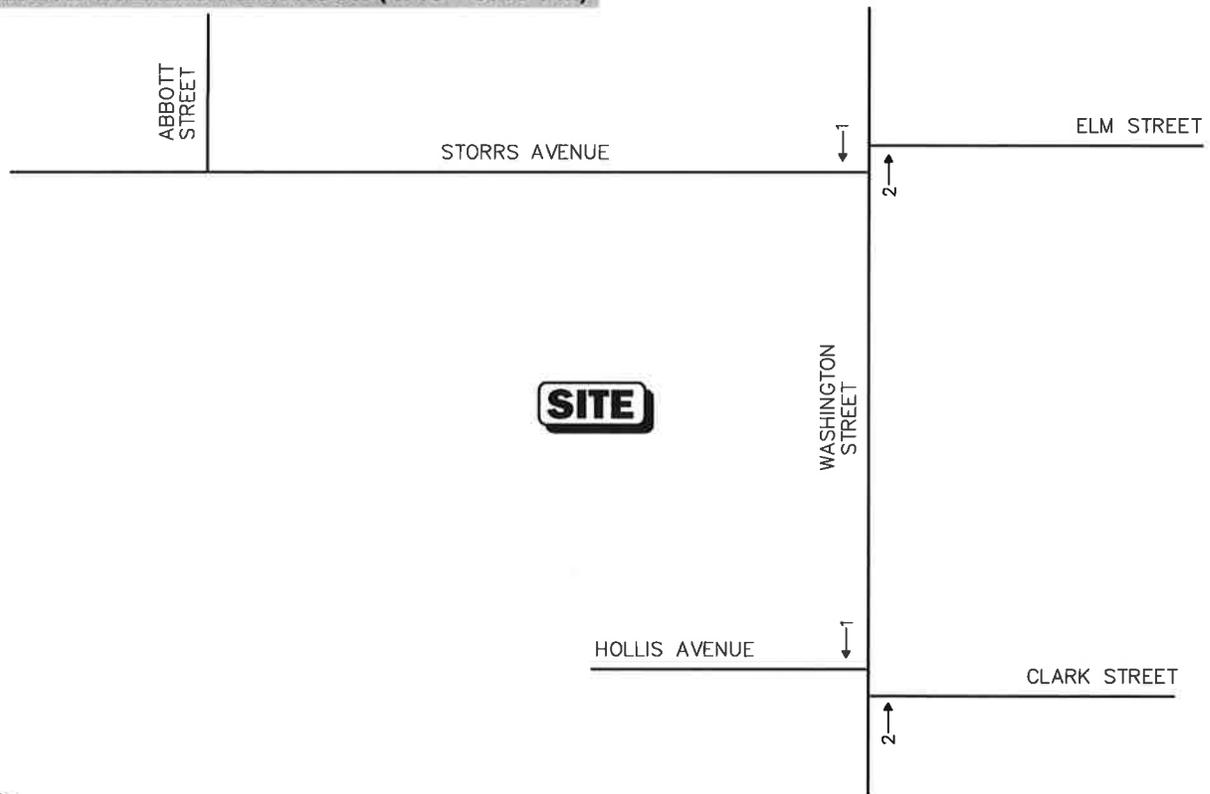


BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



Not To Scale



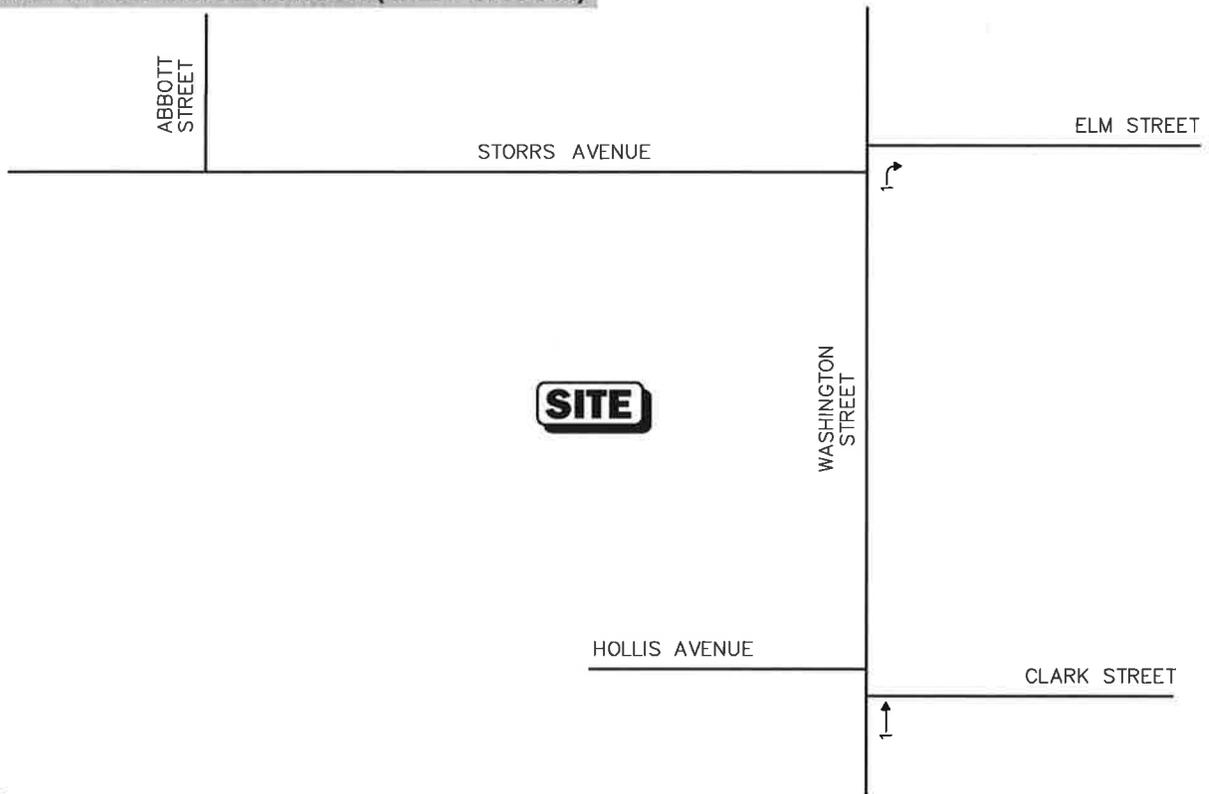
Figure A-1

Independence Avenue Residential Development Peak Hour Traffic Volumes

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



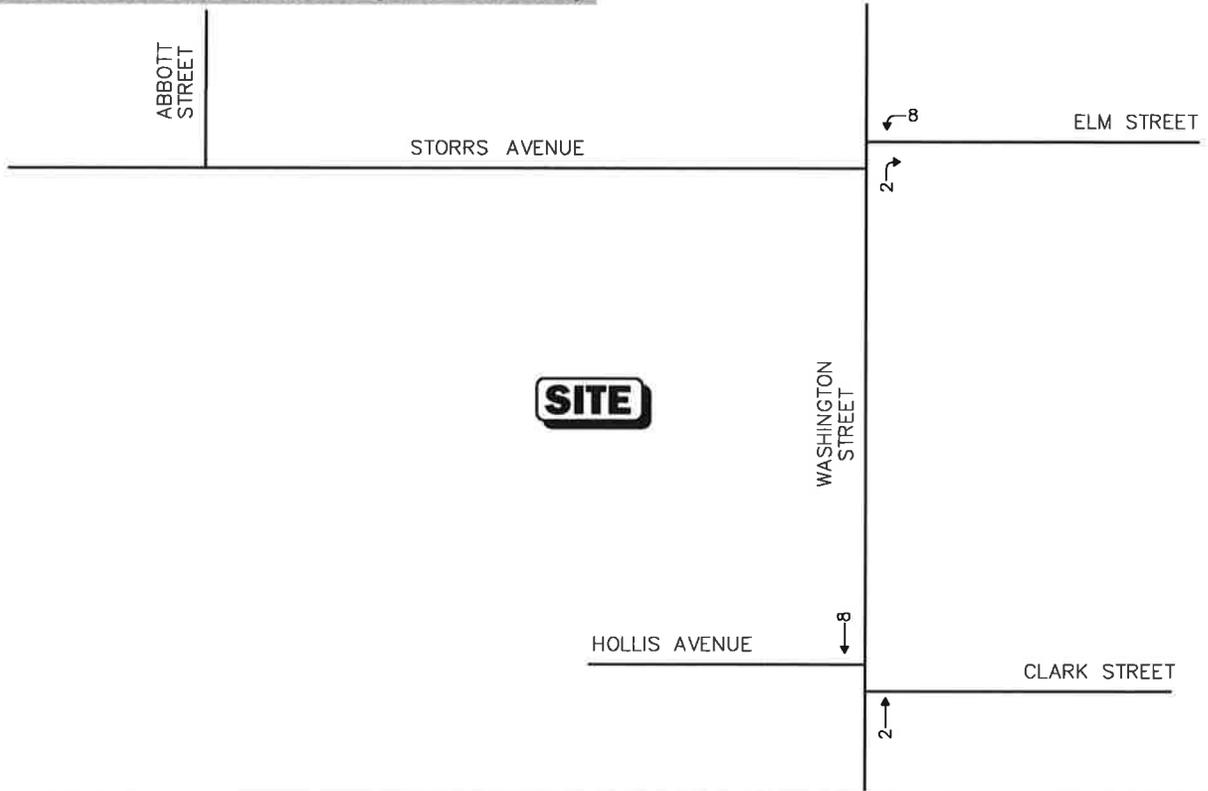
 Not To Scale



Figure A-2

**205 Elm Street
Residential Development
Peak Hour Traffic Volumes**

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)

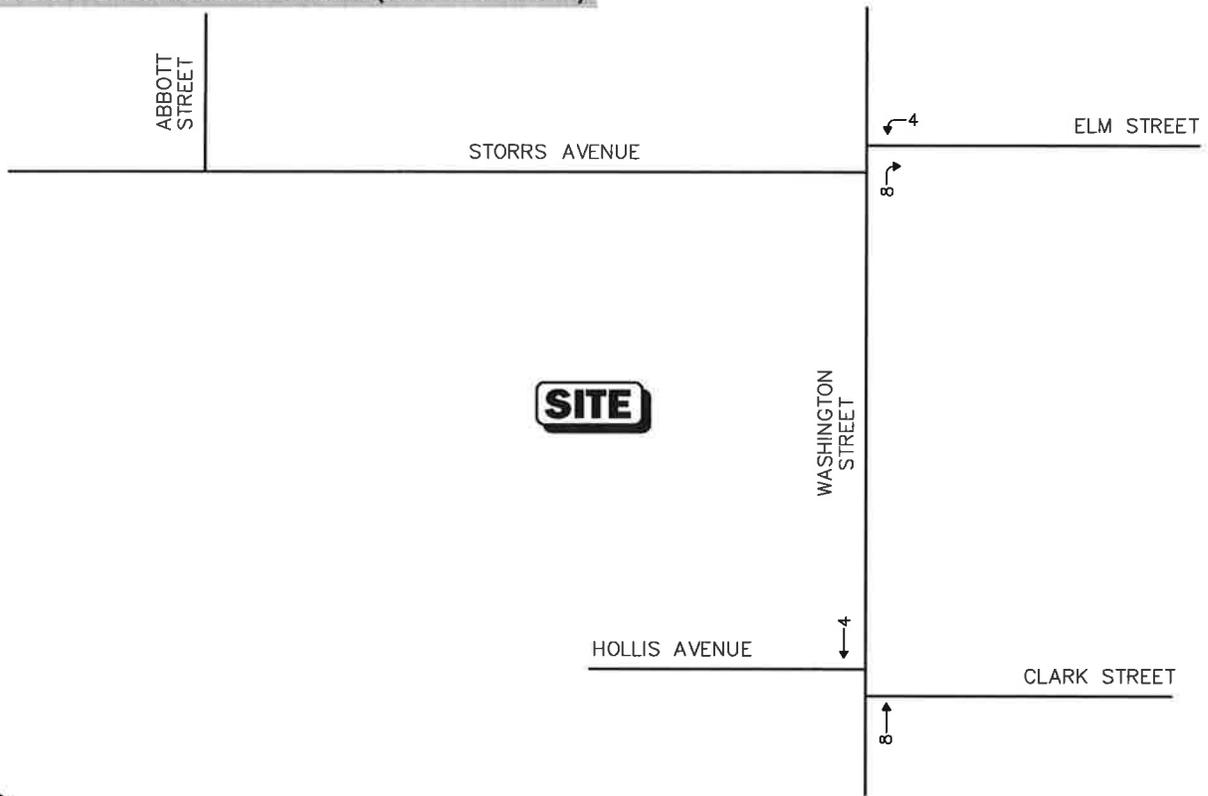


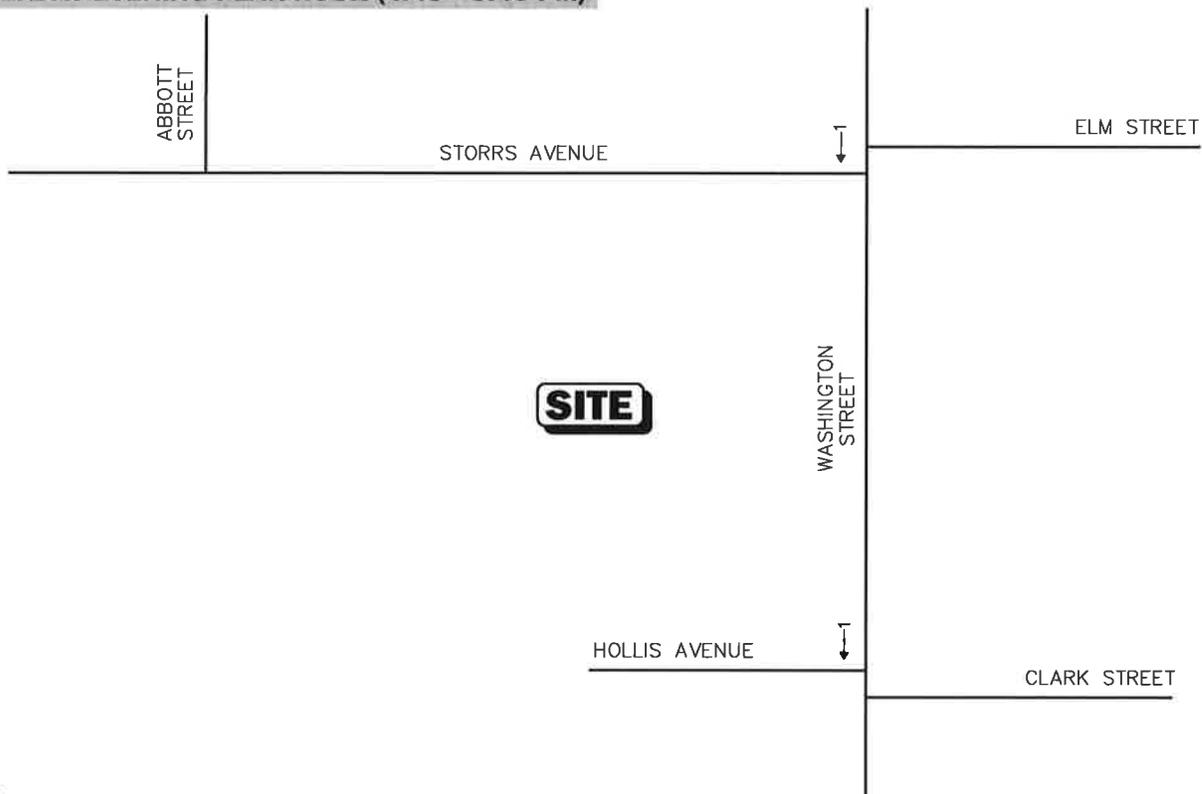
Figure A-3

**Proposed Residential Development
Peak Hour Traffic Volumes**

WEEKDAY MORNING PEAK HOUR (7:15 - 8:15 AM)



WEEKDAY EVENING PEAK HOUR (4:45 - 5:45 PM)



 Not To Scale



Figure A-4

**639 Washington Street
Residential Development
Peak Hour Traffic Volumes**

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
Hingham	Route 3	Between Exits 14 and 15	95,174	94,584	92,571		92,983	89,680	90,993	91,738	92,478	96,218	85,188	-0.23%

TRIP-GENERATION CALCULATIONS

Institute of Transportation Engineers (ITE)
Trip Generation, 9th Edition
Land Use Code (LUC) 220 - Apartment

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 70

AVERAGE WEEKDAY DAILY

$$T = 6.06 * (X) + 123.56$$

$$T = 6.06 * 70 + (123.56)$$

$$T = 547.76$$

$$T = 548 \text{ vehicle trips}$$

with 50% (274 vpd) entering and 50% (274 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.49 * (X) + 3.73$$

$$T = 0.49 * 70 + (3.73)$$

$$T = 38.03$$

$$T = 38 \text{ vehicle trips}$$

with 20% (8 vph) entering and 80% (30 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.55 * (X) + 17.65$$

$$T = 0.55 * 70 + (17.65)$$

$$T = 56.15$$

$$T = 56 \text{ vehicle trips}$$

with 65% (36 vph) entering and 35% (20 vph) exiting.

Institute of Transportation Engineers (ITE)
Trip Generation, 9th Edition
Land Use Code (LUC) 230 - Residential Condominium/Townhouse

Average Vehicle Trips Ends vs: Dwelling Units
 Independent Variable (X): 8

AVERAGE WEEKDAY DAILY

$$\ln T = 0.87 \ln (X) + 2.46$$

$$\ln T = 0.87 \ln 8 + (2.46)$$

$$\ln T = 4.27$$

$$T = 71.46$$

$$T = 72 \text{ vehicle trips}$$

with 50% (36 vpd) entering and 50% (36 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.80 \ln (X) + 0.26$$

$$\ln T = 0.80 \ln 8 + (0.26)$$

$$\ln T = 1.92$$

$$T = 6.85$$

$$T = 7 \text{ vehicle trips}$$

with 17% (1 vph) entering and 83% (6 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.82 \ln (X) + 0.32$$

$$\ln T = 0.82 \ln 8 + (0.32)$$

$$\ln T = 2.03$$

$$T = 7.58$$

$$T = 8 \text{ vehicle trips}$$

with 67% (5 vph) entering and 33% (3 vph) exiting.

JOURNEY-TO-WORK TRIP DISTRIBUTION SUMMARY

Proposed Residential Development, Braintree, MA

Residence	Workplace			MCD	Number	Washington Street (north)	Washington Street (South)	Elm Street (East)	Abbott Street (North)	Storrs Avenue (West)
	State/U.S. Island Area/Foreign Country	County	MCD							
MCD										
Braintree Town city	Massachusetts	Suffolk County	Boston city	5,003	5003					
Braintree Town city	Massachusetts	Norfolk County	Braintree Town city	3,547	177	1596	887	355	532	
Braintree Town city	Massachusetts	Norfolk County	Quincy city	1,921	1729			192		
Braintree Town city	Massachusetts	Norfolk County	Weymouth Town city	846	424	423	423			
Braintree Town city	Massachusetts	Norfolk County	Camton town	424	424					
Braintree Town city	Massachusetts	Middlesex County	Cambridge city	368	368					
Braintree Town city	Massachusetts	Plymouth County	Hingham town	352	264	264	88			
Braintree Town city	Massachusetts	Norfolk County	Randolph town	306					306	
Braintree Town city	Massachusetts	Norfolk County	Milton town	264	264					
Braintree Town city	Massachusetts	Plymouth County	Norwell town	219		219				
Braintree Town city	Massachusetts	Middlesex County	Newton city	218	218					
Braintree Town city	Massachusetts	Norfolk County	Deatham town	199	199					
Braintree Town city	Massachusetts	Norfolk County	Stoughton town	188	188					
Braintree Town city	Massachusetts	Plymouth County	Rockland town	174		174				
Braintree Town city	Massachusetts	Plymouth County	Hanover town	173		173				
Braintree Town city	Massachusetts	Plymouth County	Brockton city	168	126	42				
Braintree Town city	Massachusetts	Norfolk County	Norwood town	150	150					
Braintree Town city	Massachusetts	Norfolk County	Wellesley town	150	150					
Braintree Town city	Massachusetts	Norfolk County	Brookline town	134	134					
Braintree Town city	Massachusetts	Plymouth County	Bridgewater town	117	117					
Braintree Town city	Massachusetts	Middlesex County	Walitham city	116	116					
Braintree Town city	Massachusetts	Norfolk County	Holbrook town	107		107				
Braintree Town city	Massachusetts	Middlesex County	Burlington town	99	99					
Braintree Town city	Massachusetts	Middlesex County	Natick town	99	99					
Braintree Town city	Massachusetts	Plymouth County	Plymouth town	93		93				
Braintree Town city	Massachusetts	Plymouth County	Abington town	90		90				
Braintree Town city	Massachusetts	Plymouth County	Pembroke town	82		82				
Braintree Town city	Massachusetts	Norfolk County	Franklin Town city	79	79					
				15,686	9,640	3,263	1,398	547	838	
					61%	21%	9%	4%	5%	
				Say	60%	20%	10%	5%	5%	

CAPACITY ANALYSIS WORKSHEETS

Washington Street at Elm Street and Storrs Avenue
Washington Street at Hollis Avenue and Clark Street
Storrs Avenue at Abbott Street
Washington Street at Parkingway
Storrs Avenue at the Project Site Driveway

Washington Street at Elm Street and Storrs Avenue

2016 Existing Wkdy AM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Volume (vph)	25	40	27	189	53	182	13	497	183	129	311	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1817	0	0	1759	1615	0	1880	1509	1736	1851	0
Flt Permitted		0.987			0.962			0.987		0.120		
Satd. Flow (perm)	0	1817	0	0	1759	1615	0	1857	1509	219	1851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				157			138			3
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1046			517			923			408	
Travel Time (s)		23.8			11.8			21.0			9.3	
Peak Hour Factor	0.55	0.55	0.55	0.91	0.91	0.91	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	0%	5%	0%	0%	0%	1%	7%	4%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	266	200	0	543	195	143	363	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	9.0	39.0	39.0	26.0	9.0	48.0	
Total Split (%)	13.5%	13.5%		25.0%	25.0%	8.7%	37.5%	37.5%	25.0%	8.7%	46.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Recall Mode	None	None		None								
Act Effect Green (s)		10.2		19.0	19.0	27.6		31.2	50.2	40.4	40.4	
Actuated g/C Ratio		0.12		0.22	0.22	0.33		0.37	0.59	0.48	0.48	
v/c Ratio		0.72		0.68	0.68	0.32		0.79	0.21	0.73	0.41	
Control Delay		54.1		41.4	41.4	7.0		35.2	2.2	40.0	17.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		54.1		41.4	41.4	7.0		35.2	2.2	40.0	17.4	
LOS		D		D	D	A		D	A	D	B	
Approach Delay		54.1		26.6	26.6			26.5			23.8	
Approach LOS		D		C	C			C			C	
Queue Length 50th (ft)		80		130	130	16		242	5	39	113	
Queue Length 95th (ft)		97		#276	#276	57		#534	30	#154	254	
Internal Link Dist (ft)		966		437	437			843			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		233		467	467	631		785	1007	196	986	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	15%
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.72			0.57	0.32		0.69	0.19	0.73	0.37	

Intersection Summary

Area Type: Other
 Cycle Length: 104
 Actuated Cycle Length: 84.6
 Natural Cycle: 85
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 28.3
 Intersection LOS: C
 Intersection Capacity Utilization 74.1%
 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: 1: Washington Street & Storrs Avenue /Elm Street

φ1	φ2	φ4	φ8	φ9
9 s	39 s	14 s	26 s	16 s
φ6				
48 s				

2016 Existing Wkdy PM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔	↔	↔	
Volume (vph)	26	28	21	153	121	161	29	356	230	328	508	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1857	0	0	1830	1615	0	1875	1615	1805	1848	0
Flt Permitted		0.983			0.973			0.925		0.187		
Satd. Flow (perm)	0	1857	0	0	1830	1615	0	1741	1615	355	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				129			165			9
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1046			517			923				408
Travel Time (s)		23.8			11.8			21.0				9.3
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	308	181	0	397	237	345	614	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	27.0	44.0	44.0	26.0	27.0	71.0	
Total Split (%)	11.0%	11.0%		20.5%	20.5%	21.3%	34.6%	34.6%	20.5%	21.3%	55.9%	
Maximum Green (s)	8.0	8.0		20.0	20.0	23.0	38.0	38.0	20.0	23.0	65.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None								
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		9.9			23.0	43.0		29.0	53.2	49.6	49.6	
Actuated g/C Ratio		0.11			0.24	0.46		0.31	0.57	0.53	0.53	
v/c Ratio		0.43			0.69	0.22		0.74	0.24	0.79	0.63	
Control Delay		48.1			46.2	6.5		40.5	3.4	30.8	20.0	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		48.1			46.2	6.5		40.5	3.4	30.8	20.0	
LOS		D			D	A		D	A	C	B	
Approach Delay		48.1			31.5			26.6			23.8	
Approach LOS		D			C			C			C	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	13%
Maximum Green (s)	10.0
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

2016 Existing Wkdy PM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		43			167	17		207	9	113	239	
Queue Length 95th (ft)		112			#435	58		415	55	#293	473	
Internal Link Dist (ft)		966			437			843			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		218			450	931		779	986	560	1367	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.41			0.68	0.19		0.51	0.24	0.62	0.45	

Intersection Summary

Area Type: Other

Cycle Length: 127

Actuated Cycle Length: 94.1

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.4

Intersection LOS: C

Intersection Capacity Utilization 84.0%

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: 1: Washington Street & Storrs Avenue /Elm Street

φ1	φ2	φ4	φ8	φ9
27 s	44 s	14 s	26 s	16 s
φ6				
71 s				

2024 No-Build Wkdy AM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗		↕	↗	↖	↖	
Volume (vph)	27	43	29	214	57	197	14	539	200	140	339	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1817	0	0	1758	1615	0	1880	1509	1736	1851	0
Fit Permitted		0.987			0.962			0.986		0.112		
Satd. Flow (perm)	0	1817	0	0	1758	1615	0	1855	1509	205	1851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				157			139			3
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1046			517			923				408
Travel Time (s)		23.8			11.8			21.0				9.3
Peak Hour Factor	0.55	0.55	0.55	0.91	0.91	0.91	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	0%	5%	0%	0%	0%	1%	7%	4%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	180	0	0	298	216	0	588	213	156	395	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	9.0	39.0	39.0	26.0	9.0	48.0	
Total Split (%)	13.5%	13.5%		25.0%	25.0%	8.7%	37.5%	37.5%	25.0%	8.7%	46.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Recall Mode	None	None		None								
Act Effct Green (s)		10.1			20.3	28.8		33.7	54.1	42.8	42.8	
Actuated g/C Ratio		0.11			0.23	0.33		0.38	0.61	0.48	0.48	
v/c Ratio		0.81			0.74	0.34		0.83	0.22	0.83	0.44	
Control Delay		64.9			45.1	7.9		37.9	2.3	53.9	18.0	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		64.9			45.1	7.9		37.9	2.3	53.9	18.0	
LOS		E			D	A		D	A	D	B	
Approach Delay		64.9			29.5			28.4			28.2	
Approach LOS		E			C			C			C	
Queue Length 50th (ft)		90			150	22		281	7	45	131	
Queue Length 95th (ft)		104			#328	65		#605	34	#179	280	
Internal Link Dist (ft)		966			437			843			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		222			443	631		744	1007	187	935	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	15%
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	

2024 No-Build Wkdy AM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.81			0.67	0.34		0.79	0.21	0.83	0.42	

Intersection Summary

Area Type: Other

Cycle Length: 104

Actuated Cycle Length: 88.3

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 79.5%

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: 1: Washington Street & Storrs Avenue /Elm Street

$\phi 1$	$\phi 2$	$\phi 4$	$\phi 8$	$\phi 9$
9 s	39 s	14 s	26 s	16 s
$\phi 6$				
48 s				

2024 No-Build Wkdy PM

1: Washington Street & Storrs Avenue /Elm Street

2/8/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	30	23	170	131	174	31	387	258	355	639	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1857	0	0	1830	1615	0	1875	1615	1805	1851	0
Flt Permitted		0.983			0.973			0.878		0.173		
Satd. Flow (perm)	0	1857	0	0	1830	1615	0	1653	1615	329	1851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				129			171		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1046			517			923			408	
Travel Time (s)		23.8			11.8			21.0			9.3	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	95	0	0	338	196	0	431	266	374	758	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	27.0	44.0	44.0	26.0	27.0	71.0	
Total Split (%)	11.0%	11.0%		20.5%	20.5%	21.3%	34.6%	34.6%	20.5%	21.3%	55.9%	
Maximum Green (s)	8.0	8.0		20.0	20.0	23.0	38.0	38.0	20.0	23.0	65.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		9.8			22.5	44.8		33.6	56.1	56.6	56.6	
Actuated g/C Ratio		0.09			0.22	0.43		0.32	0.54	0.54	0.54	
v/c Ratio		0.51			0.86	0.25		0.81	0.28	0.84	0.75	
Control Delay		53.5			63.0	7.6		46.1	3.9	36.8	24.1	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		53.5			63.0	7.6		46.1	3.9	36.8	24.1	
LOS		D			E	A		D	A	D	C	
Approach Delay		53.5			42.7			30.0			28.3	
Approach LOS		D			D			C			C	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	13%
Maximum Green (s)	10.0
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		53			217	25		249	15	140	335	
Queue Length 95th (ft)		119			#492	66		#504	65	#367	660	
Internal Link Dist (ft)		966			437			843			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		193			395	835		650	950	513	1222	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.49			0.86	0.23		0.66	0.28	0.73	0.62	

Intersection Summary

Area Type: Other
 Cycle Length: 127
 Actuated Cycle Length: 103.9
 Natural Cycle: 105
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 32.9
 Intersection LOS: C
 Intersection Capacity Utilization 94.8%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Washington Street & Storrs Avenue /Elm Street

φ1	φ2	φ4	φ8	φ9
27 s	44 s	14 s	26 s	16 s
φ6				
71 s				

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Volume (vph)	46	45	29	214	58	197	14	541	202	140	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1814	0	0	1759	1615	0	1880	1509	1736	1850	0
Flt Permitted		0.981			0.962			0.986		0.112		
Satd. Flow (perm)	0	1814	0	0	1759	1615	0	1855	1509	205	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				157			139			3
Link Speed (mph)		30			30			30				30
Link Distance (ft)		596			517			434				408
Travel Time (s)		13.5			11.8			9.9				9.3
Peak Hour Factor	0.55	0.55	0.55	0.91	0.91	0.91	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	0%	5%	0%	0%	0%	1%	7%	4%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	0	0	299	216	0	591	215	156	400	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	9.0	39.0	39.0	26.0	9.0	48.0	
Total Split (%)	13.5%	13.5%		25.0%	25.0%	8.7%	37.5%	37.5%	25.0%	8.7%	46.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Act Effct Green (s)		10.1		20.4	20.4	28.8		33.8	54.2	42.9	42.9	
Actuated g/C Ratio		0.11		0.23	0.23	0.33		0.38	0.61	0.49	0.49	
v/c Ratio		1.01		0.74	0.74	0.34		0.83	0.22	0.83	0.44	
Control Delay		103.8		45.2	45.2	7.9		38.1	2.4	54.0	18.1	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		103.8		45.2	45.2	7.9		38.1	2.4	54.0	18.1	
LOS		F		D	D	A		D	A	D	B	
Approach Delay		103.8		29.6	29.6			28.6			28.2	
Approach LOS		F		C	C			C			C	
Queue Length 50th (ft)		~119		150	150	22		283	7	45	134	
Queue Length 95th (ft)		#143		#329	#329	65		#609	34	#179	285	
Internal Link Dist (ft)		516		437	437			354			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		217		442	442	631		742	1008	187	932	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	15%
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effect Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		1.01			0.68	0.34		0.80	0.21	0.83	0.43	

Intersection Summary

Area Type: Other
 Cycle Length: 104
 Actuated Cycle Length: 88.4
 Natural Cycle: 85
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 36.6
 Intersection LOS: D
 Intersection Capacity Utilization 79.9%
 ICU Level of Service D
 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: 1: Washington Street & Storrs Avenue /Elm Street

p1	p2	p4	p8	p9
9 s	39 s	14 s	26 s	16 s
p6				
48 s				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗		↕	↗	↖	↖	
Volume (vph)	41	31	23	170	135	174	31	388	259	355	643	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1859	0	0	1830	1615	0	1875	1615	1805	1846	0
Flt Permitted		0.979			0.973			0.843		0.195		
Satd. Flow (perm)	0	1859	0	0	1830	1615	0	1587	1615	370	1846	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				129			171			9
Link Speed (mph)		30			30			30				30
Link Distance (ft)		586			517			394				408
Travel Time (s)		13.3			11.8			9.0				9.3
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	0	0	343	196	0	432	267	374	784	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	14.0	14.0		26.0	26.0	27.0	44.0	44.0	26.0	27.0	71.0	
Total Split (%)	11.0%	11.0%		20.5%	20.5%	21.3%	34.6%	34.6%	20.5%	21.3%	55.9%	
Maximum Green (s)	8.0	8.0		20.0	20.0	23.0	38.0	38.0	20.0	23.0	65.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None								
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		10.0			22.4	44.7		36.3	58.7	59.3	59.3	
Actuated g/C Ratio		0.09			0.21	0.42		0.34	0.55	0.56	0.56	
v/c Ratio		0.61			0.90	0.26		0.80	0.28	0.81	0.76	
Control Delay		60.2			69.8	7.8		45.7	3.9	32.2	24.6	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		60.2			69.8	7.8		45.7	3.9	32.2	24.6	
LOS		E			E	A		D	A	C	C	
Approach Delay		60.2			47.3			29.7			27.1	
Approach LOS		E			D			C			C	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	13%
Maximum Green (s)	10.0
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		68			233	27		254	15	126	355	
Queue Length 95th (ft)		#157			#503	66		#524	66	#342	701	
Internal Link Dist (ft)		506			437			314			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		185			383	813		604	964	520	1180	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.60			0.90	0.24		0.72	0.28	0.72	0.66	

Intersection Summary

Area Type: Other
 Cycle Length: 127
 Actuated Cycle Length: 106.7
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 33.6
 Intersection LOS: C
 Intersection Capacity Utilization 97.3%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Washington Street & Storrs Avenue /Elm Street

p1	p2	p4	p8	p9
27 s	44 s	14 s	26 s	16 s
p6				
71 s				

2024 Build Wkdy AM w/Mitigation

1: Washington Street & Storrs Avenue /Elm Street

2/10/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕	↗	↖	↖	
Volume (vph)	46	45	29	214	58	197	14	541	202	140	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1814	0	0	1759	1615	0	1880	1509	1736	1850	0
Flt Permitted		0.981			0.962			0.986		0.114		
Satd. Flow (perm)	0	1814	0	0	1759	1615	0	1855	1509	208	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				157			136			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		596			517			434			408	
Travel Time (s)		13.5			11.8			9.9			9.3	
Peak Hour Factor	0.55	0.55	0.55	0.91	0.91	0.91	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	0%	5%	0%	0%	0%	1%	7%	4%	2%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	0	0	299	216	0	591	215	156	400	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	18.0	18.0		23.0	23.0	10.0	37.0	37.0	23.0	10.0	47.0	
Total Split (%)	17.3%	17.3%		22.1%	22.1%	9.6%	35.6%	35.6%	22.1%	9.6%	45.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Act Effct Green (s)		14.0			19.1	28.5		33.2	52.3	43.2	43.2	
Actuated g/C Ratio		0.15			0.21	0.31		0.36	0.57	0.47	0.47	
v/c Ratio		0.76			0.81	0.35		0.88	0.23	0.78	0.46	
Control Delay		54.1			54.4	8.4		44.3	2.9	45.5	19.2	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		54.1			54.4	8.4		44.3	2.9	45.5	19.2	
LOS		D			D	A		D	A	D	B	
Approach Delay		54.1			35.1			33.3			26.6	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)		110			158	23		295	9	46	137	
Queue Length 95th (ft)		123			#365	68		#634	36	#176	290	
Internal Link Dist (ft)		516			437			354			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		290			367	611		673	921	199	877	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	15%
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.76			0.81	0.35		0.88	0.23	0.78	0.46	

Intersection Summary

Area Type: Other

Cycle Length: 104

Actuated Cycle Length: 91.3

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 34.1

Intersection LOS: C

Intersection Capacity Utilization 79.9%

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: 1: Washington Street & Storrs Avenue /Elm Street

Phase	Duration	Phase	Duration	Phase	Duration
Ø1	10 s	Ø2	37 s	Ø4	18 s
				Ø8	23 s
Ø6	47 s			Ø9	16 s

2024 Build Wkdy PM w/Mitigation

1: Washington Street & Storrs Avenue /Elm Street

2/10/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	31	23	170	135	174	31	388	259	355	643	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		75	0		100	210		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1859	0	0	1830	1615	0	1875	1615	1805	1846	0
Flt Permitted		0.979			0.973			0.806		0.220		
Satd. Flow (perm)	0	1859	0	0	1830	1615	0	1517	1615	418	1846	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				128			175		9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		586			517			394			408	
Travel Time (s)		13.3			11.8			9.0			9.3	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.97	0.97	0.97	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	0	0	343	196	0	432	267	374	784	0
Turn Type	Split	NA		Split	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4		8	8	1	2	2	8	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	14.0	14.0		22.0	22.0	8.0	22.0	22.0	22.0	8.0	22.0	
Total Split (s)	17.5	17.5		27.5	27.5	22.0	45.0	45.0	27.5	22.0	67.0	
Total Split (%)	13.7%	13.7%		21.5%	21.5%	17.2%	35.2%	35.2%	21.5%	17.2%	52.3%	
Maximum Green (s)	11.5	11.5		21.5	21.5	18.0	39.0	39.0	21.5	18.0	61.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)		-2.0			-2.0	0.0		-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)		4.0			4.0	4.0		4.0	4.0	4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None								
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		12.2			23.6	45.0		41.2	64.8	63.2	63.2	
Actuated g/C Ratio		0.11			0.21	0.39		0.36	0.57	0.55	0.55	
v/c Ratio		0.54			0.91	0.27		0.79	0.27	0.83	0.76	
Control Delay		54.9			73.5	8.9		45.7	3.4	33.9	26.9	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		54.9			73.5	8.9		45.7	3.4	33.9	26.9	
LOS		D			E	A		D	A	C	C	
Approach Delay		54.9			50.0			29.5			29.2	
Approach LOS		D			D			C			C	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	16.0
Total Split (s)	16.0
Total Split (%)	13%
Maximum Green (s)	10.0
Yellow Time (s)	3.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

2024 Build Wkdy PM w/Mitigation

1: Washington Street & Storrs Avenue /Elm Street

2/10/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		69			241	30		272	14	141	401	
Queue Length 95th (ft)		136			#490	72		#540	56	#374	#814	
Internal Link Dist (ft)		506			437			314			328	
Turn Bay Length (ft)						75			100	210		
Base Capacity (vph)		229			378	714		547	992	451	1027	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.48			0.91	0.27		0.79	0.27	0.83	0.76	

Intersection Summary

Area Type: Other

Cycle Length: 128

Actuated Cycle Length: 114.1

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 34.9

Intersection LOS: C

Intersection Capacity Utilization 97.3%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Washington Street & Storrs Avenue /Elm Street

φ1	φ2	φ4	φ8	φ9
22 s	45 s	17.5 s	27.5 s	16 s
φ6				
67 s				

Washington Street at Hollis Avenue and Clark Street

2016 Existing Wkdy AM
 2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	22	0	7	6	3	8	5	737	3	3	408	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1823	0	0	1704	0	0	1907	0	0	1897	0
Flt Permitted		0.964			0.982							
Satd. Flow (perm)	0	1823	0	0	1704	0	0	1907	0	0	1897	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			923	
Travel Time (s)		5.8			7.5			7.1			21.0	
Peak Hour Factor	0.73	0.73	0.73	0.61	0.61	0.61	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	9%	0%	0%	0%	0%	13%	0%	3%	0%	0%	3%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	28	0	0	828	0	0	519	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 52.3% ICU Level of Service A
 Analysis Period (min) 15

2016 Existing Wkdy AM
2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

Intersection												
Int Delay, s/veh	1.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	0	7	6	3	8	5	737	3	3	408	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	61	61	61	90	90	90	82	82	82
Heavy Vehicles, %	9	0	0	0	0	13	0	3	0	0	3	7
Mvmt Flow	30	0	10	10	5	13	6	819	3	4	498	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1354	1346	506	1350	1354	821	515	0	0	822	0	0
Stage 1	513	513	-	832	832	-	-	-	-	-	-	-
Stage 2	841	833	-	518	522	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.2	7.1	6.5	6.33	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.3	3.5	4	3.417	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	122	153	570	129	151	358	1061	-	-	816	-	-
Stage 1	531	539	-	366	387	-	-	-	-	-	-	-
Stage 2	349	386	-	544	534	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	113	150	570	125	148	358	1061	-	-	816	-	-
Mov Cap-2 Maneuver	113	150	-	125	148	-	-	-	-	-	-	-
Stage 1	526	535	-	362	383	-	-	-	-	-	-	-
Stage 2	329	382	-	531	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.6	27.5	0.1	0.1
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1061	-	-	140	188	816	-	-
HCM Lane V/C Ratio	0.005	-	-	0.284	0.148	0.004	-	-
HCM Control Delay (s)	8.4	0	-	40.6	27.5	9.4	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.5	0	-	-

2016 Existing Wkdy PM
 2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	8	5	5	7	4	11	21	544	5	11	662	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1966	0	0	1801	0	0	1937	0	0	1919	0
Flt Permitted		0.978			0.984			0.998			0.999	
Satd. Flow (perm)	0	1966	0	0	1801	0	0	1937	0	0	1919	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			923	
Travel Time (s)		5.8			7.5			7.1			21.0	
Peak Hour Factor	0.75	0.75	0.75	0.50	0.50	0.50	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	3%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	44	0	0	633	0	0	774	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 52.9% ICU Level of Service A
 Analysis Period (min) 15

2016 Existing Wkdy PM
2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

Intersection												
Int Delay, s/veh	1.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	8	5	5	7	4	11	21	544	5	11	662	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	90	90	90	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	3	1	0	0	1	2
Mvmt Flow	11	7	7	14	8	22	23	604	6	12	697	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1422	1410	729	1413	1439	607	762	0	0	610	0	0
Stage 1	753	753	-	654	654	-	-	-	-	-	-	-
Stage 2	669	657	-	759	785	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	115	140	426	117	134	500	846	-	-	979	-	-
Stage 1	405	420	-	459	466	-	-	-	-	-	-	-
Stage 2	450	465	-	402	407	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	100	131	426	105	126	500	846	-	-	979	-	-
Mov Cap-2 Maneuver	100	131	-	105	126	-	-	-	-	-	-	-
Stage 1	388	411	-	440	447	-	-	-	-	-	-	-
Stage 2	405	446	-	381	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36.2	30.8	0.3	0.1
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	846	-	-	139	183	979	-	-
HCM Lane V/C Ratio	0.028	-	-	0.173	0.24	0.012	-	-
HCM Control Delay (s)	9.4	0	-	36.2	30.8	8.7	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.9	0	-	-

2024 No-Build Wkdy AM
 2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	24	0	8	8	4	9	5	801	3	3	453	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1823	0	0	1720	0	0	1907	0	0	1897	0
Flt Permitted		0.964			0.982							
Satd. Flow (perm)	0	1823	0	0	1720	0	0	1907	0	0	1897	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			923	
Travel Time (s)		5.8			7.5			7.1			21.0	
Peak Hour Factor	0.73	0.73	0.73	0.61	0.61	0.61	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	9%	0%	0%	0%	0%	13%	0%	3%	0%	0%	3%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	35	0	0	899	0	0	574	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.7%

ICU Level of Service B

Analysis Period (min) 15

2024 No-Build Wkdy AM
 2: Hollis Avenue/Clark Street & Washington Street

2/8/2017

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	24	0	8	8	4	9	5	801	3	3	453	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	61	61	61	90	90	90	82	82	82
Heavy Vehicles, %	9	0	0	0	0	13	0	3	0	0	3	7
Mvmt Flow	33	0	11	13	7	15	6	890	3	4	552	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1482	1473	562	1477	1481	892	571	0	0	893	0	0
Stage 1	569	569	-	903	903	-	-	-	-	-	-	-
Stage 2	913	904	-	574	578	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.2	7.1	6.5	6.33	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.3	3.5	4	3.417	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	100	128	530	105	127	325	1012	-	-	768	-	-
Stage 1	495	509	-	335	359	-	-	-	-	-	-	-
Stage 2	318	358	-	507	504	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	90	125	530	101	124	325	1012	-	-	768	-	-
Mov Cap-2 Maneuver	90	125	-	101	124	-	-	-	-	-	-	-
Stage 1	489	505	-	331	355	-	-	-	-	-	-	-
Stage 2	294	354	-	493	500	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	55.1	35.7	0.1	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	114	151	768	-	-
HCM Lane V/C Ratio	0.005	-	-	0.385	0.228	0.005	-	-
HCM Control Delay (s)	8.6	0	-	55.1	35.7	9.7	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.8	0	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	9	5	5	8	4	12	23	600	5	12	723	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1968	0	0	1801	0	0	1937	0	0	1919	0
Flt Permitted		0.977			0.984			0.998			0.999	
Satd. Flow (perm)	0	1968	0	0	1801	0	0	1937	0	0	1919	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			923	
Travel Time (s)		5.8			7.5			7.1			21.0	
Peak Hour Factor	0.75	0.75	0.75	0.50	0.50	0.50	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	3%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	48	0	0	699	0	0	845	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	2.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	5	5	8	4	12	23	600	5	12	723	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	90	90	90	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	3	1	0	0	1	2
Mvmt Flow	12	7	7	16	8	24	26	667	6	13	761	71

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1559	1545	796	1549	1578	669	832	0	0	672	0	0
Stage 1	822	822	-	721	721	-	-	-	-	-	-	-
Stage 2	737	723	-	828	857	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	92	116	390	94	110	461	796	-	-	928	-	-
Stage 1	371	391	-	422	435	-	-	-	-	-	-	-
Stage 2	413	434	-	368	377	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	77	107	390	83	102	461	796	-	-	928	-	-
Mov Cap-2 Maneuver	77	107	-	83	102	-	-	-	-	-	-	-
Stage 1	352	381	-	400	412	-	-	-	-	-	-	-
Stage 2	364	411	-	346	367	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.3	40.6	0.4	0.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	796	-	-	108	148	928	-	-
HCM Lane V/C Ratio	0.032	-	-	0.235	0.324	0.014	-	-
HCM Control Delay (s)	9.7	0	-	48.3	40.6	8.9	0	-
HCM Lane LOS	A	A	-	E	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.3	0	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	24	0	8	8	4	9	5	803	3	3	460	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1823	0	0	1720	0	0	1907	0	0	1897	0
Flt Permitted		0.964			0.982							
Satd. Flow (perm)	0	1823	0	0	1720	0	0	1907	0	0	1897	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			489	
Travel Time (s)		5.8			7.5			7.1			11.1	
Peak Hour Factor	0.73	0.73	0.73	0.61	0.61	0.61	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles (%)	9%	0%	0%	0%	0%	13%	0%	3%	0%	0%	3%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	35	0	0	901	0	0	583	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.8%

ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	2.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	24	0	8	8	4	9	5	803	3	3	460	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	61	61	61	90	90	90	82	82	82
Heavy Vehicles, %	9	0	0	0	0	13	0	3	0	0	3	7
Mvmt Flow	33	0	11	13	7	15	6	892	3	4	561	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1493	1484	570	1488	1492	894	579	0	0	896	0	0
Stage 1	577	577	-	905	905	-	-	-	-	-	-	-
Stage 2	916	907	-	583	587	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.2	7.1	6.5	6.33	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.3	3.5	4	3.417	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	98	126	525	103	125	325	1005	-	-	766	-	-
Stage 1	490	505	-	334	358	-	-	-	-	-	-	-
Stage 2	317	357	-	502	500	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	88	123	525	99	123	325	1005	-	-	766	-	-
Mov Cap-2 Maneuver	88	123	-	99	123	-	-	-	-	-	-	-
Stage 1	484	501	-	330	354	-	-	-	-	-	-	-
Stage 2	293	353	-	488	496	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	57.2	36.3	0.1	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1005	-	-	111	149	766	-	-
HCM Lane V/C Ratio	0.006	-	-	0.395	0.231	0.005	-	-
HCM Control Delay (s)	8.6	0	-	57.2	36.3	9.7	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.9	0	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	9	5	5	8	4	12	23	608	5	12	728	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12	13	12	12	13	12	12	13	12
Satd. Flow (prot)	0	1968	0	0	1801	0	0	1937	0	0	1919	0
Flt Permitted		0.977			0.984			0.998			0.999	
Satd. Flow (perm)	0	1968	0	0	1801	0	0	1937	0	0	1919	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		256			331			314			529	
Travel Time (s)		5.8			7.5			7.1			12.0	
Peak Hour Factor	0.75	0.75	0.75	0.50	0.50	0.50	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	3%	1%	0%	0%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	48	0	0	708	0	0	850	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.1%
ICU Level of Service	B
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	2.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	5	5	8	4	12	23	608	5	12	728	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	90	90	90	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	3	1	0	0	1	2
Mvmt Flow	12	7	7	16	8	24	26	676	6	13	766	71

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1572	1559	802	1563	1591	678	837	0	0	681	0	0
Stage 1	827	827	-	729	729	-	-	-	-	-	-	-
Stage 2	745	732	-	834	862	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	90	113	387	92	108	456	793	-	-	921	-	-
Stage 1	369	389	-	417	431	-	-	-	-	-	-	-
Stage 2	409	430	-	365	375	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	75	104	387	81	100	456	793	-	-	921	-	-
Mov Cap-2 Maneuver	75	104	-	81	100	-	-	-	-	-	-	-
Stage 1	349	378	-	395	408	-	-	-	-	-	-	-
Stage 2	360	407	-	343	365	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	49.9	41.6	0.4	0.1
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	793	-	-	105	145	921	-	-
HCM Lane V/C Ratio	0.032	-	-	0.241	0.331	0.014	-	-
HCM Control Delay (s)	9.7	0	-	49.9	41.6	9	0	-
HCM Lane LOS	A	A	-	E	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	1.3	0	-	-

Storrs Avenue at Abbott Street

2016 Existing Wkdy AM

3: Storrs Avenue/Storrs Avenue & Abbotts Street

2/8/2017

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	40	98	58	4	10	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1909	1912	0	1645	0
Flt Permitted		0.986			0.979	
Satd. Flow (perm)	0	1909	1912	0	1645	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	1046		334	
Travel Time (s)		13.3	23.8		7.6	
Peak Hour Factor	0.66	0.66	0.74	0.74	0.72	0.72
Heavy Vehicles (%)	0%	2%	2%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	209	83	0	32	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.0%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy AM
 3: Storrs Avenue/Storrs Avenue & Abbotts Street

2/8/2017

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	40	98	58	4	10	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	66	66	74	74	72	72
Heavy Vehicles, %	0	2	2	0	0	8
Mvmt Flow	61	148	78	5	14	18

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	84	0	351
Stage 1	-	-	81
Stage 2	-	-	270
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1526	-	650
Stage 1	-	-	947
Stage 2	-	-	780
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1526	-	621
Mov Cap-2 Maneuver	-	-	621
Stage 1	-	-	947
Stage 2	-	-	746

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1526	-	-	-	777
HCM Lane V/C Ratio	0.04	-	-	-	0.041
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

2016 Existing Wkdy PM

3: Storrs Avenue/Storrs Avenue & Abbotts Street

2/8/2017

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	24	45	204	18	12	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1930	1942	0	1583	0
Flt Permitted		0.983			0.989	
Satd. Flow (perm)	0	1930	1942	0	1583	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	1046		334	
Travel Time (s)		13.3	23.8		7.6	
Peak Hour Factor	0.78	0.78	0.93	0.93	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	89	238	0	68	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.9%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM
 3: Storrs Avenue/Storrs Avenue & Abbotts Street

2/8/2017

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	24	45	204	18	12	42
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	78	78	93	93	79	79
Heavy Vehicles, %	0	0	0	0	0	8
Mvmt Flow	31	58	219	19	15	53

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	239	0	348
Stage 1	-	-	229
Stage 2	-	-	119
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1340	-	653
Stage 1	-	-	814
Stage 2	-	-	911
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1340	-	637
Mov Cap-2 Maneuver	-	-	637
Stage 1	-	-	814
Stage 2	-	-	889

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1340	-	-	-	754
HCM Lane V/C Ratio	0.023	-	-	-	0.091
HCM Control Delay (s)	7.8	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Volume (vph)	43	106	63	4	11	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1909	1912	0	1645	0
Flt Permitted		0.986			0.978	
Satd. Flow (perm)	0	1909	1912	0	1645	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	1046		334	
Travel Time (s)		13.3	23.8		7.6	
Peak Hour Factor	0.66	0.66	0.74	0.74	0.72	0.72
Heavy Vehicles (%)	0%	2%	2%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	226	90	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 24.6% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	43	106	63	4	11	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	66	66	74	74	72	72
Heavy Vehicles, %	0	2	2	0	0	8
Mvmt Flow	65	161	85	5	15	19

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	91	0	88
Stage 1	-	-	88
Stage 2	-	-	291
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1517	-	954
Stage 1	-	-	940
Stage 2	-	-	763
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1517	-	954
Mov Cap-2 Maneuver	-	-	598
Stage 1	-	-	940
Stage 2	-	-	727

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1517	-	-	-	756
HCM Lane V/C Ratio	0.043	-	-	-	0.046
HCM Control Delay (s)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	49	221	19	13	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1930	1944	0	1583	0
Flt Permitted		0.983			0.989	
Satd. Flow (perm)	0	1930	1944	0	1583	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	1046		334	
Travel Time (s)		13.3	23.8		7.6	
Peak Hour Factor	0.78	0.78	0.93	0.93	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	96	258	0	73	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 30.3% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	26	49	221	19	13	45
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	78	78	93	93	79	79
Heavy Vehicles, %	0	0	0	0	0	8
Mvmt Flow	33	63	238	20	16	57

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	258	0	377
Stage 1	-	-	248
Stage 2	-	-	129
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1318	-	629
Stage 1	-	-	798
Stage 2	-	-	902
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1318	-	613
Mov Cap-2 Maneuver	-	-	613
Stage 1	-	-	798
Stage 2	-	-	879

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1318	-	-	-	732
HCM Lane V/C Ratio	0.025	-	-	-	0.1
HCM Control Delay (s)	7.8	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	43	107	65	6	11	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1909	1907	0	1645	0
Flt Permitted		0.986			0.978	
Satd. Flow (perm)	0	1909	1907	0	1645	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	450		334	
Travel Time (s)		13.3	10.2		7.6	
Peak Hour Factor	0.66	0.66	0.74	0.74	0.72	0.72
Heavy Vehicles (%)	0%	2%	2%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	227	96	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 24.7% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	43	107	65	6	11	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	66	66	74	74	72	72
Heavy Vehicles, %	0	2	2	0	0	8
Mvmt Flow	65	162	88	8	15	19

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	96	0	384
Stage 1	-	-	92
Stage 2	-	-	292
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1510	-	623
Stage 1	-	-	937
Stage 2	-	-	762
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1510	-	594
Mov Cap-2 Maneuver	-	-	594
Stage 1	-	-	937
Stage 2	-	-	726

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1510	-	-	-	751
HCM Lane V/C Ratio	0.043	-	-	-	0.046
HCM Control Delay (s)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	51	222	20	15	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	13	12	12	12
Satd. Flow (prot)	0	1930	1942	0	1592	0
Flt Permitted		0.983			0.988	
Satd. Flow (perm)	0	1930	1942	0	1592	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		585	460		334	
Travel Time (s)		13.3	10.5		7.6	
Peak Hour Factor	0.78	0.78	0.93	0.93	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	98	261	0	76	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 30.6% ICU Level of Service A
 Analysis Period (min) 15

2024 Build Wkdy PM
 3: Storrs Avenue/Storrs Avenue & Abbotts Street

2/8/2017

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	26	51	222	20	15	45
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	78	78	93	93	79	79
Heavy Vehicles, %	0	0	0	0	0	8
Mvmt Flow	33	65	239	22	19	57

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	260	0	381
Stage 1	-	-	249
Stage 2	-	-	132
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1316	-	625
Stage 1	-	-	797
Stage 2	-	-	899
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1316	-	609
Mov Cap-2 Maneuver	-	-	609
Stage 1	-	-	797
Stage 2	-	-	876

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	726
HCM Lane V/C Ratio	0.025	-	-	-	0.105
HCM Control Delay (s)	7.8	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Washington Street at Parkway

2016 Existing Wkdy AM
 4: Washington Street & Parkway

2/21/2017

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	5	6	12	688	516	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1719	0	0	1862	1858	0
Flt Permitted	0.979			0.999		
Satd. Flow (perm)	1719	0	0	1862	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	189			529	394	
Travel Time (s)	4.3			12.0	9.0	
Peak Hour Factor	0.69	0.69	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	761	573	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.8% ICU Level of Service B
Analysis Period (min)	15

2016 Existing Wkdy AM
4: Washington Street & Parkingway

2/21/2017

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	6	12	688	516	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	7	9	13	748	561	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1341	567	573	0	-	0
Stage 1	567	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	170	527	1010	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	166	527	1010	-	-	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1010	-	265	-	-
HCM Lane V/C Ratio	0.013	-	0.06	-	-
HCM Control Delay (s)	8.6	0	19.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

2016 Existing Wkdy PM
 4: Washington Street & Parkingway

2/21/2017

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	11	13	9	604	746	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1723	0	0	1861	1858	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1723	0	0	1861	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	156			539	384	
Travel Time (s)	3.5			12.3	8.7	
Peak Hour Factor	0.67	0.67	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	667	828	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.2% ICU Level of Service A
Analysis Period (min)	15

2016 Existing Wkdy PM
4: Washington Street & Parkingway

2/21/2017

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	13	9	604	746	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	16	19	10	657	811	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1496	820	828	0	-	0
Stage 1	820	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	137	378	812	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	134	378	812	-	-	-
Mov Cap-2 Maneuver	134	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	812	-	206	-	-
HCM Lane V/C Ratio	0.012	-	0.174	-	-
HCM Control Delay (s)	9.5	0	26.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

2024 No-Build Wkdy AM
 4: Washington Street & Parkingway

2/21/2017

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	5	6	12	748	571	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1719	0	0	1861	1858	0
Flt Permitted	0.979			0.999		
Satd. Flow (perm)	1719	0	0	1861	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	220			569	354	
Travel Time (s)	5.0			12.9	8.0	
Peak Hour Factor	0.69	0.69	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	826	633	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.0% ICU Level of Service B

Analysis Period (min) 15

2024 No-Build Wkdy AM
4: Washington Street & Parkway

2/21/2017

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	6	12	748	571	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	7	9	13	813	621	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1466	627	633	0	-	0
Stage 1	627	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	142	487	960	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	138	487	960	-	-	-
Mov Cap-2 Maneuver	138	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	22.1		0.1		0
HCM LOS	C				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	960	-	227	-	-
HCM Lane V/C Ratio	0.014	-	0.07	-	-
HCM Control Delay (s)	8.8	0	22.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	11	13	9	665	816	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1723	0	0	1861	1858	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1723	0	0	1861	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	170			569	354	
Travel Time (s)	3.9			12.9	8.0	
Peak Hour Factor	0.67	0.67	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	733	904	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 53.9% ICU Level of Service A
 Analysis Period (min) 15

2024 No-Build Wkdy PM
4: Washington Street & Parkingway

2/21/2017

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	13	9	665	816	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	16	19	10	723	887	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1638	896	904	0	-	0
Stage 1	896	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	112	342	761	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	110	342	761	-	-	-
Mov Cap-2 Maneuver	110	-	-	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	761	-	174	-	-
HCM Lane V/C Ratio	0.013	-	0.206	-	-
HCM Control Delay (s)	9.8	0	31	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

2024 Build Wkdy AM
 4: Washington Street & Site Drive

2/21/2017

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	9	13	14	748	571	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1713	0	0	1862	1858	0
Flt Permitted	0.980			0.999		
Satd. Flow (perm)	1713	0	0	1862	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	235			489	434	
Travel Time (s)	5.3			11.1	9.9	
Peak Hour Factor	0.69	0.69	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	0	828	634	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.6% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	9	13	14	748	571	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	13	19	15	813	621	13

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1470	627	634 0
Stage 1	627	-	- -
Stage 2	843	-	- -
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	142	487	959 -
Stage 1	536	-	- -
Stage 2	426	-	- -
Platoon blocked, %			-
Mov Cap-1 Maneuver	138	487	959 -
Mov Cap-2 Maneuver	138	-	- -
Stage 1	536	-	- -
Stage 2	414	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	22.4	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	959	-	239	-	-
HCM Lane V/C Ratio	0.016	-	0.133	-	-
HCM Control Delay (s)	8.8	0	22.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

2024 Build Wkdy PM
 4: Washington Street & Site Drive

2/21/2017

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	13	18	17	665	816	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1715	0	0	1862	1858	0
Flt Permitted	0.980			0.999		
Satd. Flow (perm)	1715	0	0	1862	1858	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	195			529	394	
Travel Time (s)	4.4			12.0	9.0	
Peak Hour Factor	0.67	0.67	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	741	909	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 58.7%

ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	18	17	665	816	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	92	92	92	92
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	19	27	18	723	887	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1658	898	909	0	-	0
Stage 1	898	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	109	341	757	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	105	341	757	-	-	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	446	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.6	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	757	-	176	-	-
HCM Lane V/C Ratio	0.024	-	0.263	-	-
HCM Control Delay (s)	9.9	0	32.6	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Storrs Avenue at the Project Site Driveway

2016 Existing Wkdy AM
5: Driveway & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (vph)	104	4	12	61	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1853	0	0	1848	1655	0
Flt Permitted				0.992	0.988	
Satd. Flow (perm)	1853	0	0	1848	1655	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	330			716	208	
Travel Time (s)	7.5			16.3	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.50	0.50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	0	79	8	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 20.5% ICU Level of Service A
 Analysis Period (min) 15

2016 Existing Wkdy AM
5: Driveway & Storrs Avenue

2/21/2017

Intersection

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	104	4	12	61	1	3
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	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	4	13	66	2	6

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	117
Stage 1	-	-	115
Stage 2	-	-	92
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1471
Stage 1	-	-	910
Stage 2	-	-	932
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1471
Mov Cap-2 Maneuver	-	-	774
Stage 1	-	-	910
Stage 2	-	-	924

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	890	-	-	1471	-
HCM Lane V/C Ratio	0.009	-	-	0.009	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2016 Existing Wkdy PM
5: Driveway & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (vph)	57	0	8	217	5	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1863	0	0	1860	1705	0
Flt Permitted				0.998	0.982	
Satd. Flow (perm)	1863	0	0	1860	1705	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	340			706	125	
Travel Time (s)	7.7			16.0	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.58	0.58
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	0	0	245	25	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.9%

ICU Level of Service A

Analysis Period (min) 15

2016 Existing Wkdy PM
5: Driveway & Storrs Avenue

2/21/2017

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	57	0	8	217	5	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	92	92	92	92	58	58
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	62	0	9	236	9	16

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	62	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.2	-
Pot Cap-1 Maneuver	-	-	1554	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	859	-	-	1554	-
HCM Lane V/C Ratio	0.028	-	-	0.006	-
HCM Control Delay (s)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2024 No-Build Wkdy AM
 5: Driveway & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (vph)	113	4	12	66	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1856	0	0	1853	1688	0
Flt Permitted				0.992	0.988	
Satd. Flow (perm)	1856	0	0	1853	1688	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	350			696	143	
Travel Time (s)	8.0			15.8	3.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	0	85	8	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 20.8% ICU Level of Service A
 Analysis Period (min) 15

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	113	4	12	66	1	3
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	50	50
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	123	4	13	72	2	6

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	223
Stage 1	-	-	125
Stage 2	-	-	98
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1472	770
Stage 1	-	-	906
Stage 2	-	-	931
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1472	763
Mov Cap-2 Maneuver	-	-	763
Stage 1	-	-	906
Stage 2	-	-	923

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	882	-	-	1472	-
HCM Lane V/C Ratio	0.009	-	-	0.009	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2024 No-Build Wkdy PM
5: Driveway & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Volume (vph)	62	0	8	235	5	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1863	0	0	1860	1705	0
Flt Permitted				0.998	0.982	
Satd. Flow (perm)	1863	0	0	1860	1705	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	311			736	155	
Travel Time (s)	7.1			16.7	3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.58	0.58
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	264	25	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.8% ICU Level of Service A

Analysis Period (min) 15

2024 No-Build Wkdy PM
5: Driveway & Storrs Avenue

2/21/2017

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	62	0	8	235	5	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	92	92	92	92	58	58
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	67	0	9	255	9	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	67	0	340	67
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1547	-	660	1002
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	778	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1547	-	655	1002
Mov Cap-2 Maneuver	-	-	-	-	655	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	843	-	-	1547	-
HCM Lane V/C Ratio	0.029	-	-	0.006	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2024 Build Wkdy AM
 5: Site Drive & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	↗
Volume (vph)	113	5	17	66	5	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1855	0	0	1851	1672	0
Flt Permitted				0.990	0.991	
Satd. Flow (perm)	1855	0	0	1851	1672	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	450			596	260	
Travel Time (s)	10.2			13.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.50	0.50
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	90	58	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	113	5	17	66	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	50	50
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	123	5	18	72	10	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	128
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1470
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1470
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1470	-
HCM Lane V/C Ratio	0.065	-	-	0.013	-
HCM Control Delay (s)	9.3	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

2024 Build Wkdy PM
5: Site Drive & Storrs Avenue

2/21/2017

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↘	
Volume (vph)	62	4	33	235	7	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1850	0	0	1856	1684	0
Flt Permitted				0.994	0.989	
Satd. Flow (perm)	1850	0	0	1856	1684	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	460			586	216	
Travel Time (s)	10.5			13.3	4.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.58	0.58
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	0	291	52	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.9% ICU Level of Service A
Analysis Period (min)	15

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	62	4	33	235	7	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	58	58
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	67	4	36	255	12	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	72
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1541
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1541
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	862	-	-	1541	-
HCM Lane V/C Ratio	0.06	-	-	0.023	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-