

Transportation Impact Assessment

Thorndike Place
Arlington, Massachusetts

Prepared for:

Arlington Land Realty, LLC
Cambridge, Massachusetts

November 2020

Prepared by:

 **Vanasse &
Associates inc**
Transportation Engineers & Planners

35 New England Business Center Drive
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TRANSPORTATION IMPACT ASSESSMENT

THORNDIKE PLACE
ARLINGTON, MASSACHUSETTS

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84 Sherman Street
Cambridge, MA 02138

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EXECUTIVE SUMMARY

DESCRIPTION OF PROJECT

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) to identify traffic impacts associated with a proposed Thorndike Place residential development to be located on the Mugar Parcel in Arlington, Massachusetts (the “Project”). The purpose of this TIA is to review existing and future traffic conditions in the vicinity of the site, determine the traffic impacts from the proposed Project at key intersections expected to experience increased traffic levels from the Project, and review the need for improvements to mitigate the Project’s traffic impact.

PROPOSED PROJECT

The site is bounded by Dorothy Road to the north, Burch Street to the east, and Route 2 to the west and south. The Project consists of constructing a building containing 176 residential units. Parking will be provided on-site for 239 vehicles. A parking garage below the units will provide 204 spaces while 8 spaces are provided in the courtyard. The remaining 27 spaces will be provided via a surface parking lot on-site. Approximately 144 bicycle parking spaces will be provided in the garage. Access to the site is proposed via one full-access driveway onto Dorothy Road at the intersection with Littlejohn Street.

EXISTING CONDITIONS

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

- Route 2 at Route 16
- Lake Street at Route 2 eastbound On/Off-ramps
- Lake Street at Route 2 westbound On/Off -ramps
- Lake Street at Wilson Avenue
- Lake Street at Littlejohn Street
- Lake Street at Homestead Road

- Lake Street at Burch Street and Alfred Road
- Lake Street at Margaret Street and Lakehill Avenue
- Lake Street at Brooks Avenue
- Massachusetts Avenue at Lake Street

2020 BASELINE TRAFFIC VOLUMES CONDITIONS

In order to develop 2020 Baseline traffic-volume conditions, the historic data obtained required adjustment for passage of time, while the new data collected required adjustment due to the effects of the COVID-19 pandemic. The counts conducted in 2020 were done in the month of September. Therefore, for practicality it was determined the other existing data should be corrected to September 2020 conditions. The 2014 counts were conducted in March 2014 and therefore were seasonally adjusted to September 2014 volumes using traffic count data from the Massachusetts Department of Transportation (MassDOT) permanent count station ID 4065¹ located on I-95 south of the ramp to Route 2 eastbound. Using the same permanent count station, the September 2014 volumes were grown to September 2016 volumes. The September 2016 volumes were subsequently grown to September 2019 using the same count station data. The 2019 data collected by VAI were conducted in May 2019 and were adjusted to September 2019 using the permanent count station information. The traffic volumes were then representative of September 2019 volumes. These volumes were then grown by 0.5 percent to raise them from 2019 to 2020 conditions. The next step was to develop a COVID-19 correction factor to apply to the counts conducted in September 2020. These factors were calculated comparing the August 2019 counts to the August 2020 counts from the permanent count station. Even with the COVID-19 correction factor, the counted September 2020 volumes were significantly lower than the derived September 2020 volumes. To correct for the difference, the networks were balanced upwards along Lake Street, and traffic volumes from specific developments that were occupied after 2014 but before 2020 were added to develop the 2020 Baseline traffic volumes.

FUTURE CONDITIONS

Traffic volumes within the study area were projected to 2027, which reflects a seven-year planning horizon consistent with State traffic study guidelines. These conditions incorporate traffic growth due to general background traffic increases as well as development projects currently being proposed/permitted or under construction and expected to generate traffic in the future. This condition is referred to as the No-Build condition.

PROJECT-GENERATED TRAFFIC

The Project is expected to generate 430 vehicle trips on an average weekday (two-way, 24-hour volume), with 27 vehicle trips (7 entering and 20 exiting) expected during the weekday morning peak hour. During the weekday evening peak hour, the Project is expected to generate 33 vehicle trips (20 entering and 13 exiting).

The projected vehicle trips were distributed onto area roadways based on existing travel patterns and U.S. Census Journey-to-Work data for Arlington. Traffic-volume increases due to the Project

¹MassDOT Transportation Data Management System; Location ID 4065; Located on I-95 south of ramp to Route 2 eastbound.

were shown to range from 0.1 to 0.8 percent during peak hours and are expected to be less during other hours of the day.

TRAFFIC OPERATIONS ANALYSIS

In future conditions, operations are generally preserved with minor but manageable increases to delay on the various approaches. The addition of Project-related traffic to the study area roadways and intersections is not anticipated to significantly impact traffic operations within the study area over No-Build conditions.

RECOMMENDATIONS AND CONCLUSION

Bluebikes Station

- Subject to receiving the necessary approvals from the Town, the Project will commit to providing a large (23 dock) Bluebikes station in the vicinity of the existing Bluebikes station at Thorndike Field. This will serve to accommodate demand for Bluebikes in this area adjacent to the Minuteman Bikeway.

Site Recommendations

- The existing vegetation on the site frontage should be removed to provide adequate sight distance at the proposed site driveway location.
- The site driveway onto Dorothy Road should be placed under STOP-sign control with painted STOP-bars on the driveway at the STOP-sign location.
- At the vicinity of the site driveway, any new landscaping or building features should not exceed 24 inches in height or should be placed out of the lines of sight for motorists exiting the site and for those approaching the driveway on Dorothy Road.

Transportation Demand Management Measures

- Designate an on-site employee as the site's Transportation Coordinator to oversee marketing and promoting of transportation options at the site.
- Provide new residents transportation information packets with information on getting around Arlington sustainably.
- Provide Transitscreen installation in the building lobby which depicts accurate real-time information for area transit, Bluebikes stations, and Uber/Lyft services in the area.
- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the Project site. This information will be posted in a centralized location.
- The property management team will investigate joining either the 128 Business Council or the Alewife Transportation Management Association (TMA). Either TMA could provide a ridematching program among residents of the Project and employers of the area.

The Project is expected to produce a minor increase in traffic volume in the vicinity of the site and minor but manageable increases in delay to various movements within the study area. No changes to critical movement levels of service occur as a result of the addition of Project volumes under 2027 Build conditions. The level of service does go from D to E during the weekday morning peak hour under 2027 Build conditions at the intersection of Lake Street with Brooks Avenue but the average delay only increases 1 second from 35 to 36 seconds.

The proposed addition of a large Bluebikes station adjacent to the existing station at Thorndike Field will help to alleviate demand for Bluebikes in this area, adjacent to the Minuteman Bikeway. This in combination with the proposal to include 144 sheltered bike parking spaces will encourage the use of bicycling as a sustainable commuting measure over the use of personal vehicles. Based on the above, VAI has concluded that the Project can be safely accommodated with minimal impact on the area road network.

INTRODUCTION

VAI has prepared this TIA in order to identify the traffic impacts associated with the proposed Thorndike Place residential development to be located on the Mugar Parcel in Arlington, Massachusetts. This report identifies and analyzes existing and future traffic conditions both with and without the Project and reviews access requirements, potential off-site improvements, and safety considerations.

STUDY METHODOLOGY

This study was prepared in coordination with the Town of Arlington and in accordance with the State guidelines for TIAs; and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometry, observations of traffic flow, and collection of peak-period traffic counts.

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

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

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in September 2020. The field investigation consisted of an inventory of existing roadway geometrics; and operating characteristics; as well as posted speed limits, and land use information within the study area. The study area for the Project contains the major roadways which provide access to the Project, as well as the intersections which are expected to accommodate the majority of Project-related traffic. The study area is listed below and graphically depicted in Figure 1.

- Route 2 at Route 16
- Lake Street at Route 2 eastbound On/Off-ramps
- Lake Street at Route 2 westbound On/Off-ramps
- Lake Street at Wilson Avenue
- Lake Street at Littlejohn Street
- Lake Street at Homestead Road
- Lake Street at Burch Street and Alfred Road
- Lake Street at Margaret Street and Lakehill Avenue
- Lake Street at Minuteman Commuter Bikeway
- Lake Street at Brooks Avenue
- Massachusetts Avenue at Lake Street

The following describes the study area roadways and intersections which are also shown in Figure 2 which summarizes existing lane use, travel lane widths, and sidewalk and crosswalk locations at the study area intersections.

GEOMETRY

Roadways

Lake Street

Lake Street is classified as an urban minor arterial roadway under the jurisdiction of the Town of Arlington. Lake Street runs in a general east-west alignment from Pleasant Street to Massachusetts Avenue. Direction of travel of Lake Street is separated by a double-yellow centerline. The land use along Lake Street generally consist of residential properties.

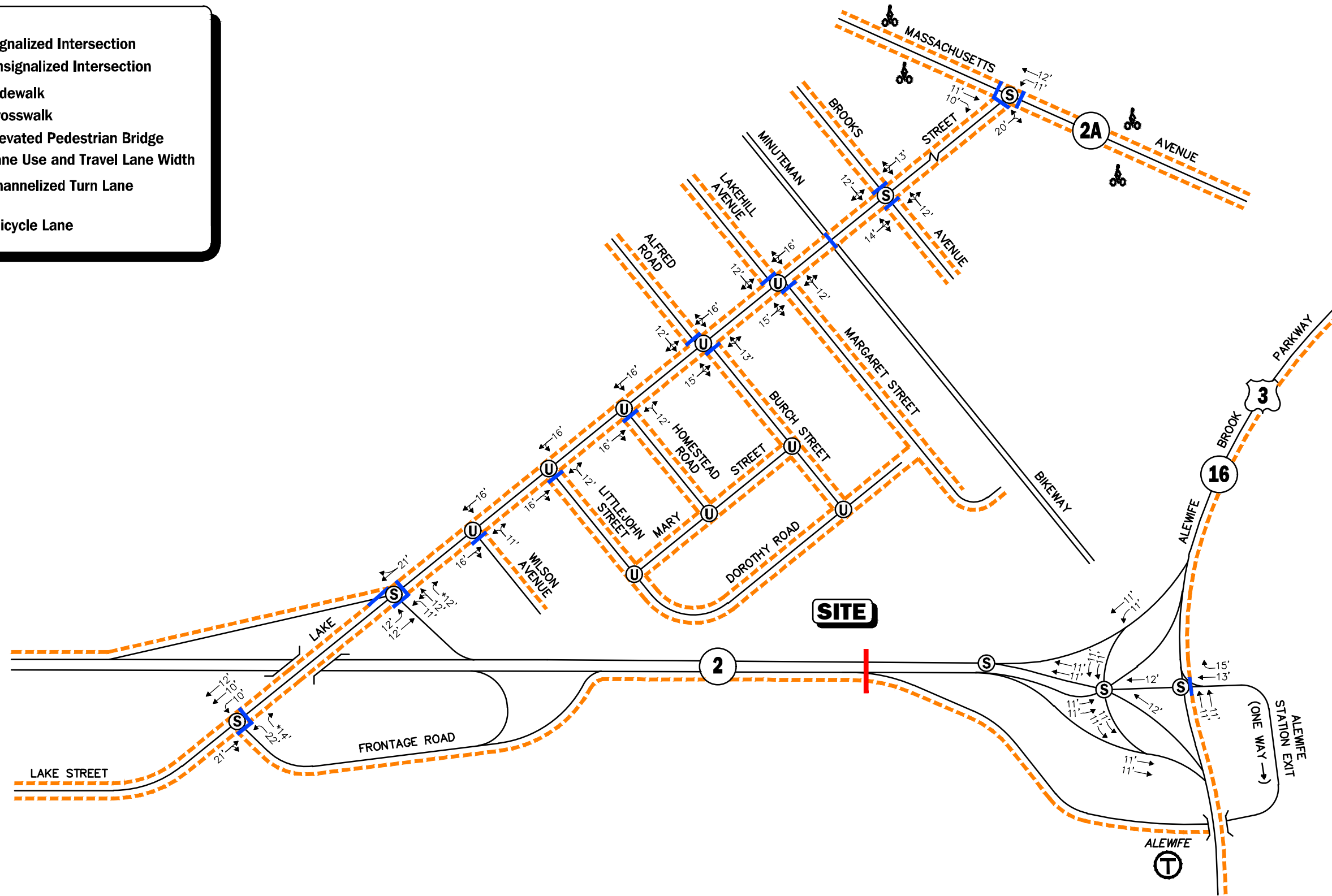


Figure 1
Site Location Map



Legend:

- Ⓢ Signalized Intersection
- Ⓤ Unsignalized Intersection
- Sidewalk
- Crosswalk
- Elevated Pedestrian Bridge
- xx' Lane Use and Travel Lane Width
- *xx' Channelized Turn Lane
- 🚲 Bicycle Lane



Not To Scale

Vanasse & Associates inc

Figure 2
Existing Intersection Lane Use, Travel Lane Width, and Pedestrian Facilities

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Intersections

Route 2 at Route 16

Route 2 meets Route 16 to form four separate signalized intersections. Direction of travel on Route 2 is median divided while direction of travel of Route 16 is separated by a double-yellow centerline. Illumination is provided via streetlights mounted on metal poles. Land use in the vicinity of this intersection consists of the Alewife train station, wooded areas, and some office/research and development (R&D) space. This intersection is under the jurisdiction of the MassDOT.

Lake Street at Route 2 Eastbound On/Off-Ramps

Lake Street is intersected by the Route 2 eastbound on/off-ramps from the south to form this three-way intersection under traffic signal control. Direction of travel on the ramps is separated by a raised median while a faded double-yellow centerline separates direction of travel on Lake Street. Illumination is provided via streetlights mounted on metal poles. Land use in the vicinity of this intersection consists of residential properties and wooded areas. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Route 2 Westbound On/Off-Ramps

Lake Street is intersected by the Route 2 westbound off-ramp from the south and the Route 2 westbound on-ramp from the north to form this four-way intersection under traffic signal control. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles and metal poles. Land use in the vicinity of this intersection consists of residential properties and wooded areas. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Wilson Avenue

Lake Street is intersected by Wilson Avenue from the south to form this three-way intersection under STOP-sign control. Wilson Avenue is signed to discourage entering movements from Lake Street from 7:00 to 9:00 AM and 4:00 to 7:00 PM Monday through Friday. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Littlejohn Street

Lake Street is intersected by Littlejohn Street from the south to form this three-way intersection under STOP-sign control. Littlejohn Street is signed to discourage entering movements from Lake Street from 7:00 to 9:00 AM and 4:00 to 7:00 PM Monday through Friday. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Homestead Road

Lake Street is intersected by Homestead Road from the south to form this three-way intersection under STOP-sign control. Homestead Road is signed to discourage entering movements from Lake Street from 7:00 to 9:00 AM and 4:00 to 7:00 PM Monday through Friday. Direction of travel on

Lake Street is separated by a faded double-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Burch Street and Alfred Road

Lake Street is intersected by the Burch Street from the south and Alfred Street from the north to form this skewed four-way intersection under STOP-sign control. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Burch Street and Alfred Street allow two-way travel. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Margaret Street and Lakehill Avenue

Lake Street is intersected by Lakehill Avenue from the north and Margaret Street from the south to form this skewed four-way intersection under STOP-sign control. Lakehill Avenue and Margaret Street have signs indicating NO ACCESS TO MASS AVE. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Lakehill Avenue and Margaret Street both allow two-way travel. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Minuteman Commuter Bikeway

Lake Street is intersected by the Minuteman Commuter Bikeway from the north and south to form this four-way intersection with the Bikeway currently under STOP-sign control. At the time of data collection in September 2020, this intersection was under construction to be signalized. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Direction of travel on the Minuteman Commuter Bikeway is separated by a faded single-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Lake Street at Brooks Avenue

Lake Street is intersected by Brooks Avenue from the north and south to form this four-way intersection under traffic signal control. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Brooks Avenue allows two-way travel. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of residential properties. This intersection is under the jurisdiction of the Town of Arlington.

Massachusetts Avenue at Lake Street

Massachusetts Avenue is intersected by the Lake Street from the west to form this three-way intersection under traffic signal control. Direction of travel on Massachusetts Avenue is separated by a double-yellow centerline. Direction of travel on Lake Street is separated by a faded double-yellow centerline. Illumination is provided via streetlights mounted on wooden utility poles. Land use in the vicinity of this intersection consists of commercial properties. This intersection is under the jurisdiction of the Town of Arlington.

EXISTING TRAFFIC VOLUMES

Due to the COVID-19 pandemic, traffic volumes, pedestrian crossing volumes, and bicycle volumes were obtained from multiple sources. Data was obtained from the original April 2014 *Traffic Impact and Access Study*² conducted for the Project, the January 2017 *Transportation Impact Study*³ conducted by VAI for a nearby project in Cambridge, data collected by VAI in May 2019 for another nearby project in Cambridge, data collected by the East Arlington Livable Street Coalition and the Eco Counter on the Minuteman Commuter Bikeway, and September 2020 counts conducted by VAI for the Project.

Traffic-Volume Adjustments

In order to develop 2020 Baseline traffic-volume conditions, the historic data obtained required adjustment for passage of time, while the new data collected required adjustment due to the effects of the COVID-19 pandemic. The counts conducted in 2020 were done in the month of September. Therefore, for practicality it was determined the other data should be corrected to September 2020 conditions. The 2014 counts were conducted in March 2014 and therefore were seasonally adjusted to September 2014 volumes using traffic count data from MassDOT permanent count station ID 4065⁴ located on I-95 south of the ramp to Route 2 eastbound. Using the same permanent count station, the September 2014 volumes were grown to September 2016 volumes. The September 2016 volumes were subsequently grown to September 2019 using the same count station data. The 2019 data collected by VAI were collected in May 2019 and were adjusted to September 2019 using the permanent count station information. The traffic volumes were then representative of September 2019 volumes. These volumes were then grown by 0.5 percent to raise them from 2019 to 2020 conditions. The next step was to develop a COVID-19 correction factor to apply to the counts conducted in September 2020. These factors were calculated comparing the August 2019 counts to the August 2020 counts from the permanent count station. Even with the COVID-19 correction factor, the counted September 2020 volumes were significantly lower than the derived September 2020 volumes. To correct for the difference, the networks were balanced upwards along Lake Street.

In addition to the general growth in the area from 2014 to 2020, there were a number of specific developments mentioned for inclusion in the 2020 Baseline volumes. These developments were occupied after the 2014 counts but before the 2020 counts.

Vox on Two – This 227-unit residential development is located at 223, 225, and 231 Concord Turnpike (Route 2) in Cambridge, Massachusetts. Access to the site is through a right-turn only entrance driveway and one right-turn only exit driveway onto Route 2 eastbound. Volumes for this development were obtained from the *Transportation Impact Study*⁵ conducted in 2010 and added to the 2020 baseline conditions.

²*Traffic Impact and Access Study – Mugar Parcel 40B Residential Development*; MDM Transportation Consultants, Inc.; April 2014.

³*Transportation Impact Study – Proposed Residence at Alewife Station – Cambridge, Massachusetts*; Vanasse & Associates, Inc.; January 2017.

⁴MassDOT Transportation Data Management System; Location ID 4065; Located on I-95 south of ramp to Route 2 eastbound.

⁵*Transportation Impact Study – Proposed Residence at Alewife Station – Cambridge, Massachusetts*; Vanasse & Associates, Inc.; December 2010.

Residence at Alewife Station – This 320-unit residential development is located at 195-211 Concord Turnpike (Route 2) in Cambridge, Massachusetts. Access to the site is through a right-turn only entrance driveway and one right-turn only exit driveway onto Route 2 eastbound. Volumes for this development were obtained from the Transportation Impact Study⁶ conducted in 2017 and added to the 2020 baseline conditions.

Belmont Highlands – This 300-unit residential development is located off Acorn Park Drive in Belmont, Massachusetts. Access to the site is through three driveways that intersect with Acorn Park Drive. Volumes for this development were obtained from the Traffic Impact and Access Study⁷ conducted in 2007 and added to the 2020 baseline conditions.

Discovery Park Hotel – This 150-room hotel is located at Cambridge Discovery Park Drive in Cambridge, Massachusetts. Access to the site is through a driveway that intersects with Acorn Park Drive. Volumes for this development were obtained from the Memorandum⁸ conducted in 2013 and added to the 2020 baseline conditions.

This practice was discussed and confirmed with BETA Group, the Town’s traffic peer review consultant for the Project. The 2020 Baseline traffic volumes on Lake Street are summarized in Table 1.

Table 1
2020 BASELINE ROADWAY TRAFFIC-VOLUME SUMMARY

Location	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	Volume (vph) ^a	Predominant Flow	Volume (vph)	Predominant Flow
Lake Street, west of Burch Street	1,662	66% WB	1,351	59% EB

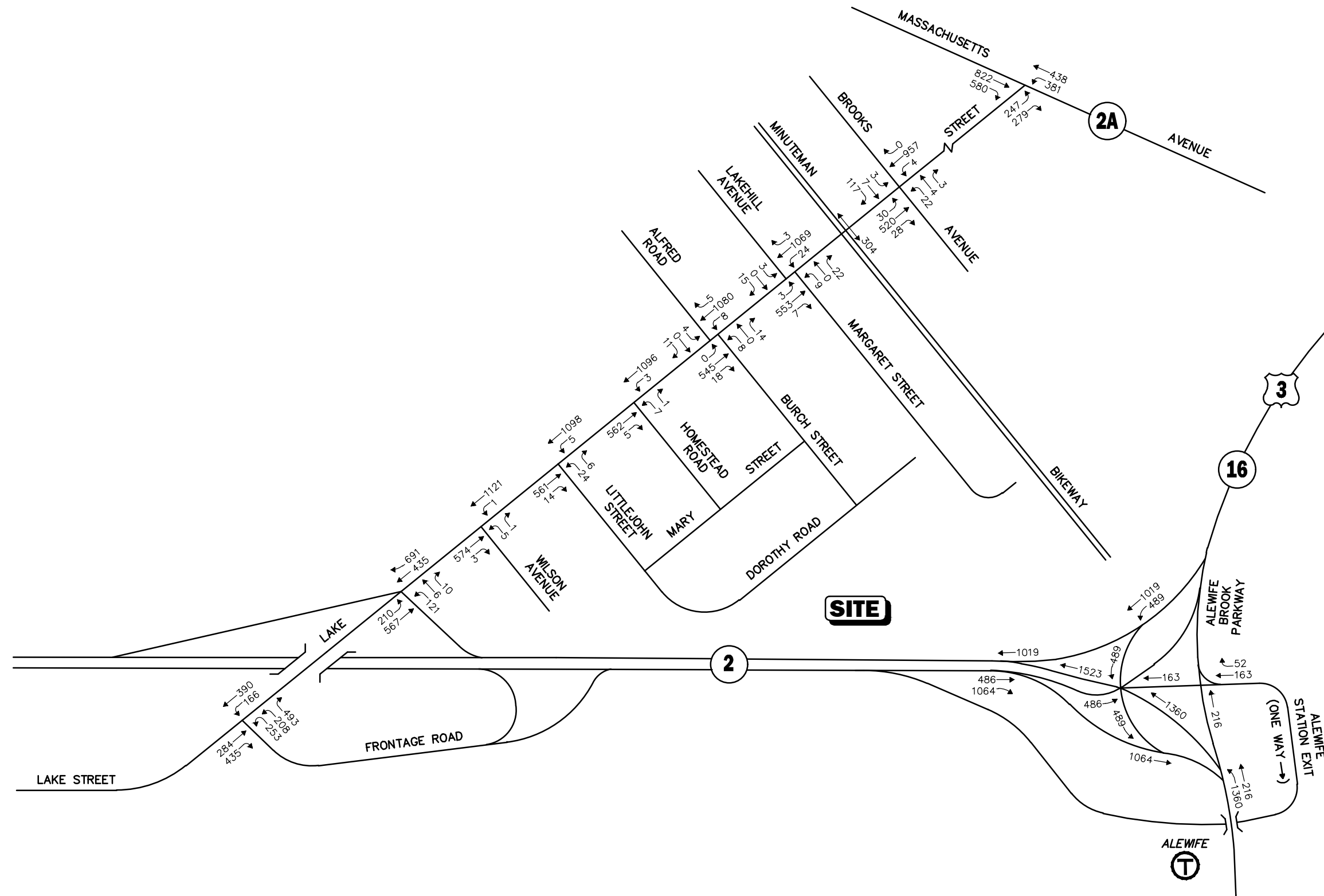
^aTwo-way peak-hour volume expressed in vehicles per hour.
EB = eastbound; WB = westbound.

As can be seen in Table 1, Lake Street was found to accommodate approximately 1,662 vehicles per hour (vph) during the weekday morning peak hour and 1,351 vph during the weekday evening peak hour under 2020 Baseline conditions. During the weekday morning peak hour, 66 percent of the traffic is traveling westbound and during the weekday evening peak hour 59 percent of the traffic is traveling eastbound. The existing traffic volumes for all the study area intersections are graphically depicted in Figure 3 and Figure 4 for the weekday morning and weekday evening peak hours, respectively.

⁶*Transportation Impact Study – Proposed Residences at Alewife Station – Cambridge, Massachusetts*; Vanasse & Associates, Inc.; January 2017.

⁷*Traffic Impact and Access Study – Proposed Residential Development – Belmont, Massachusetts*; Vanasse & Associates, Inc.; March 2007.

⁸*Memorandum – Building 600 – Proposed 150-Room Hotel – Cambridge, Massachusetts*; Vanasse & Associates, Inc.; September 27, 2013.

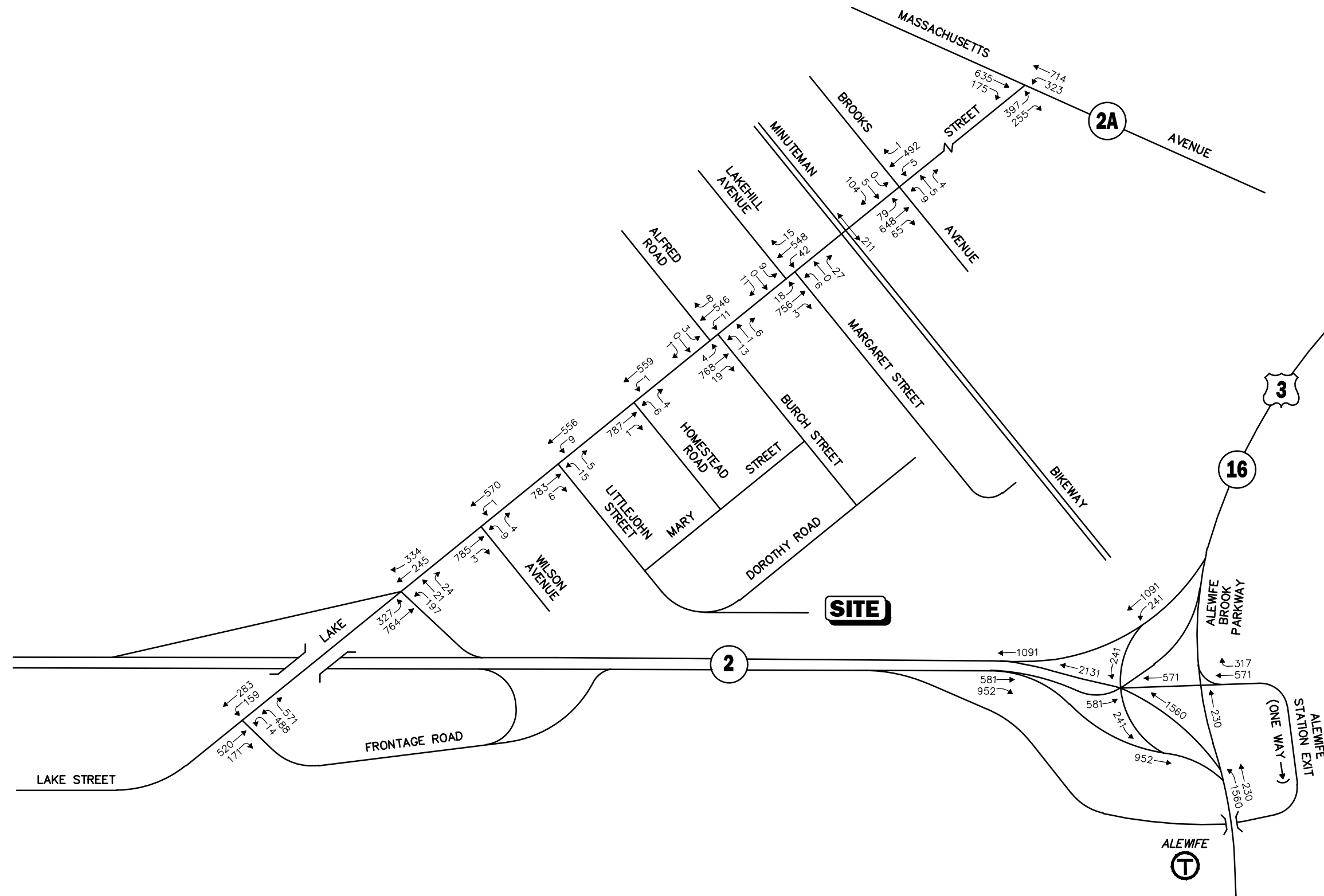


SITE

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



Figure 3
2020 Baseline
Weekday Morning
Peak Hour Traffic Volumes



SITE

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



Figure 4
2020 Baseline
Weekday Evening
Peak Hour Traffic Volumes

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in September 2020. 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 bicycle facilities. Generally, sidewalks are provided along both sides of the study area roadway. Exceptions include Alewife Brook Parkway (Route 16) that only provides a sidewalk on the east side of the road throughout the study area, Route 2 which only provides a sidewalk on the south side of the roadway, and Wilson Avenue which only provides a sidewalk on the east side of the roadway. Crosswalks are provided across the Alewife Station Access Road, across the Route 2 ramps at Lake Street, across Lake Street at the Route 2 ramps, across all side streets off of Lake Street, and across all the approaches to the intersection of Massachusetts Avenue with Lake Street. The Minuteman Commuter Bikeway crosses Lake Street between Margaret Street and Brooks Avenue. The bikeway runs from Bedford to Cambridge and provides direct access to Alewife Station.

THORNDIKE PARK

The Arlington Recreation Department was contacted to determine the uses of Thorndike Field located at the terminus of Margaret Street. There are multiple fields used for soccer and lacrosse and a dog park. The fields are open from April to November. From April through June, the fields are open from 3:00 PM to dusk on weekdays and from 9:00 AM to dusk on Saturdays and Sundays. Based on estimates from the Recreation Department, typical usage during peak hours for the field is approximately five teams at a time with 15 members per team, or 75 people, plus approximately 10 people at the dog park, or 85 people. From July through August, the fields are used for summer camps that are operated from 8:30 AM to 3:30 PM. The camps typically have between 50 and 100 children per session. From 6:00 PM to dusk the fields are used by adult soccer league teams which typically have about 24 players per game. From September to November the fields are again used for soccer but not lacrosse. The fields are open from 3:00 PM to dusk during weekdays and 9:00 AM to dusk on Saturday and Sunday. Activity is typically 75 percent of the spring activity so the peak hour generates approximately 64 people. To the extent that activity was underway at the field during the times that traffic counts were conducted, the trips generated by the field during the peak commuting periods are included in the counts.

All school uses accessing the fields are directed to use Varnum Street. The parking lot provides 65 parking spaces. Typically, when the parking lot capacity is exceeded people park at Hardy Elementary School and walk to the field. Currently, no sport tournaments are held at the fields.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Massachusetts Bay Transportation Authority (MBTA) for fixed-route bus and rapid transit services. Table 2 summarizes the characteristics of these services. Schedules and fare information for the fixed-route bus and rapid transit services are provided in the Appendix.

**Table 2
PUBLIC TRANSPORTATION SERVICES**

Service	Stop Closest to Site	Distance from Site	Weekday		Saturday		Sunday	
			Hours of Operation	Headway (minutes)	Hours of Operation	Headway (minutes)	Hours of Operation	Headway (minutes)
Bus: Route 67: Turkey Hill – Alewife Station	West Service Road at Lake Street	0.3 mi. northwest	5:53 AM – 8:32 PM	25-50			No Weekend Service	
Bus: Route 77: Arlington Heights to Harvard Station	Mass Ave at Lake Street	0.7 mi. northeast	4:48 AM – 1:25 AM	9-20	4:48 AM – 1:26 AM	10-17	6:00 AM – 1:25 AM	10-20
Bus: Route 79: Arlington Heights – Alewife Station	Mass Ave at Lake Street	0.7 mi. northeast	6:35 AM – 7:24 PM	5-50			No Weekend Service	
Bus: Route 350: North Burlington – Alewife Station	Mass Ave at Lake Street	0.7 mi. northeast	5:53 AM – 11:08 PM	15-56	6:25 AM – 11:10 PM	40-60	7:05 AM – 7:35 PM	55-90
Rapid Transit: Red Line	Alewife Station	0.8 mi. southwest	5:16 AM – 12:30 AM	5-9	5:16 AM – 12:30 AM	12-16	6:00 AM – 12:30 AM	12-16

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Safety Management/Traffic Operations Unit for the most recent five-year period available (2013 through 2017) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, weather condition, lighting condition, pavement condition, and severity.

As can be seen in Table 3, no fatalities were reported over the five-year period reviewed. The crash rates for the intersections were observed to be lower than the MassDOT District 4 crash rates for unsignalized and signalized intersections. The intersection of Route 2 with Route 16 experienced the most crashes in the five-year review period with 88, or an average of 17.6 crashes per year. The majority of the crashes were rear-end crashes (48 out of 88) which is consistent with the types of crashes expected at highly congested intersections. Few crashes occur along Lake Street from the Route 2 ramps through Margaret Street.

A number of crashes occurred at the intersection of Lake Street with the Minuteman Commuter Bikeway. A total of 18 crashes occurred at this intersection over the five-year review period with 8 rear-end crashes, 4 pedestrian crashes, and 3 bicyclist crashes. These types of crashes are expected at a highly congested crossing with a mixed-use path under unsignalized control. This intersection is under construction and will provide a signalized crossing which should increase safety.

The intersection of Lake Street at Brooks Avenue is also highly congested. Approximately 7 of the 11 crashes over the five-year review period were rear-end collisions. The intersection of Massachusetts Avenue with Lake Street experienced 22 crashes over the five-year review period averaging 4.4 crashes per year. Half of the crashes were sideswipe collisions (11 out of 22). Massachusetts Avenue has parking on both sides which often leads to more sideswipe collisions.

Table 3
MOTOR VEHICLE CRASH DATA SUMMARY

Scenario	Route 2 at Route 16	Lake Street at Route 2 EB On/Off-Ramps	Lake Street at Route 2 WB On/Off-Ramps	Lake Street at Wilson Avenue	Lake Street at Littlejohn Street	Lake Street at Homestead Road
<i>Year:</i>						
2013	21	0	2	0	0	0
2014	22	3	0	1	1	0
2015	23	0	1	1	2	0
2016	16	0	1	0	1	0
<u>2017</u>	<u>6</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>
Total	88	5	5	2	4	1
Average ^a	17.6	1.0	1.0	0.4	0.8	0.2
Crash Rate ^b	0.71	0.10	0.12	0.07	0.13	0.03
Significant ^c	No	No	No	No	No	No
<i>Type:</i>						
Angle	21	1	0	1	2	0
Rear-End	48	0	1	1	0	0
Head-On	0	0	0	0	1	0
Sideswipe	13	1	1	0	0	1
Fixed Object	6	3	1	0	0	0
Pedestrian	0	0	0	0	0	0
Bicyclist	0	0	1	0	1	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	88	5	5	2	4	1
<i>Weather Conditions:</i>						
Clear	64	3	5	1	4	0
Cloudy/Rain	16	0	0	1	0	1
Snow/Ice	2	1	0	0	0	0
Fog	0	0	0	0	0	0
<u>Unknown/Other</u>	<u>6</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	88	5	5	2	4	1
<i>Lighting Conditions:</i>						
Daylight	58	3	4	2	3	1
Dawn/Dusk	3	0	0	0	0	0
Dark (lit)	24	2	1	0	1	0
Dark (unlit)	3	0	0	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	88	5	5	2	4	1
<i>Pavement Conditions:</i>						
Dry	75	3	4	2	4	0
Wet	11	0	1	0	0	1
Snow/Ice	2	2	0	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	88	5	5	2	4	1
<i>Severity:</i>						
Property Damage Only	67	5	1	2	2	1
Personal Injury	20	0	2	0	2	0
Fatality	0	0	0	0	0	0
<u>Unknown/Other</u>	<u>1</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	88	5	5	2	4	1

*See notes at end of table.

Table 3 Continued
MOTOR VEHICLE CRASH DATA SUMMARY

Scenario	Lake Street at Burch Street & Alfred Road	Lake Street at Margaret Street & Lakehill Avenue	Lake Street at Minuteman Bikeway	Lake Street at Brooks Avenue	Mass Ave at Lake Street
<i>Year:</i>					
2013	2	2	1	3	3
2014	0	1	5	4	3
2015	0	0	3	1	9
2016	0	2	6	1	2
2017	<u>1</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>5</u>
Total	3	7	18	11	22
Average ^a	0.6	1.4	3.6	2.2	4.4
Crash Rate ^b	0.10	0.22	0.50	0.35	0.40
Significant ^c	No	No	No	No	No
<i>Type:</i>					
Angle	1	2	2	1	4
Rear-End	1	2	8	7	6
Head-On	0	1	0	1	0
Sideswipe	1	2	1	1	11
Fixed Object	0	0	0	1	1
Pedestrian	0	0	4	0	0
Bicyclist	0	0	3	0	0
Unknown/Other	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	3	7	18	11	22
<i>Weather Conditions:</i>					
Clear	1	3	15	8	12
Cloudy/Rain	2	4	2	1	10
Snow/Ice	0	0	0	2	0
Fog	0	0	0	0	0
Unknown/Other	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	3	7	18	11	22
<i>Lighting Conditions:</i>					
Daylight	2	6	16	9	18
Dawn/Dusk	1	0	0	0	1
Dark (lit)	0	1	1	2	3
Dark (unlit)	0	0	0	0	0
Unknown/Other	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	3	7	18	11	22
<i>Pavement Conditions:</i>					
Dry	2	5	14	8	20
Wet	1	2	2	1	2
Snow/Ice	0	0	1	2	0
Unknown/Other	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	3	7	18	11	22
<i>Severity:</i>					
Property Damage Only	2	3	11	8	16
Personal Injury	0	1	4	0	1
Fatality	0	0	0	0	0
Unknown/Other	<u>1</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>5</u>
Total	3	7	18	11	22

^aAverage number of crashes over five-year period.

^bCrash rate per million entering vehicles (mev).

^cSignificant if crash rate > 0.73 for signalized intersections or > 0.57 for unsignalized intersections (MassDOT District 4 rates).

Source: MassDOT Crash Data, 2013 through 2017.

FUTURE CONDITIONS

To determine the impact of site-generated traffic volumes on the roadway network under future conditions, baseline traffic volumes in the study area were projected to the year 2027. Traffic volumes on the roadway network at that time, in the absence of the Project (that is, the No-Build condition), would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific development by others expected to be completed by 2027. Inclusion of these factors resulted in the development of 2027 No-Build traffic volumes. Anticipated site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop the 2027 Build traffic-volume conditions.

FUTURE TRAFFIC GROWTH

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

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

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

General Background Growth

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data and other area traffic studies, it was determined that the traffic volumes are fluctuating in the area. The average annual percent change was determined to be approximately -0.15 percent. To be conservative, a 0.5 percent per year compounded annual background traffic growth rate was used to account for future traffic growth including presently unforeseen development within the study area.

Specific Development by Others

The Town of Arlington was contacted in order to determine if there are any planned or approved specific development projects within the area that would have an impact on future traffic volumes at the study intersections. Based on these discussions the Hardy School Expansion and Buildings 400/500 at Discovery Park were identified for inclusion in this assessment.

Hardy School Expansion – The Hardy Elementary School located at 52 Lake Street began construction a three-story, six-classroom expansion in 2018. The construction is complete but enrollment in the school has remained generally the same since 2017 with approximately 450 students according to the Massachusetts Department of Elementary and Secondary Education (MDESE).⁹ The MDESE indicates that the school has approximately 15 students per teacher. To calculate the expected number of trips due to the expansion, the average number of students per teacher (15) was multiplied by the number of new classrooms (6). Therefore, the expansion is assumed to increase student enrolment by 90 students. It is assumed that 60 percent of the new trips will be driving trips and 40 percent will be walking trips. Trip-generation statistics published by the Institute of Transportation Engineers (ITE)¹⁰ for Land Use Code (LUC) 520, *Elementary School* were used to determine the number of trips associated with an increase of 90 students and these volumes were added to the future condition networks.

Discovery Park Buildings 400/500 – Buildings 400 and 500 at Discovery Park in Cambridge, Massachusetts are permitted for 278,000 square feet (sf) of office/R&D space. Access to the buildings is provided via the existing driveway off Acorn Park Drive. Since no traffic study was developed specifically for this component of Discovery Park, traffic volumes were obtained from initial traffic studies developed for that project and added to the future condition networks.

Planned Roadway Improvements

The Town of Arlington was contacted in order to determine if there are any planned roadway improvement projects expected to be completed within the study area in the seven-year planning horizon. Based on these discussions, no roadway improvement projects are planned within the study area beyond general maintenance except for the signalization of the intersection of Lake Streets with the Minuteman Commuter Bikeway.

Signalization of Lake Street at Minuteman Commuter Bikeway – The intersection of Lake Street with the Minuteman Commuter Bikeway was under construction to be signalized at the time data was collected. Therefore, under future conditions this intersection was assumed to be signalized and coordinated with the signal at the intersection of Lake Street with Brooks Avenue as reflected on design plans provided by the Town of Arlington.

No-Build Traffic Volumes

The 2026 No-Build peak-hour traffic-volume networks were developed by applying the 0.5 percent per year compounded annual background traffic growth rate to the 2020 peak-hour traffic volumes and incorporating traffic projections from the identified background developments. The resulting 2027 No-Build weekday morning and weekday evening peak-hour traffic-volume networks are shown on Figure 5 and Figure 6, respectively.

⁹Massachusetts Department of Elementary and Secondary Education - Massachusetts School and District Profiles; 2020; profiles.doe.mass.edu/general/general.aspx?topNavID=1.

¹⁰*Trip Generation*, Tenth Edition; Institute of Transportation Engineers; Washington, DC; 2017.

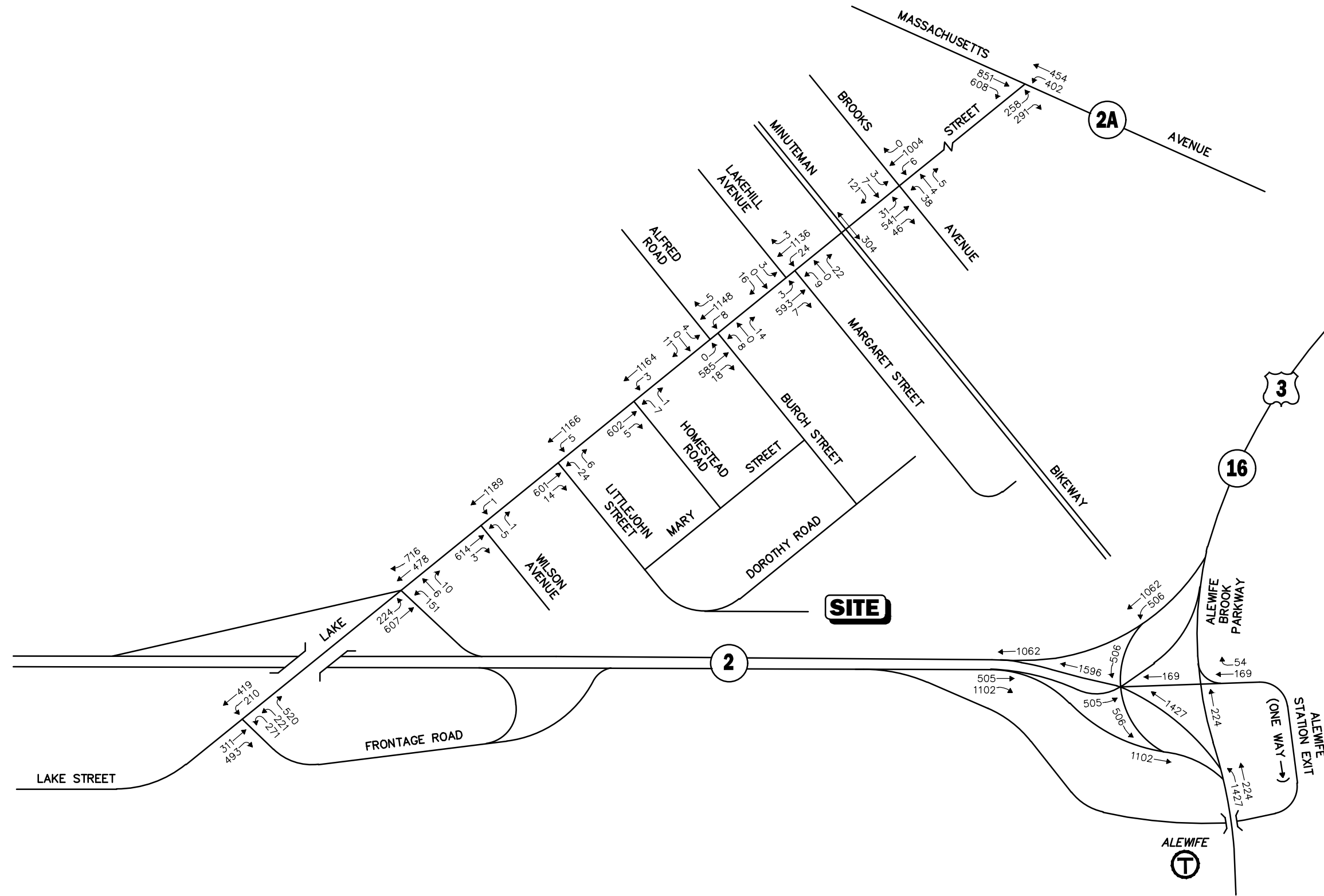
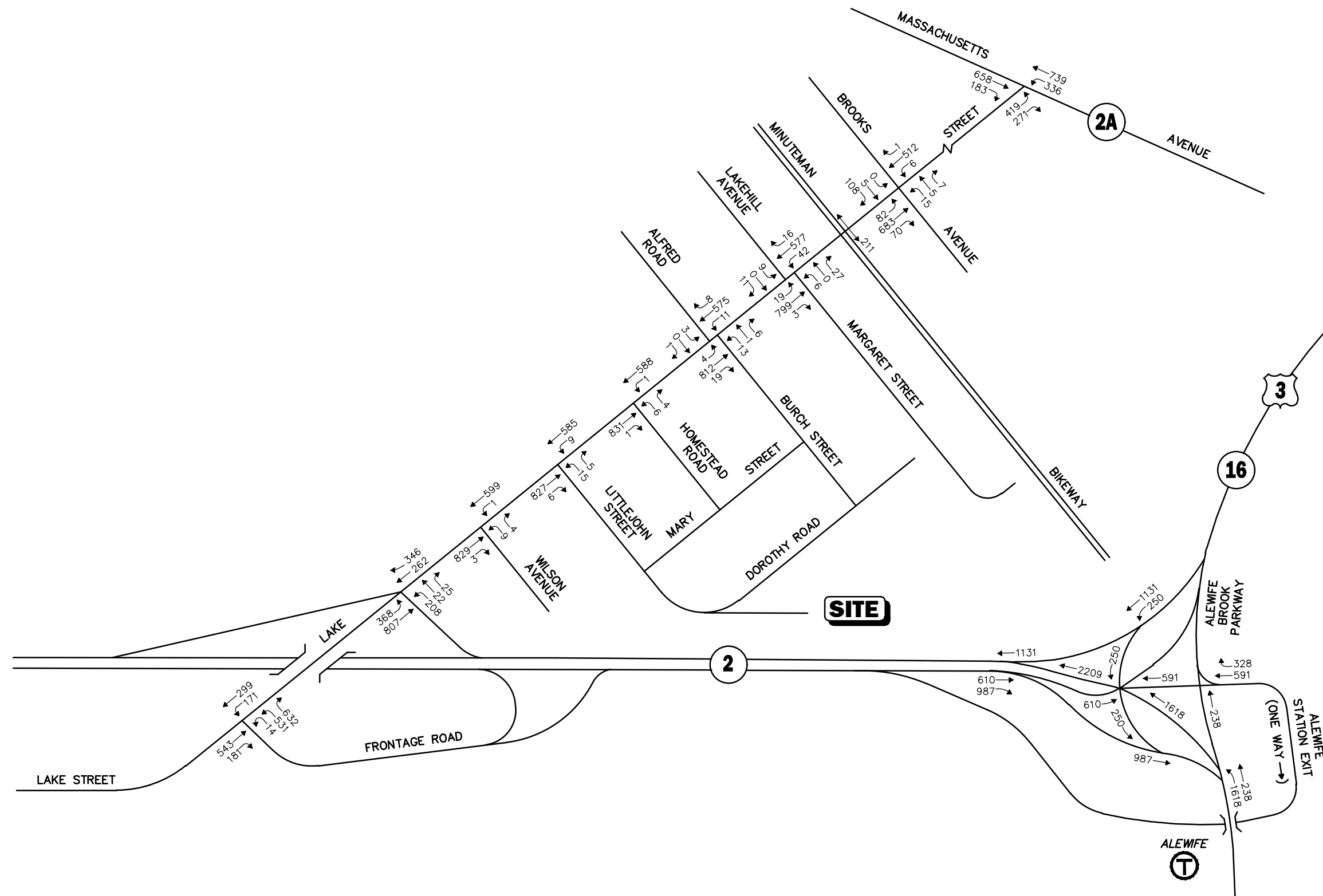


Figure 5
 2027 No-Build
 Weekday Morning
 Peak Hour Traffic Volumes

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





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



Figure 6
2027 No-Build
Weekday Evening
Peak Hour Traffic Volumes

PROJECT-GENERATED TRAFFIC

The Project entails constructing 176 residential units to be located on the Mugar Parcel in Arlington, Massachusetts. In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published by the ITE for LUC 221, *Multifamily Housing (Mid-Rise)* were used in conjunction with mode split data from a traffic monitoring report prepared for the¹¹ report for the Vox on Two residential development located at 223 Concord Turnpike.

Vox on Two Mode Split Data

Mode split data from the Vox on Two residential development was used in trip-generation calculations. Vox on Two is located at 223 Concord Turnpike in Cambridge, Massachusetts. The Project is anticipated to have similar commuting characteristics as the Vox on Two site as they are in close proximity with one another, have similar access to transit and sustainable transportation facilities, and are likely to appeal to the same demographic tenant base. The Vox on Two 2019 mode split characteristics are provided in Table 4.

Table 4
VOX ON TWO: 2019 MODE SPLIT^a

<u>Mode</u>	<u>Percent</u>
Single Occupancy Vehicle	39
High Occupancy Vehicle	6
Transit	35
Bike	5
Walk	14
Other	<u>1</u>
TOTAL	100

^aFrom Vox on Two 2019 PTDM Report filed with the City of Cambridge Community Development Department.

Site-Generated Trips by Mode

The Vox on Two mode split data was then applied to the ITE trip-generation projections for LUC 221 to determine the site-generated trips by mode. A summary of the expected site-generated trips by mode is provided in Table 5.

¹¹2019 *Parking and Transportation Demand Management (PTDM) Report*; Vox on Two; Cambridge, MA; 2019.

Table 5
PROJECT TRIP GENERATION SUMMARY

Time Period/ Directional Distribution	ITE Project Vehicle Trips ^a	Project Person Trips ^b	SOV Trips 39%	HOV Trips 6%	Transit Trips 35%	Bike Trips 5%	Walk Trips 14%	Other Trips 1%	Total Project Vehicle Trips ^c
Weekday Daily	958	1,082	422	64	378	54	152	12	430
<i>Weekday Morning Peak Hour:</i>									
Entering	16	18	7	1	6	1	3	0	7
Exiting	<u>44</u>	<u>50</u>	<u>20</u>	<u>3</u>	<u>18</u>	<u>2</u>	<u>7</u>	<u>0</u>	<u>20</u>
Total	60	68	27	4	24	3	10	0	27
<i>Weekday Evening Peak Hour:</i>									
Entering	46	52	20	3	18	3	7	1	20
Exiting	<u>30</u>	<u>34</u>	<u>13</u>	<u>2</u>	<u>12</u>	<u>2</u>	<u>5</u>	<u>0</u>	<u>13</u>
Total	76	86	33	5	30	5	12	1	33

^aBased on ITE LUC 221, Multifamily Housing (Mid-Rise); 176 units.

^bITE vehicle trips multiplied by VOR from American Community Survey 2018 5-year estimates for Census Tract 3561; VOR = 1.13

^cSOV+HOV persons trips divided by VOR from American Community Survey 2018 5-year estimates for Census Tract 3561; VOR = 1.13

As can be seen in Table 5, the Project is expected to generate 430 vehicle trips on an average weekday (two-way, 24-hour volume), with 27 vehicle trips (7 entering and 20 exiting) expected during the weekday morning peak hour. During the weekday evening peak hour, the Project is expected to generate 33 vehicle trips (20 entering and 13 exiting). Transit, bike, and walking trips are expected to generate 37 weekday morning person trips and 47 weekday evening person trips.

TRIP DISTRIBUTION AND ASSIGNMENT

The Project trip distribution was based on a review of existing travel patterns at the study area intersections and Journey-to-Work data for Arlington obtained from the United States Census Bureau.¹² The trip distribution for the Project is summarized in Table 6 and graphically depicted on Figure 7. The weekday morning and weekday evening peak-hour traffic volumes expected to be generated by the Project were assigned on the study area roadway network as shown on Figure 8 and Figure 9, respectively.

¹²2011-2015 5-Year American Community Survey; U.S. Census Bureau; 2019.

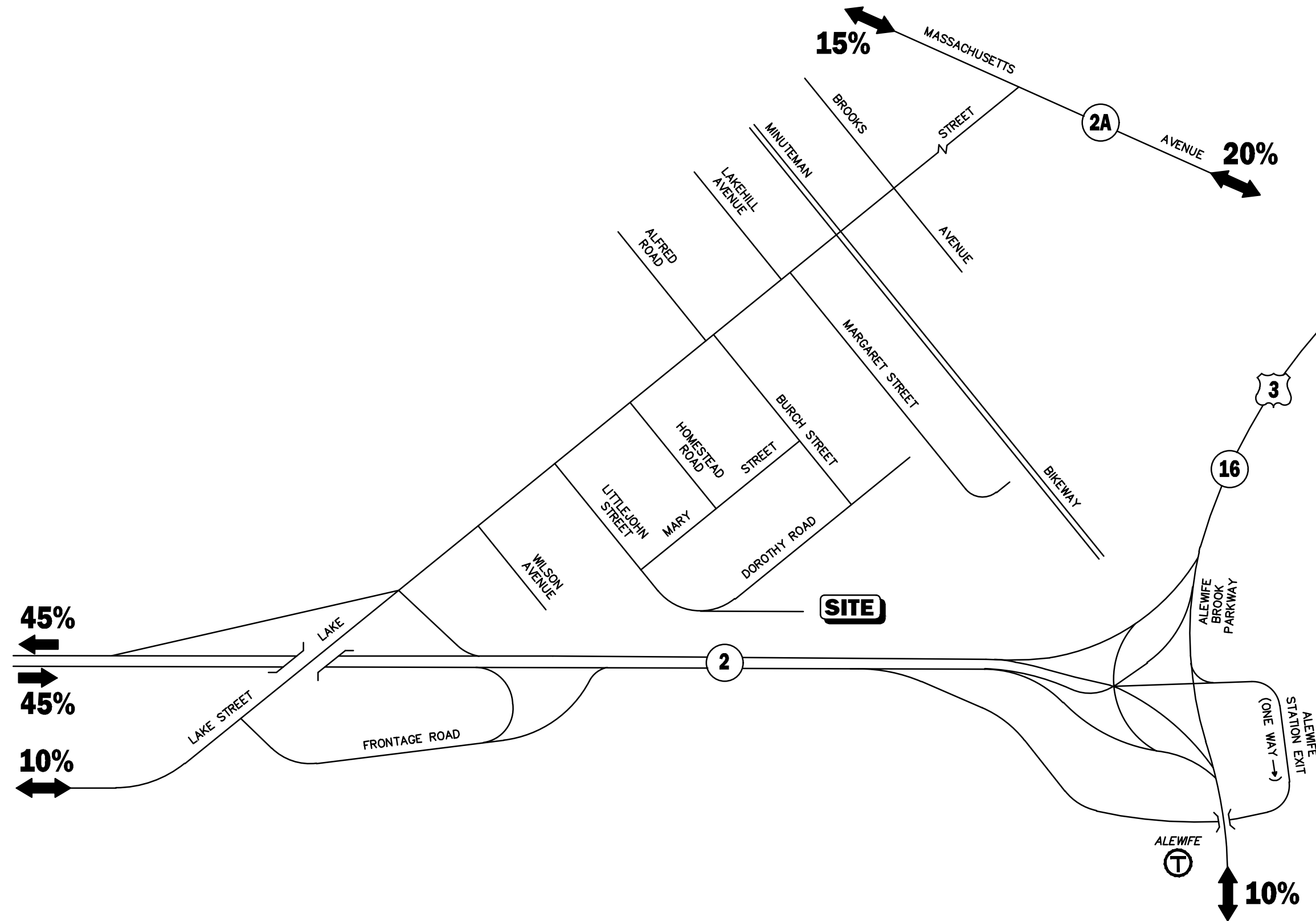
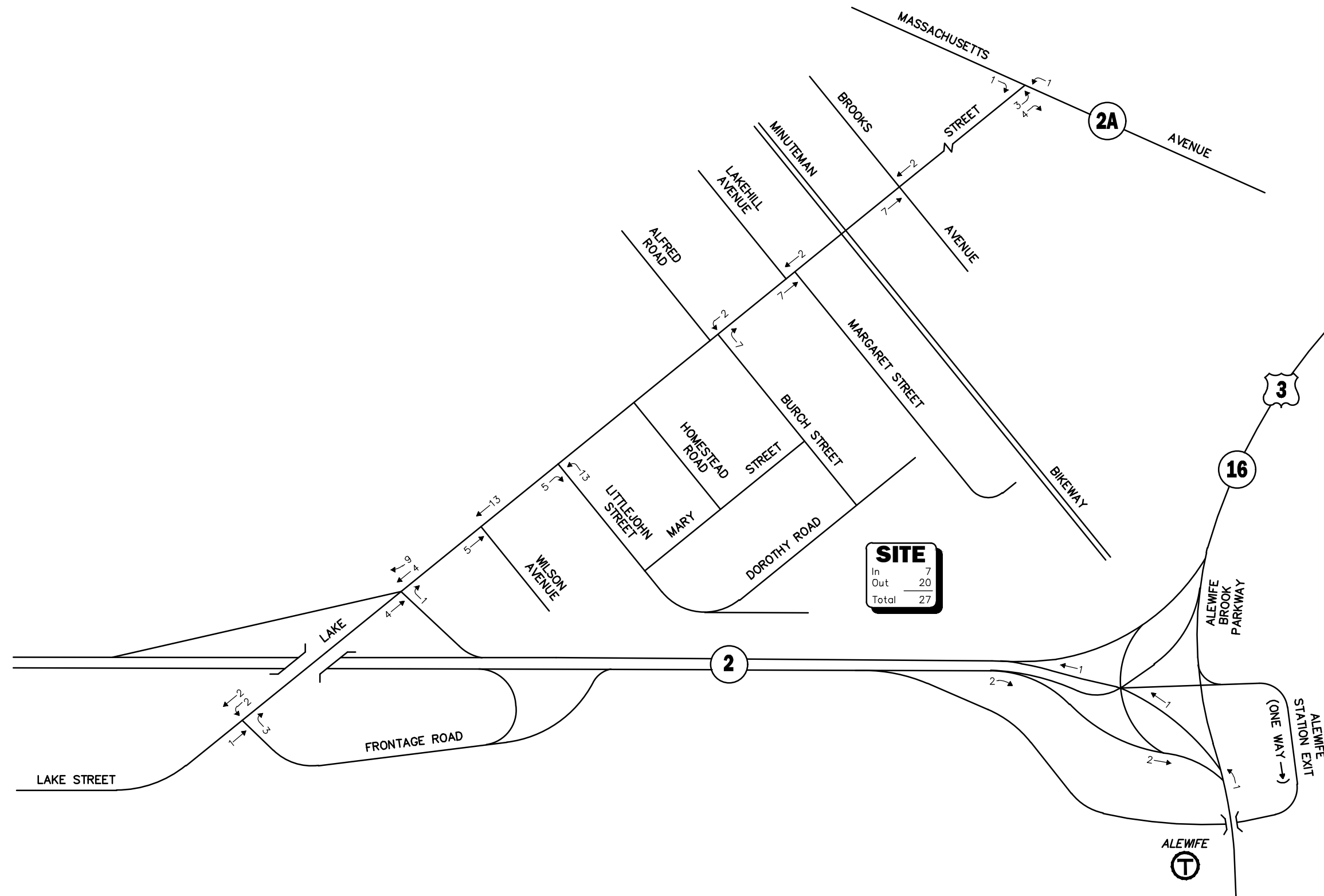


Figure 7
Trip Distribution Map

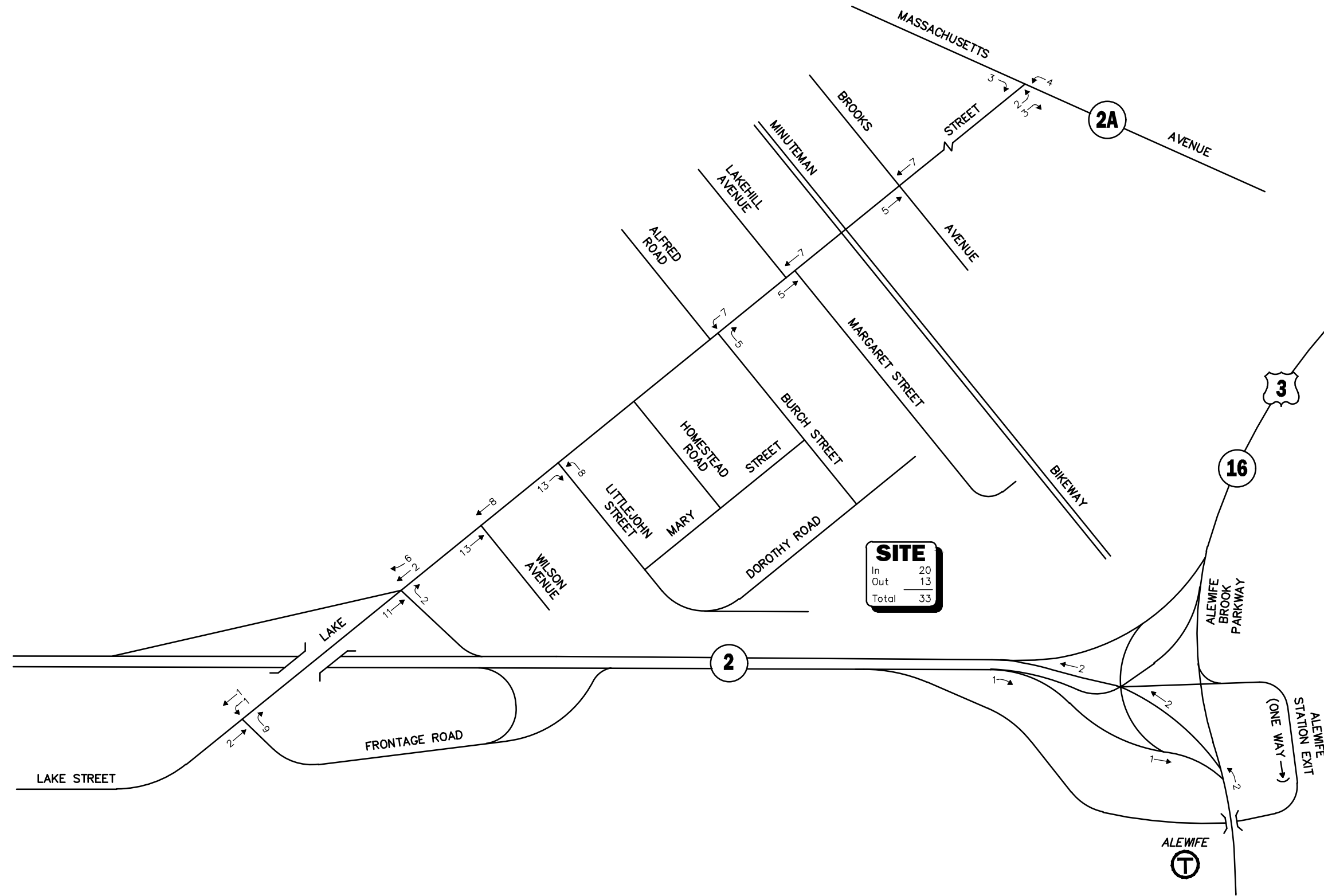


Not To Scale

VA Vanasse & Associates inc

Figure 8

Site Generated
Weekday Morning
Peak Hour Traffic Volumes



Not To Scale



Figure 9
 Site Generated
 Weekday Evening
 Peak Hour Traffic Volumes

Table 6
TRIP-DISTRIBUTION SUMMARY

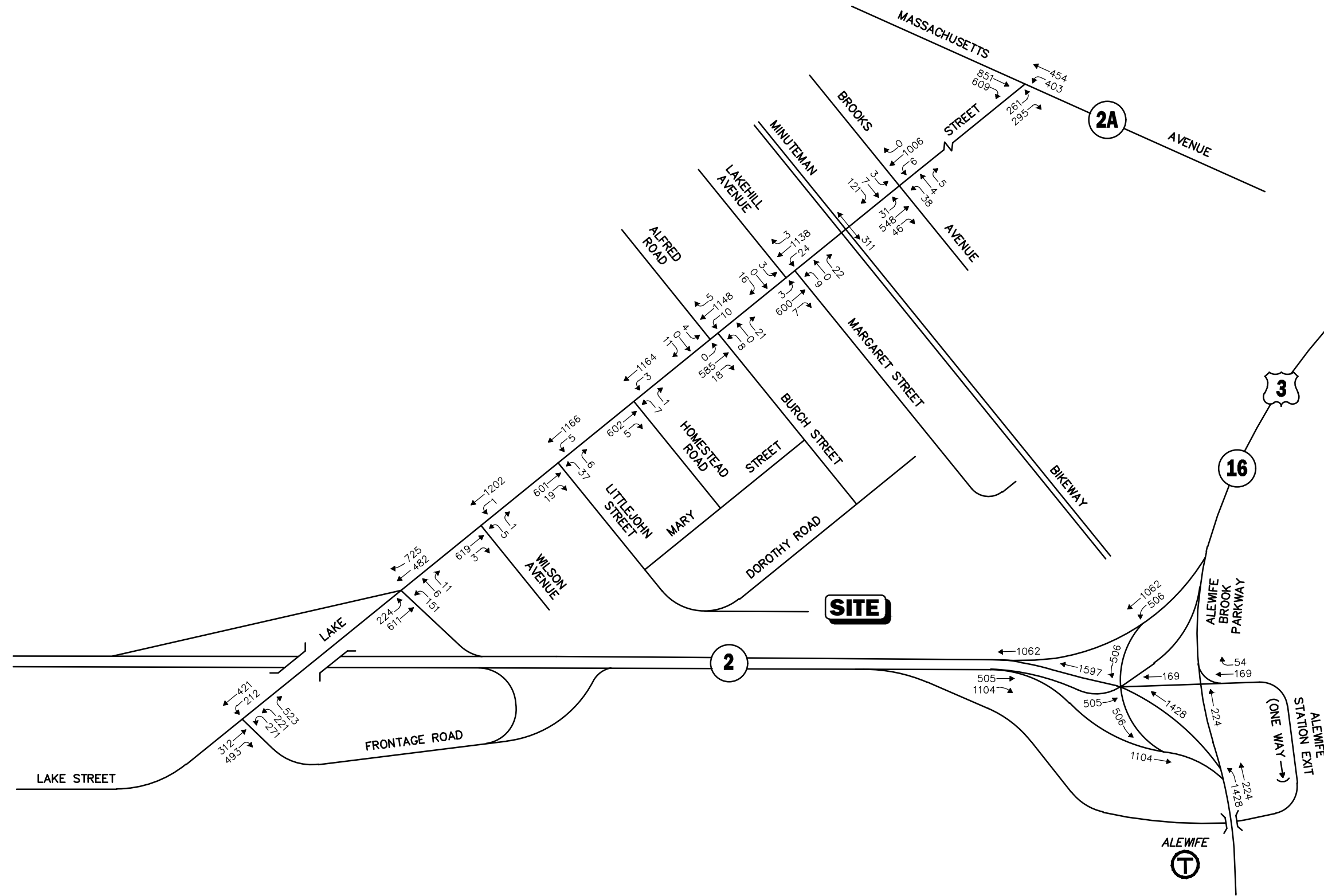
Roadway	Direction (To/From)	Percentage of Site Traffic
Route 2	West	45
Lake Street	West	10
Massachusetts Avenue	North	15
Massachusetts Avenue	South	20
Alewife Brook Parkway	South	<u>10</u>
TOTAL		100

FUTURE TRAFFIC VOLUMES – BUILD CONDITION

The 2027 Build condition networks consist of the 2027 No-Build traffic volumes with the anticipated site-generated traffic added to them. The 2027 Build weekday morning and weekday evening peak-hour traffic-volume networks are graphically depicted on Figure 10 and Figure 11, respectively.

A summary of peak-hour projected traffic-volume increases external to the study area that is the subject of this assessment is shown in Table 7. These volumes are based on the expected increases from the Project.

As shown in Table 7, Project-related traffic-volume increases external to the study area relative to 2027 No-Build conditions are anticipated to range from 0.1 to 0.8 percent during the peak periods.

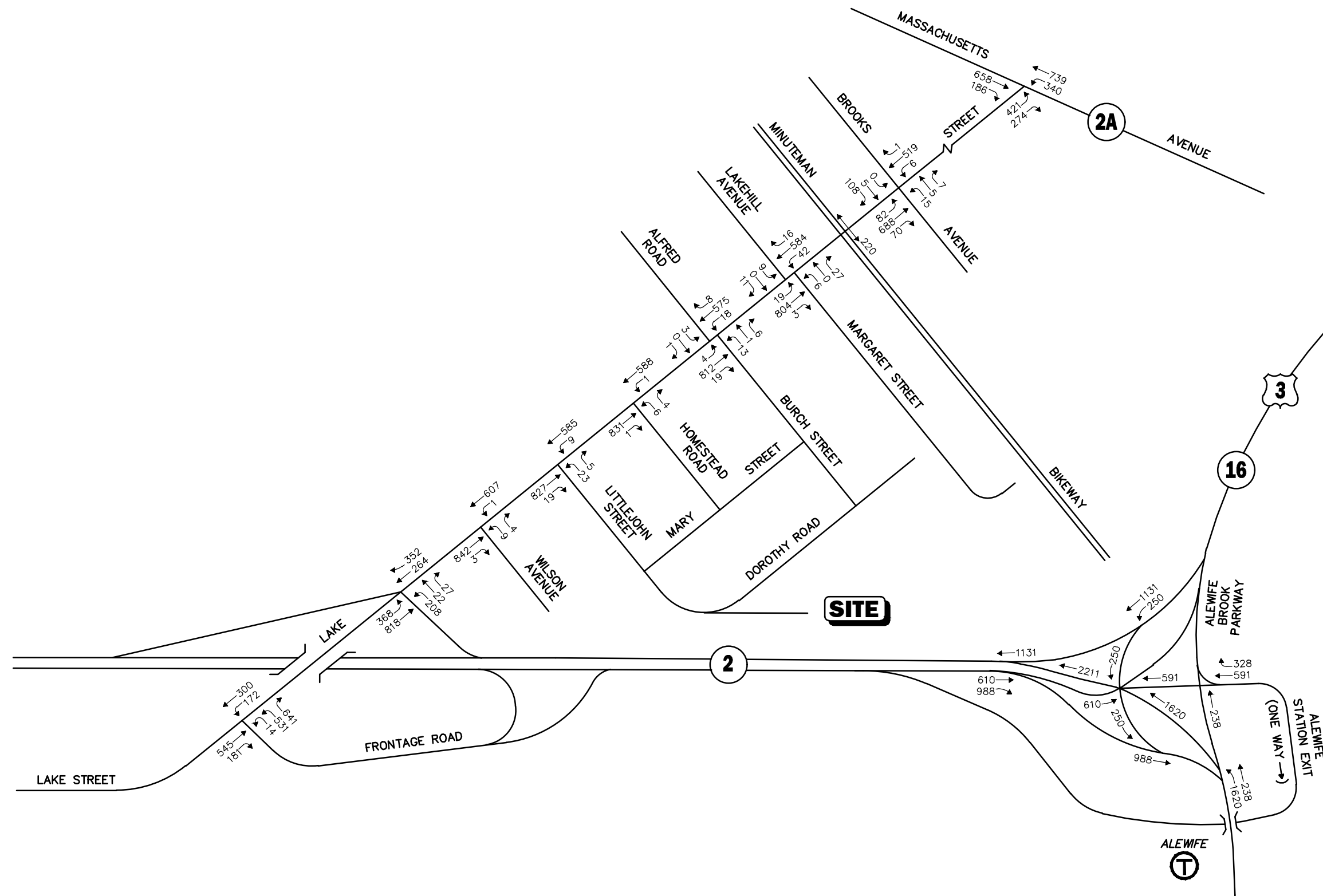


SITE

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



Figure 10
2027 Build
Weekday Morning
Peak Hour Traffic Volumes



SITE



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



Figure 11
2027 Build
Weekday Evening
Peak Hour Traffic Volumes

Table 7
PEAK-HOUR TRAFFIC-VOLUME INCREASES^a

Location/Peak Hour	2027 No-Build	2027 Build	Traffic-Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Route 2, west of Lake Street:</i>				
Weekday Morning	1,958	1,970	12	0.6
Weekday Evening	1,913	1,928	15	0.8
<i>Lake Street, west of Route 2 EB On/Off-Ramps:</i>				
Weekday Morning	1,444	1,447	3	0.2
Weekday Evening	1,554	1,557	3	0.2
<i>Massachusetts Avenue, north of Lake Street:</i>				
Weekday Morning	2,171	2,175	4	0.2
Weekday Evening	1,999	2,004	5	0.3
<i>Massachusetts Avenue, south of Lake Street:</i>				
Weekday Morning	1,998	2,003	5	0.3
Weekday Evening	2,004	2,011	7	0.3
<i>Alewife Brook Parkway, south of Route 2:</i>				
Weekday Morning	3,259	3,262	3	0.1
Weekday Evening	3,093	3,096	3	0.1

^aTwo-way traffic total.

PARKING ANALYSIS

A parking analysis for the proposed development was conducted utilizing parking ratio requirements from the Town of Arlington Zoning Bylaw. Table 8 summarizes the parking analysis.

Table 8
PARKING ANALYSIS

Room Type	Number of Units	Required Rate	Required Spaces
Studio	11	1 space/unit	11
1-bedroom	87	1.15 spaces/unit	101
2-bedroom	58	1.5 spaces/unit	87
3-bedroom	20	2 spaces/unit	<u>40</u>
Total	176	--	239
Spaces Provided			239

As can be seen from Table 8, the site is required to provide 239 parking spaces for the proposed 176 units. Accordingly, the Project proposes to construct 239 spaces onsite. This results in a ratio of 1.36 spaces per unit, which is generally consistent with data from the ITE *Parking Generation Manual*.¹³ The ITE indicates that parking demand for this size development would be accommodated with a rate of 1.31 spaces per unit. Therefore, it is anticipated that adequate parking will be provided on site for the Project.

Both the Vox on Two and the recently completed Tempo apartment developments in Cambridge have been constructed with a parking ratio of 1 space per unit. In addition, based on the monitoring report, approximately 14 percent of Vox residents do not have any vehicles and therefore do not need any parking. Since the Project is in a similar location as the Vox on Two development with similar access to the Alewife MBTA Station and arguably better access to the Minuteman Bikeway, it is expected that similar parking usage will be the case for the Project.

In addition, the Project will also provide 144 bike parking spaces. These spaces will be located in the garage and as such will provide sheltered secure bike storage, which is typically viewed as critical to encouraging the use of this sustainable form of transportation. It is anticipated that with the bike parking on site, the proposed mitigation (identified later in this report), and the site's close proximity to the Minuteman Bikeway, the Project will appeal to an active resident demographic that is more focused on sustainable transportation than personal vehicle use.

¹³*Parking Generation Manual, 5th Edition*; ITE; Washington, D.C.; January 2019.

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.¹⁴ 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.

¹⁴The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual 6th Edition*; Transportation Research Board; Washington, DC; 2016.

Unsignalized Intersections

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

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

The levels of service of unsignalized intersections are determined by application of a procedure described in the *Highway Capacity Manual 6th Edition*.¹⁵ Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the *Highway Capacity Manual 6th Edition*. Table 9 summarizes the relationship between level of service and average control delay for two-way stop controlled and all-way stop controlled intersections.

Table 9
LEVEL-OF-SERVICE CRITERIA FOR
UNSIGNALIZED INTERSECTIONS^a

Level-Of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
$v/c \leq 1.0$	$v/c > 1.0$	
A	F	≤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 6th Edition*; Transportation Research Board; Washington, DC; 2016; page 20-6.

¹⁵*Highway Capacity Manual 6th Edition*; Transportation Research Board; Washington, DC; 2016.

Signalized Intersections

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

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

Levels of service for signalized intersections are calculated using the operational analysis methodology of the *Highway Capacity Manual 6th Edition*. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay, and final acceleration delay. Table 10 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 10
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS^a

Level-of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
$v/c \leq 1.0$	$v/c > 1.0$	
A	F	≤ 10.0
B	F	10.1 to 20.0
C	F	20.1 to 35.0
D	F	35.1 to 55.0
E	F	55.1 to 80.0
F	F	> 80.0

^aSource: *Highway Capacity Manual 6th Edition*; Transportation Research Board, Washington, DC; 2016; page 19-16.

ANALYSIS RESULTS

Level-of-service analyses were conducted for 2020 Baseline, 2027 No-Build, and 2027 Build conditions for the study area intersections. The results of the intersection capacity analysis within the study area are described below, with a tabular summary provided in Table 11 and Table 12.

Unsignalized Intersection Analysis Results

Lake Street at Wilson Avenue

Under all existing and future conditions, the critical movement at this intersection operates at LOS F during the weekday morning and at LOS E during the weekday evening peak hour.

Lake Street at Littlejohn Street

Under all existing and future conditions, the critical movement at this intersection operates at LOS F during the weekday morning peak hour. During the weekday evening peak hour, the critical movement at this intersection operates at LOS D under 2020 Baseline conditions and LOS E during 2027 No-Build and 2027 Build conditions.

Lake Street at Homestead Road

Under all existing and future conditions, the critical movement at this intersection operates at LOS F during the weekday morning and at LOS D during the weekday evening peak hour.

Lake Street at Burch Street and Alfred Road

The critical movements at this intersection operate at LOS E under the 2020 Baseline conditions during both the weekday morning and weekday evening peak hours. Under the 2027 No-Build condition the northbound movement operates at LOS F while the southbound movement operates at LOS E during both the weekday morning and weekday evening peak hours. Under the 2027 Build condition critical movements operate at LOS E during the weekday morning peak hour. The level of service remains unchanged during the weekday evening peak hour under 2027 Build conditions. The weekday morning peak hour level of service improves during the 2027 Build condition because project trips were added to the northbound right-turn movement which reduced the average delay for the approach.

Lake Street at Margaret Street and Lakehill Avenue

Under 2020 Baseline and 2027 No-Build conditions, the critical movements at this intersection operate at LOS F or better during the weekday morning and weekday evening peak hours. No changes to level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Dorothy Road/Littlejohn Street at Site Driveway

Under 2027 Build conditions, the critical movement at this intersection operates at LOS A during the weekday morning and weekday evening peak hours.

**Table 11
UN SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

Intersection/ Critical Movement/Peak Hour	2020 Baseline				2027 No-Build				2027 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d	V/C	Delay	LOS	Queue	V/C	Delay	LOS	Queue
Lake Street at Wilson Avenue:												
<i>Weekday Morning:</i>												
Wilson Avenue NB LT/RT	0.11	>50	F	10	0.13	>50	F	10	0.14	>50	F	13
<i>Weekday Evening:</i>												
Wilson Avenue NB LT/RT	0.13	36	E	10	0.14	40	E	13	0.15	41	E	13
Lake Street at Littlejohn Street:												
<i>Weekday Morning:</i>												
Littlejohn Street NB LT/RT	0.47	>50	F	50	0.56	>50	F	60	0.86	>50	F	103
<i>Weekday Evening:</i>												
Littlejohn Street NB LT/RT	0.18	35	D	15	0.20	39	E	18	0.30	46	E	30
Lake Street at Homestead Road:												
<i>Weekday Morning:</i>												
Homestead Road NB LT/RT	0.13	>50	F	10	0.16	>50	F	13	0.16	>50	F	13
<i>Weekday Evening:</i>												
Homestead Road NB LT/RT	0.08	28	D	8	0.09	31	D	8	0.09	31	D	8
Lake Street at Burch Street and Alfred Road:												
<i>Weekday Morning:</i>												
Burch Street NB LT/TH/RT	0.23	43	E	20	0.27	>50	F	25	0.30	47	E	30
Alfred Road SB LT/TH/RT	0.13	38	E	10	0.15	44	E	13	0.16	46	E	13
<i>Weekday Evening:</i>												
Burch Street NB LT/TH/RT	0.24	47	E	23	0.27	>50	F	25	0.30	51	F	30
Alfred Road SB LT/TH/RT	0.05	41	E	5	0.06	47	E	5	0.06	50	E	5
Lake Street at Margaret Street and Lakehill Avenue:												
<i>Weekday Morning:</i>												
Margaret Street NB LT/TH/RT	0.67	>50	F	73	0.80	>50	F	83	0.84	>50	F	88
Lakehill Avenue SB LT/TH/RT	0.16	34	D	15	0.20	40	E	18	0.20	40	E	18
<i>Weekday Evening:</i>												
Margaret Street NB LT/TH/RT	0.47	>50	F	50	0.54	>50	F	58	0.54	>50	F	58
Lakehill Avenue SB LT/TH/RT	0.26	>50	F	23	0.31	>50	F	28	0.31	>50	F	30
Dorothy Road/Littlejohn Street at Site Driveway:												
<i>Weekday Morning:</i>												
Site Driveway NB TH/RT	Intersection constructed under 2027 Build conditions								0.02	9	A	3
<i>Weekday Evening:</i>												
Site Driveway NB TH/RT									0.01	9	A	0

^aVolume to capacity ratio.

^bDelay in seconds per vehicle.

^cLevel of service.

^d95th percentile queue length in feet.

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

Signalized Intersection Analysis Results

Route 2 at Route 16

Signal 1

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS D or better during both the weekday morning and weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Signal 2

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS E during the weekday morning and overall LOS F during the weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Signal 3

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS C or better during both the weekday morning and weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Signal 4

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS A during both the weekday morning and weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Lake Street at Route 2 Eastbound On/Off-Ramps

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS D or better during both the weekday morning and weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Lake Street at Route 2 Westbound On/Off-Ramps

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS D or better during both the weekday morning and weekday evening peak hours. No changes to overall level of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Lake Street at Minuteman Commuter Bikeway

Though this intersection is currently unsignalized, it was modeled in Synchro as signalized under Existing conditions to provide a consistent basis for analysis. Under 2027 No-Build and 2027 Build conditions the signal is coordinated with the signal at the intersection of Lake Street with Brooks Avenue. Under 2020 Baseline conditions, this intersection operates at an overall LOS D during the weekday morning and an overall LOS A during the weekday evening peak hour. Under 2027 No-Build conditions, when the signal is coordinated with the Brooks Avenue intersection, this intersection operates at an overall LOS C during the weekday morning peak hour and an overall

LOS B during the weekday evening peak hour. No changes to overall levels of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Lake Street at Brooks Avenue

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS D or better during both the weekday morning and weekday evening peak hours. No changes to overall levels of service occur as a result of the addition of Project volumes under 2027 Build conditions during the weekday evening peak hour. The level of service changes from D to E during the weekday morning peak hour under 2027 Build conditions but the average delay only increases 1 second from 35 to 36 seconds.

Massachusetts Avenue at Lake Street

Under 2020 Baseline and 2027 No-Build conditions, this intersection operates at an overall LOS F or better during both the weekday morning and weekday evening peak hours. No changes to overall levels of service occur as a result of the addition of Project volumes under 2027 Build conditions.

Table 12
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/ Critical Movement/Peak Hour	2020 Baseline				2027 No-Build				2027 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
ROUTE 2 AT ROUTE 16 (4 SIGNALS)												
Signal 1: Route 2 WB at Route 16 SB:												
<i>Weekday Morning:</i>												
Route 2 EB LT	0.81	8	A	41/40	0.85	10	B	43/40	0.85	10	B	43/40
Route 2 SB RT	0.98	53	D	502/613	1.02	63	E	581/659	1.02	63	E	581/659
Overall	--	27	C	--	--	32	C	--	--	32	C	--
<i>Weekday Evening:</i>												
Route 2 WB TH	1.04	31	C	656/52	1.08	48	D	702/57	1.08	49	D	704/56
Route 16 SB RT	0.91	42	D	442/606	0.95	47	D	472/644	0.95	47	D	472/644
Overall	--	35	C	--	--	48	D	--	--	48	D	--
Signal 2: Route 2 EB at Route 16 NB/SB/Alewife Station Access Road:												
<i>Weekday Morning:</i>												
Route 2 EB LT	0.89	67	E	197/291	0.92	72	E	206/308	0.92	72	E	206/308
Alewife Station Access Road WB TH	0.25	17	B	82/134	0.26	17	B	86/138	0.26	17	B	86/138
Route 16 NB LT	1.04	69	E	665/804	1.09	>80	F	728/868	1.09	>80	F	730/868
Route 16 SB TH	0.70	46	D	213/259	0.72	47	D	223/269	0.72	47	D	223/269
Overall	--	61	E	--	--	73	E	--	--	73	E	--
<i>Weekday Evening:</i>												
Route 2 EB LT	1.14	>80	F	300/418	1.19	>80	F	326/446	1.19	>80	F	326/446
Alewife Station Access Road WB TH	0.82	29	C	399/578	0.85	33	C	422/639	0.85	33	C	422/639
Route 16 NB LT	1.10	89	F	741/880	1.14	>80	F	792/931	1.14	>80	F	794/933
Route 16 SB TH	0.30	38	D	81/119	0.31	38	D	84/123	0.31	38	D	84/123
Overall	--	>80	F	--	--	>80	F	--	--	>80	F	--
Signal 3: Route 16 NB/SB at Alewife Station Access Road:												
<i>Weekday Morning:</i>												
Alewife Station Access Road WB TH	0.17	8	A	48/78	0.17	9	A	50/81	0.17	9	A	50/81
Alewife Station Access Road WB RT	0.06	8	A	15/30	0.07	8	A	15/31	0.07	8	A	15/31
Route 16 NB TH	0.30	38	D	80/117	0.32	38	D	83/121	0.32	38	D	83/121
Overall	--	23	C	--	--	23	C	--	--	23	C	--
<i>Weekday Evening:</i>												
Alewife Station Access Road WB TH	0.54	15	B	227/320	0.56	16	B	239/337	0.56	16	B	239/337
Alewife Station Access Road WB RT	0.35	10	B	106/159	0.36	11	B	110/165	0.36	11	B	110/165
Route 16 NB TH	0.29	38	D	78/115	0.30	38	D	81/119	0.30	38	D	81/119
Overall	--	18	B	--	--	19	B	--	--	19	B	--

See notes at end of table.

Table 12 (Continued)
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/ Critical Movement/Peak Hour	2020 Baseline				2027 No-Build				2027 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
Signal 4: Route 2 EB at Route 16 SB:												
<i>Weekday Morning:</i>												
Route 2 EB RT	0.50	11	B	209/258	0.52	12	B	220/272	0.52	12	B	221/272
Route 16 SB TH	0.59	3	A	5/0	0.62	4	A	5/0	0.62	4	A	5/0
Overall	--	9	A	--	--	9	A	--	--	9	A	--
<i>Weekday Evening:</i>												
Route 2 EB RT	0.48	11	B	198/245	0.50	11	B	209/255	0.50	11	B	210/258
Route 16 SB TH	0.25	1	A	0/0	0.26	1	A	0/1	0.26	1	A	0/1
Overall	--	9	A	--	--	10	A	--	--	10	A	--
LAKE STREET AT ROUTE 2 EB ON/OFF-RAMPS:												
<i>Weekday Morning:</i>												
Lake Street EB TH	0.59	25	C	95/176	0.64	28	C	118/204	0.65	28	C	119/205
Lake Street EB RT	0.26	0	A	0/0	0.30	0	A	0/0	0.30	0	A	0/0
Lake Street WB LT	0.56	28	C	62/116	0.58	27	C	83/151	0.58	27	C	84/152
Lake Street WB TH	0.25	7	A	39/53	0.25	7	A	42/57	0.25	7	A	43/57
Route 2 EB Off-Ramp NB LT	0.89	44	D	167/400	1.04	79	E	234/482	1.04	>80	F	236/482
Route 2 EB Off-Ramp NB RT	0.70	12	B	36/191	0.78	17	B	54/243	0.78	17	B	55/246
Overall	--	18	B	--	--	26	C	--	--	27	C	--
<i>Weekday Evening:</i>												
Lake Street EB TH	0.73	26	C	196/335	0.75	27	C	214/360	0.75	27	C	215/361
Lake Street EB RT	0.11	0	A	0/0	0.12	0	A	0/0	0.12	0	A	0/0
Lake Street WB LT	0.59	35	C	71/142	0.61	36	D	79/156	0.61	36	D	80/157
Lake Street WB TH	0.15	5	A	26/37	0.16	5	A	27/40	0.16	5	A	27/40
Route 2 EB Off-Ramp NB LT	1.08	>80	F	253/556	>1.20	>80	F	314/633	>1.20	>80	F	315/634
Route 2 EB Off-Ramp NB RT	0.81	19	B	57/279	0.90	28	C	90/362	0.90	29	C	92/367
Overall	--	35	C	--	--	49	D	--	--	49	D	--

See notes at end of table.

Table 12 (Continued)
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/ Critical Movement/Peak Hour	2020 Baseline				2027 No-Build				2027 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
LAKE STREET AT ROUTE 2 WB ON/OFF-RAMPS:												
<i>Weekday Morning:</i>												
Lake Street EB LT	0.73	38	D	81/164	0.77	41	D	88/179	0.77	41	D	88/179
Lake Street EB TH	0.65	14	B	150/238	0.69	15	B	167/265	0.70	15	B	168/268
Lake Street WB TH	0.96	57	E	168/335	1.05	>80	F	214/378	1.06	>80	F	217/381
Lake Street WB RT	0.96	34	C	80/314	1.03	51	D	135/357	1.04	55	D	169/364
Route 2 WB Off-Ramp NB LT	0.18	18	B	22/47	0.23	19	B	28/56	0.23	19	B	28/56
Route 2 WB Off-Ramp NB LT/TH	0.19	18	B	23/48	0.22	19	B	28/55	0.22	19	B	28/55
Route 2 WB Off-Ramp NB RT	0.02	0	A	0/0	0.02	0	A	0/0	0.02	0	A	0/0
Overall	--	32	C	--	--	44	D	--	--	45	D	--
<i>Weekday Evening:</i>												
Lake Street EB LT	1.04	>80	F	155/289	1.18	>80	F	191/331	1.19	>80	F	191/331
Lake Street EB TH	0.89	27	C	246/461	0.93	32	C	274/502	0.94	34	C	281/513
Lake Street WB TH	0.62	27	C	84/149	0.64	27	C	90/160	0.64	27	C	91/161
Lake Street WB RT	0.58	7	A	0/55	0.59	7	A	0/56	0.59	7	A	0/57
Route 2 WB Off-Ramp NB LT	0.25	19	B	33/72	0.27	19	B	35/75	0.27	19	B	35/75
Route 2 WB Off-Ramp NB LT/TH	0.24	19	B	34/72	0.26	19	B	36/76	0.26	19	B	36/76
Route 2 WB Off-Ramp NB RT	0.04	0	A	0/0	0.04	0	A	0/0	0.05	0	A	0/0
Overall	--	33	C	--	--	44	D	--	--	45	D	--
LAKE STREET AT MINUTEMAN COMMUTER BIKEWAY:												
<i>Weekday Morning:</i>												
Lake Street EB TH	0.54	8	A	101/149	0.59	15	B	245/378	0.60	15	B	249/384
Lake Street WB TH	0.84	65	E	232/517	0.92	44	D	121/405	0.92	44	D	122/427
Overall	--	43	D	--	--	33	C	--	--	33	C	--
<i>Weekday Evening:</i>												
Lake Street EB LT/TH/RT	0.66	9	A	170/251	0.75	16	B	326/460	0.76	16	B	339/477
Lake Street WB LT/TH/RT	0.41	8	A	86/141	0.47	4	A	53/98	0.48	4	A	53/98
Overall	--	9	A	--	--	11	B	--	--	11	B	--
LAKE STREET AT BROOKS AVENUE:												
<i>Weekday Morning:</i>												
Lake Street EB LT/TH/RT	0.59	19	B	55/408	0.62	4	A	9/3	0.62	4	A	8/3
Lake Street WB LT/TH/RT	0.98	38	D	147/772	0.99	63	E	618/1013	0.99	64	E	621/1017
Brooks Avenue NB LT/TH/RT	0.18	19	B	6/28	0.57	58	E	32/59	0.57	58	E	32/59
Brooks Avenue SB LT/TH/RT	0.42	9	A	2/35	0.47	14	B	7/41	0.47	14	B	7/41
Overall	--	29	C	--	--	40	D	--	--	40	D	--
<i>Weekday Evening:</i>												
Lake Street EB LT/TH/RT	0.85	71	E	97/636	0.82	8	A	33/38	0.83	8	A	29/57
Lake Street WB LT/TH/RT	0.50	10	B	43/286	0.47	10	A	147/234	0.48	10	A	150/237
Brooks Avenue NB LT/TH/RT	0.10	18	B	4/20	0.46	49	D	14/36	0.46	49	D	14/36
Brooks Avenue SB LT/TH/RT	0.38	9	A	1/30	0.55	16	B	3/37	0.55	16	B	3/37
Overall	--	44	D	--	--	10	B	--	--	10	B	--

See notes at end of table.

Table 12 (Continued)
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/ Critical Movement/Peak Hour	2020 Baseline				2027 No-Build				2027 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
MASSACHUSETTS AVENUE AT LAKE STREET:												
<i>Weekday Morning:</i>												
Lake Street EB LT/RT	1.12	>80	F	306/659	1.17	>80	F	335/698	1.18	>80	F	343/709
Massachusetts Avenue NB LT	>1.20	>80	F	211/512	>1.20	>80	F	250/559	>1.20	>80	F	251/562
Massachusetts Avenue NB TH	0.49	18	B	133/317	0.51	18	B	140/332	0.51	18	B	140/332
Massachusetts Avenue SB TH	0.75	32	C	198/371	0.77	33	C	208/409	0.77	33	C	208/409
Massachusetts Avenue SB RT	0.96	48	D	213/561	1.00	59	E	237/604	1.00	57	E	237/606
Overall	--	76	E	--	--	91	F	--	--	>80	F	--
<i>Weekday Evening:</i>												
Lake Street EB LT/RT	>1.20	>80	F	498/887	>1.20	>80	F	546/949	>1.20	>80	F	551/955
Massachusetts Avenue NB LT	0.96	58	E	89/359	1.02	75	E	93/393	1.04	79	E	95/402
Massachusetts Avenue NB TH	0.80	28	C	278/702	0.83	30	C	294/740	0.83	30	C	294/740
Massachusetts Avenue SB TH	0.58	28	C	142/265	0.60	28	C	148/277	0.60	28	C	148/277
Massachusetts Avenue SB RT	0.33	16	B	37/113	0.34	16	B	40/119	0.35	16	B	40/121
Overall	--	>80	F	--	--	>80	F	--	--	>80	F	--

^aVolume to capacity ratio.
^bAverage stopped delay per vehicle (in seconds).
^cLevel-of-service.
^dQueue length in feet.

RECOMMENDATIONS AND CONCLUSIONS

RECOMMENDATIONS

The traffic assessment contained herein indicates that the Project will not have substantial impacts at the study area intersections and Project-related traffic increases are expected to be between 0.1 percent and 0.8 percent during the peak hours depending on location. VAI recommends the following:

Bluebikes Station

- Subject to receiving the necessary approvals from the Town, the Project will commit to providing a large (23 dock) Bluebikes station in the vicinity of the existing Bluebikes station at Thorndike Field. This will serve to accommodate demand for Bluebikes in this heavily traveled bike corridor adjacent to the Minuteman Bikeway.

Site Recommendations

- The existing vegetation on the site frontage should be removed to provide adequate sight distance at the proposed site driveway location.
- The site driveway onto Dorothy Road should be placed under STOP-sign control, with painted STOP bars on the driveway at the STOP-sign location.
- At the site driveway, any new landscaping or building features should not exceed 24 inches in height or should be placed out of the lines of sight for motorists exiting the site and for those approaching the driveways on Dorothy Road.

Transportation Demand Management Measures

- Designate an on-site employee as the site's Transportation Coordinator to oversee marketing and promoting of transportation options at the site.
- Provide new residents transportation information packets with information on getting around Arlington sustainably.

- Provide Transitscreen installation in the building lobby which depicts accurate real-time information for area transit, Bluebikes stations, and Uber/Lyft services in the area.
- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the Project site. This information will be posted in a centralized location.
- The property management team will investigate joining either the 128 Business Council or the Alewife TMA. Either TMA could provide a ridematching program among residents of the Project and employers of the area.

CONCLUSIONS

VAI has completed a transportation assessment of the potential impacts on the surrounding transportation infrastructure associated with the proposed Thorndike Place residential development to be located on the Mugar Parcel in Arlington, 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.

The Project is expected to produce a minor increase in traffic volumes in the vicinity of the site and minor but manageable increases in delays to various movements within the study area. No changes to critical movement levels of service occur as a result of the addition of Project volumes under 2027 Build conditions. The level of service does go from D to E during the weekday morning peak hour under 2027 Build conditions at the intersection of Lake Street with Brooks Avenue but the average delay only increases 1 second from 35 to 36 seconds.

The proposed addition of a large Bluebikes station adjacent to the existing station at Thorndike Field will help to alleviate demand for Bluebikes in this area, adjacent to the Minuteman Bikeway. This in combination with the proposal to include 144 sheltered bike parking spaces will encourage the use of bicycling as a sustainable commuting measure over the use of personal vehicles.

Based on the above, VAI has concluded that the Project can be safely accommodated with minimal impact on the area road network.

APPENDIX

TRAFFIC COUNT DATA
MINUTEMAN COMMUTER BIKEWAY DATA
SEASONAL ADJUSTMENT DATA
COVID-19 ADJUSTMENT DATA
PUBLIC TRANSPORTATION SCHEDULES
MOTOR VEHICLE CRASH DATA
GROWTH RATE DATA
TRIP GENERATION CALCULATIONS
JOURNEY TO WORK DATA
CAPACITY ANALYSIS

TRAFFIC COUNT DATA

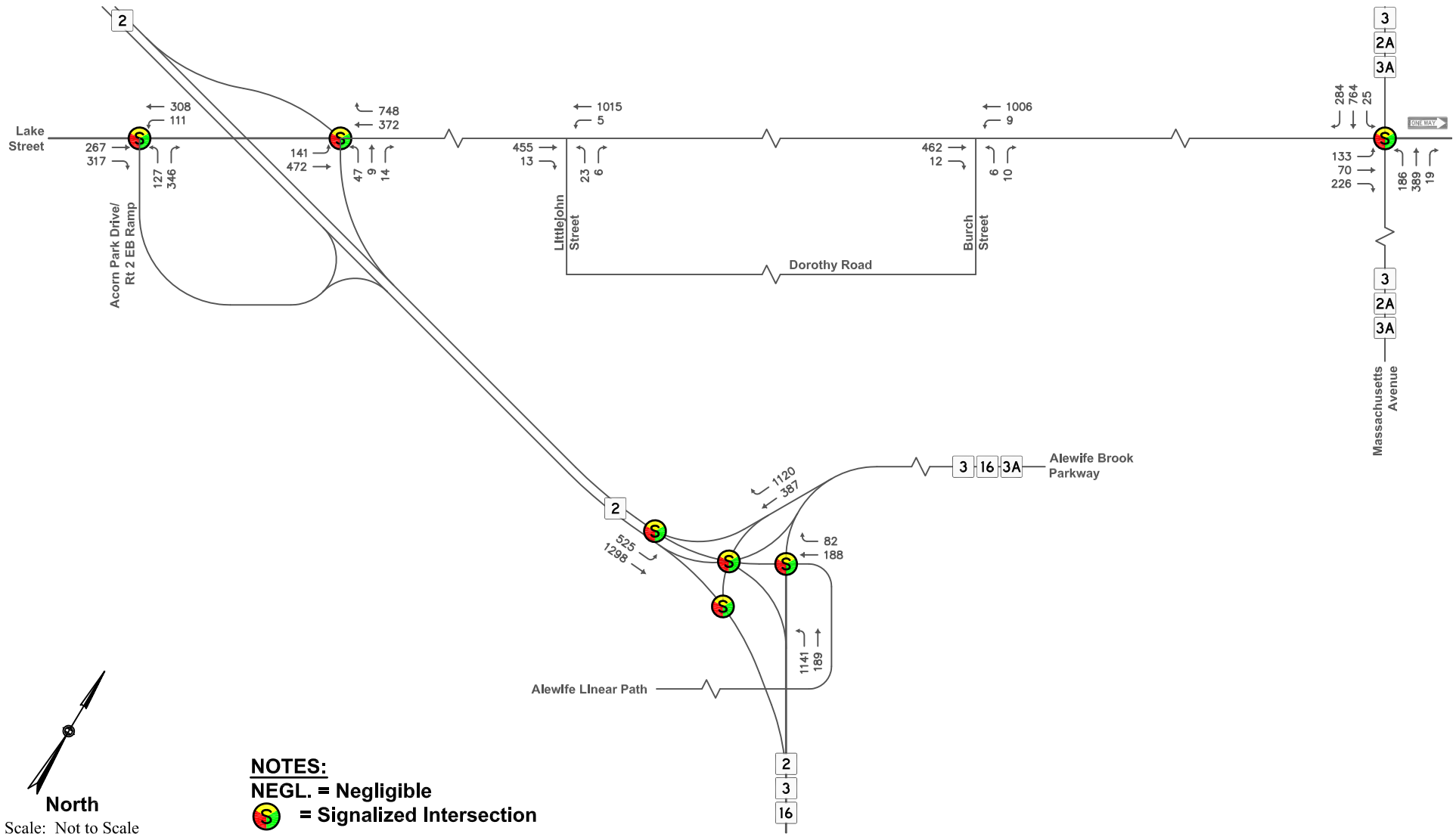


Figure 3

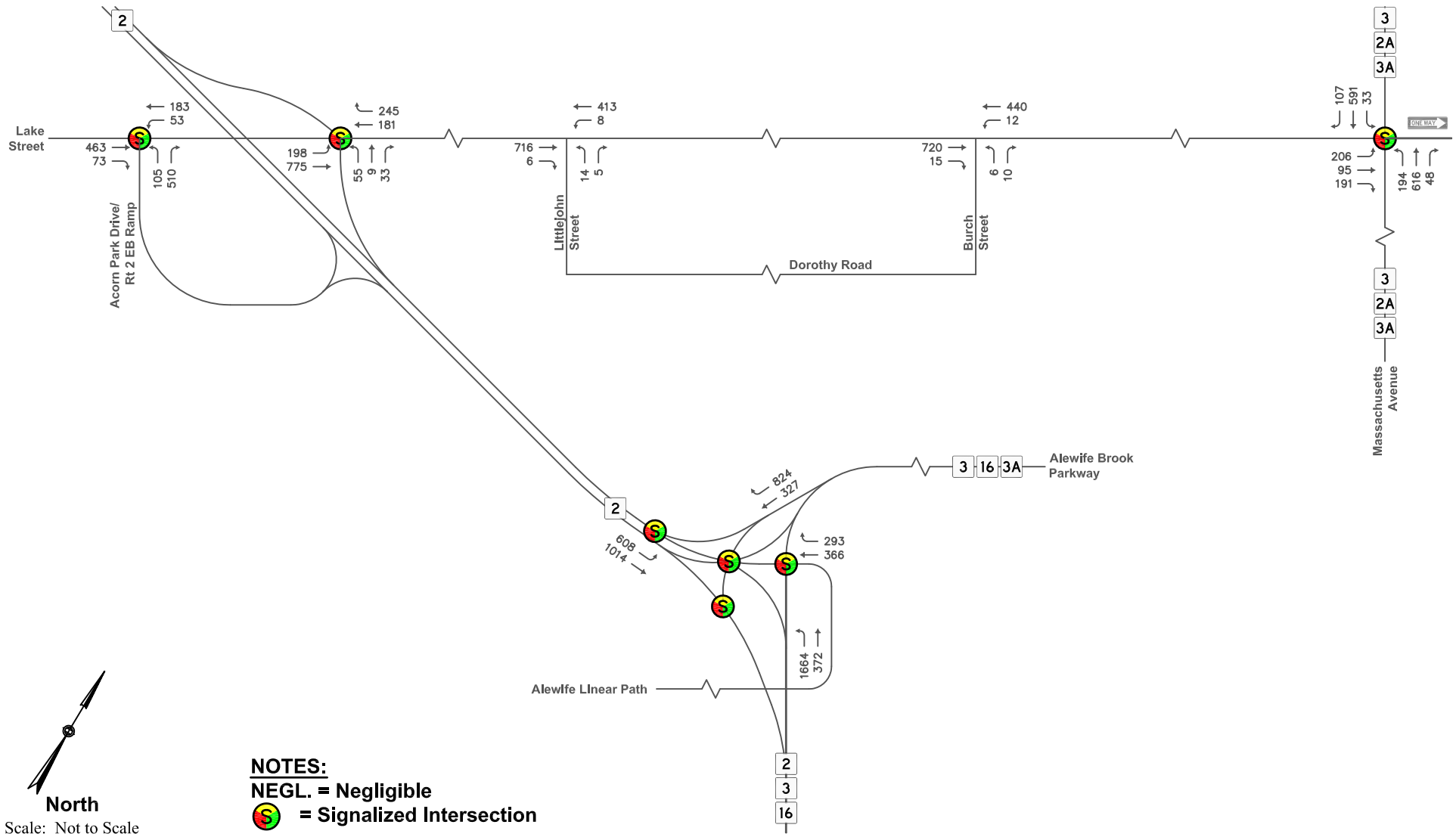


Figure 4

Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Cars - Trucks - Buses

Start Time	Lake St From North		Frontage Rd From East			Lake St From South		Int. Total
	Left	Thru	Left	Right	U-TR	Thru	Right	
07:30 AM	21	58	24	102	60	63	75	403
07:45 AM	19	67	36	83	63	48	95	411
Total	40	125	60	185	123	111	170	814
08:00 AM	19	62	33	64	46	59	108	391
08:15 AM	30	74	37	72	58	61	109	441
08:30 AM	25	72	33	86	44	65	77	402
08:45 AM	28	65	30	75	50	44	70	362
Total	102	273	133	297	198	229	364	1596
09:00 AM	25	70	35	92	50	57	49	378
09:15 AM	17	71	21	85	19	41	29	283
Grand Total	184	539	249	659	390	438	612	3071
Apprch %	25.4	74.6	19.2	50.8	30	41.7	58.3	
Total %	6	17.6	8.1	21.5	12.7	14.3	19.9	
Cars	183	537	248	658	390	435	589	3040
% Cars	99.5	99.6	99.6	99.8	100	99.3	96.2	99
Trucks	1	2	1	1	0	3	2	10
% Trucks	0.5	0.4	0.4	0.2	0	0.7	0.3	0.3
Buses	0	0	0	0	0	0	21	21
% Buses	0	0	0	0	0	0	3.4	0.7

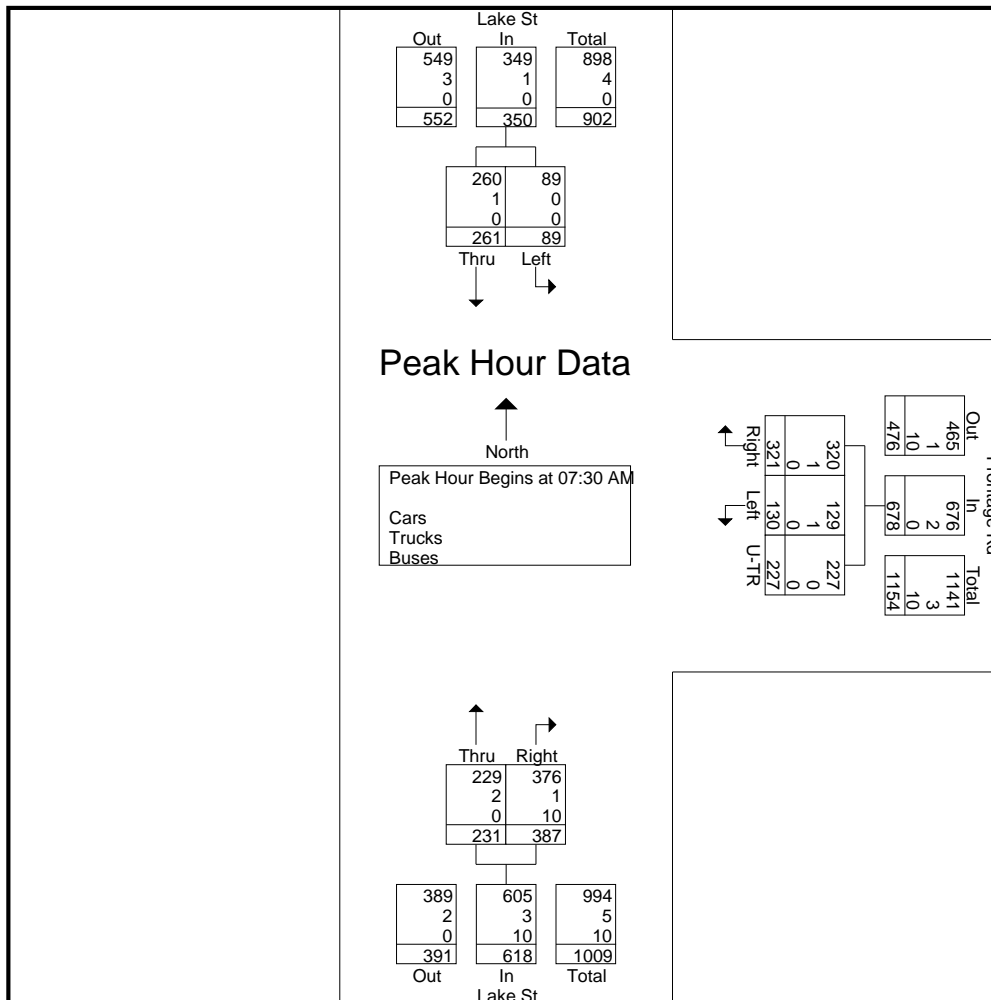
Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 2

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Start Time	Lake St From North			Frontage Rd From East				Lake St From South			Int. Total
	Left	Thru	App. Total	Left	Right	U-TR	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:30 AM											
07:30 AM	21	58	79	24	102	60	186	63	75	138	403
07:45 AM	19	67	86	36	83	63	182	48	95	143	411
08:00 AM	19	62	81	33	64	46	143	59	108	167	391
08:15 AM	30	74	104	37	72	58	167	61	109	170	441
Total Volume	89	261	350	130	321	227	678	231	387	618	1646
% App. Total	25.4	74.6		19.2	47.3	33.5		37.4	62.6		
PHF	.742	.882	.841	.878	.787	.901	.911	.917	.888	.909	.933
Cars	89	260	349	129	320	227	676	229	376	605	1630
% Cars	100	99.6	99.7	99.2	99.7	100	99.7	99.1	97.2	97.9	99.0
Trucks	0	1	1	1	1	0	2	2	1	3	6
% Trucks	0	0.4	0.3	0.8	0.3	0	0.3	0.9	0.3	0.5	0.4
Buses	0	0	0	0	0	0	0	0	10	10	10
% Buses	0	0	0	0	0	0	0	0	2.6	1.6	0.6



Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Trucks

Start Time	Lake St From North		Frontage Rd From East			Lake St From South		Int. Total
	Left	Thru	Left	Right	U-TR	Thru	Right	
07:30 AM	0	1	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	1	1
Total	0	1	0	0	0	0	1	2
08:00 AM	0	0	0	0	0	0	0	0
08:15 AM	0	0	1	1	0	2	0	4
08:30 AM	0	1	0	0	0	1	0	2
08:45 AM	0	0	0	0	0	0	0	0
Total	0	1	1	1	0	3	0	6
09:00 AM	1	0	0	0	0	0	1	2
09:15 AM	0	0	0	0	0	0	0	0
Grand Total	1	2	1	1	0	3	2	10
Apprch %	33.3	66.7	50	50	0	60	40	
Total %	10	20	10	10	0	30	20	

Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Bikes Peds

Start Time	Lake St From North			Frontage Rd From East			Lake St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:30 AM	0	1	2	2	1	2	1	2	0	4	7	11
07:45 AM	0	1	0	0	0	3	0	0	0	3	1	4
Total	0	2	2	2	1	5	1	2	0	7	8	15
08:00 AM	0	0	0	0	0	0	0	1	0	0	1	1
08:15 AM	0	0	2	1	0	1	0	0	0	3	1	4
08:30 AM	0	1	0	0	0	0	0	0	0	0	1	1
08:45 AM	0	1	0	0	0	0	2	0	0	0	3	3
Total	0	2	2	1	0	1	2	1	0	3	6	9
09:00 AM	0	1	0	0	0	0	0	1	0	0	2	2
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	5	4	3	1	6	3	4	0	10	16	26
Apprch %	0	100		75	25		42.9	57.1				
Total %	0	31.2		18.8	6.2		18.8	25		38.5	61.5	

Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Cars - Trucks - Buses

Start Time	Lake St From North		Frontage Rd From East			Lake St From South		Int. Total
	Left	Thru	Left	Right	U-TR	Thru	Right	
04:30 PM	11	60	23	127	0	109	11	341
04:45 PM	9	49	24	140	0	80	14	316
Total	20	109	47	267	0	189	25	657
05:00 PM	8	49	40	127	1	89	22	336
05:15 PM	9	58	87	94	0	97	14	359
05:30 PM	10	64	118	82	1	95	26	396
05:45 PM	17	70	94	112	4	102	18	417
Total	44	241	339	415	6	383	80	1508
06:00 PM	8	60	104	91	2	74	22	361
06:15 PM	10	65	100	89	6	105	18	393
Grand Total	82	475	590	862	14	751	145	2919
Apprch %	14.7	85.3	40.2	58.8	1	83.8	16.2	
Total %	2.8	16.3	20.2	29.5	0.5	25.7	5	
Cars	81	474	590	862	14	751	132	2904
% Cars	98.8	99.8	100	100	100	100	91	99.5
Trucks	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0
Buses	1	1	0	0	0	0	13	15
% Buses	1.2	0.2	0	0	0	0	9	0.5

Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 2

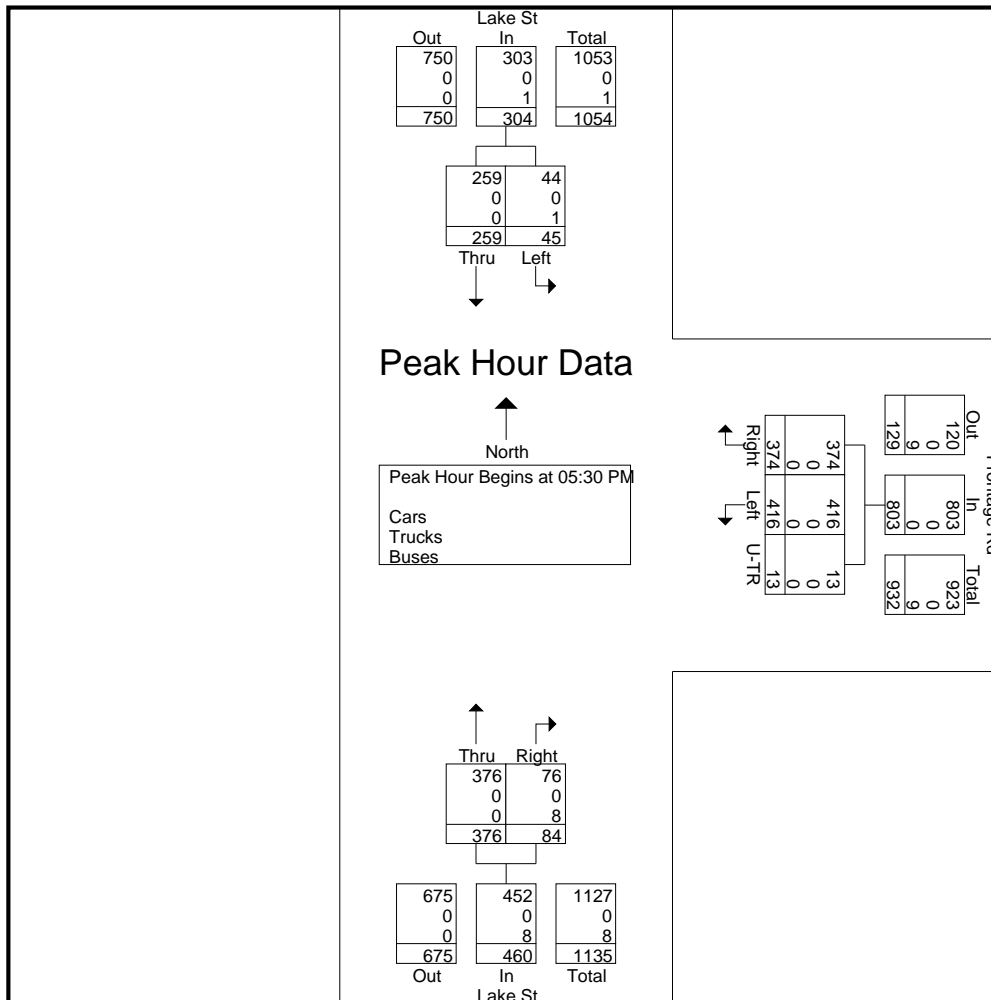
N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Start Time	Lake St From North			Frontage Rd From East				Lake St From South			Int. Total
	Left	Thru	App. Total	Left	Right	U-TR	App. Total	Thru	Right	App. Total	

Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:30 PM

05:30 PM	10	64	74	118	82	1	201	95	26	121	396
05:45 PM	17	70	87	94	112	4	210	102	18	120	417
06:00 PM	8	60	68	104	91	2	197	74	22	96	361
06:15 PM	10	65	75	100	89	6	195	105	18	123	393
Total Volume	45	259	304	416	374	13	803	376	84	460	1567
% App. Total	14.8	85.2		51.8	46.6	1.6		81.7	18.3		
PHF	.662	.925	.874	.881	.835	.542	.956	.895	.808	.935	.939
Cars	44	259	303	416	374	13	803	376	76	452	1558
% Cars	97.8	100	99.7	100	100	100	100	100	90.5	98.3	99.4
Trucks	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0
Buses	1	0	1	0	0	0	0	0	8	8	9
% Buses	2.2	0	0.3	0	0	0	0	0	9.5	1.7	0.6



Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Buses

Start Time	Lake St From North		Frontage Rd From East			Lake St From South		Int. Total
	Left	Thru	Left	Right	U-TR	Thru	Right	
04:30 PM	0	0	0	0	0	0	1	1
04:45 PM	0	1	0	0	0	0	3	4
Total	0	1	0	0	0	0	4	5
05:00 PM	0	0	0	0	0	0	1	1
05:15 PM	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	0	0	2	3
05:45 PM	0	0	0	0	0	0	2	2
Total	1	0	0	0	0	0	5	6
06:00 PM	0	0	0	0	0	0	3	3
06:15 PM	0	0	0	0	0	0	1	1
Grand Total	1	1	0	0	0	0	13	15
Apprch %	50	50	0	0	0	0	100	
Total %	6.7	6.7	0	0	0	0	86.7	

Accurate Counts

978-664-2565

File Name : 7277A002
 Site Code : 7277A002
 Start Date : 9/14/2016
 Page No : 1

N/S Street : Lake Street
 E/W Street : Frontage Road
 City/State : Cambridge, MA
 Weather : Clear

Groups Printed- Bikes Peds

Start Time	Lake St From North			Frontage Rd From East			Lake St From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	2	0	0	0	2	2
Total	0	0	0	0	0	0	2	0	0	0	2	2
05:00 PM	0	0	0	0	1	0	0	0	0	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	2	0	0	0	0	2	1	0	0	5	5
05:45 PM	0	1	1	0	0	1	1	0	0	2	2	4
Total	0	3	1	0	1	1	3	1	0	2	8	10
06:00 PM	0	0	0	0	0	1	2	1	0	1	3	4
06:15 PM	0	0	1	1	0	1	0	0	0	2	1	3
Grand Total	0	3	2	1	1	3	7	2	0	5	14	19
Apprch %	0	100		50	50		77.8	22.2				
Total %	0	21.4		7.1	7.1		50	14.3		26.3	73.7	

5

Accurate Counts
978-664-2565

N/S Street : Lake Street
E/W Street : Route 2 WB Ramps
City/State : Cambridge, MA
Weather : Cloudy

File Name : 7277A001
Site Code : 7277A001
Start Date : 9/27/2016
Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Lake St From North			Rte 2 WB Ramps From East			Lake St From South			Rte 2 WB Ramps From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:30 AM	0	78	222	16	2	3	32	124	0	0	0	0	477
07:45 AM	0	68	170	13	2	2	27	95	0	0	0	0	377
Total	0	146	392	29	4	5	59	219	0	0	0	0	854
08:00 AM	0	73	137	16	1	3	37	89	0	0	0	0	356
08:15 AM	1	81	137	28	3	1	33	122	0	0	0	0	406
08:30 AM	0	99	150	23	1	1	31	148	0	0	0	0	453
08:45 AM	1	96	141	21	1	4	26	141	0	0	0	0	431
Total	2	349	565	88	6	9	127	500	0	0	0	0	1646
09:00 AM	0	88	109	23	1	1	21	103	0	0	0	0	346
09:15 AM	0	74	93	18	2	2	17	110	0	0	0	0	316
Grand Total	2	657	1159	158	13	17	224	932	0	0	0	0	3162
Apprch %	0.1	36.1	63.8	84	6.9	9	19.4	80.6	0	0	0	0	
Total %	0.1	20.8	36.7	5	0.4	0.5	7.1	29.5	0	0	0	0	
Cars	2	654	1147	142	6	17	210	916	0	0	0	0	3094
% Cars	100	99.5	99	89.9	46.2	100	93.8	98.3	0	0	0	0	97.8
Trucks	0	3	11	10	0	0	14	14	0	0	0	0	52
% Trucks	0	0.5	0.9	6.3	0	0	6.2	1.5	0	0	0	0	1.6
Buses	0	0	1	6	7	0	0	2	0	0	0	0	16
% Buses	0	0	0.1	3.8	53.8	0	0	0.2	0	0	0	0	0.5

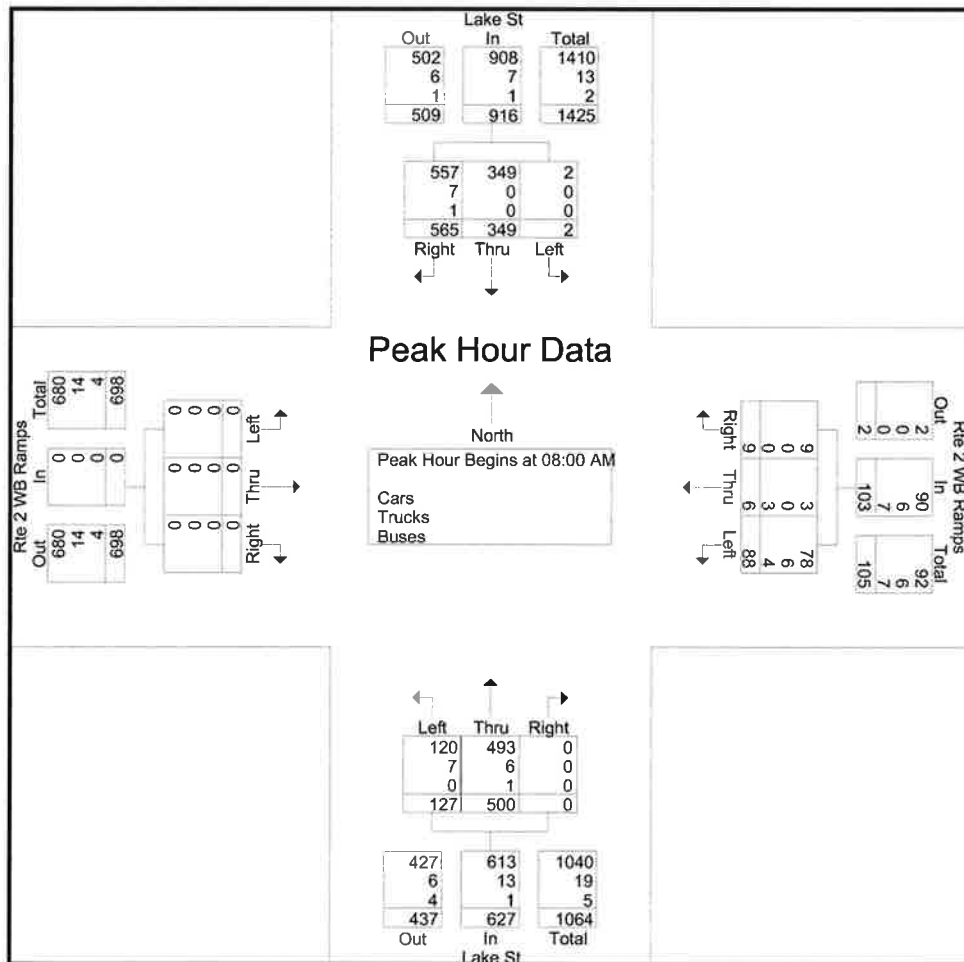
Accurate Counts

978-664-2565

N/S Street : Lake Street
 E/W Street : Route 2 WB Ramps
 City/State : Cambridge, MA
 Weather : Cloudy

File Name : 7277A001
 Site Code : 7277A001
 Start Date : 9/27/2016
 Page No : 2

Start Time	Lake St From North				Rte 2 WB Ramps From East				Lake St From South				Rte 2 WB Ramps 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 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	73	137	210	16	1	3	20	37	89	0	126	0	0	0	0	356
08:15 AM	1	81	137	219	28	3	1	32	33	122	0	155	0	0	0	0	406
08:30 AM	0	99	150	249	23	1	1	25	31	148	0	179	0	0	0	0	453
08:45 AM	1	96	141	238	21	1	4	26	26	141	0	167	0	0	0	0	431
Total Volume	2	349	565	916	88	6	9	103	127	500	0	627	0	0	0	0	1646
% App. Total	0.2	38.1	61.7		85.4	5.8	8.7		20.3	79.7	0		0	0	0		
PHF	.500	.881	.942	.920	.786	.500	.563	.805	.858	.845	.000	.876	.000	.000	.000	.000	.908
Cars	2	349	557	908	78	3	9	90	120	493	0	613	0	0	0	0	1611
% Cars	100	100	98.6	99.1	88.6	50.0	100	87.4	94.5	98.6	0	97.8	0	0	0	0	97.9
Trucks	0	0	7	7	6	0	0	6	7	6	0	13	0	0	0	0	26
% Trucks	0	0	1.2	0.8	6.8	0	0	5.8	5.5	1.2	0	2.1	0	0	0	0	1.6
Buses	0	0	1	1	4	3	0	7	0	1	0	1	0	0	0	0	9
% Buses	0	0	0.2	0.1	4.5	50.0	0	6.8	0	0.2	0	0.2	0	0	0	0	0.5



Accurate Counts

978-664-2565

N/S Street : Lake Street
 E/W Street : Route 2 WB Ramps
 City/State : Cambridge, MA
 Weather : Cloudy

File Name : 7277A001
 Site Code : 7277A001
 Start Date : 9/27/2016
 Page No : 1

Groups Printed- Bikes Peds

Start Time	Lake St From North				Rte 2 WB Ramps From East				Lake St From South				Rte 2 WB Ramps From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	10	10	1	11
07:45 AM	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	8	9	2	11
Total	0	1	2	0	0	0	0	1	0	0	0	0	0	0	0	18	19	3	22
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	2	3
08:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:30 AM	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	4	0	4
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	0	2	0	1	0	1	1	0	0	1	6	2	8
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	2	2	0	0	0	3	0	1	0	1	1	0	0	19	25	5	30
Apprch %	0	33.3	66.7		0	0	0		0	100	0		100	0	0				
Total %	0	20	40		0	0	0		0	20	0		20	0	0		83.3	16.7	

Accurate Counts

978-664-2565

N/S Street : Lake Street
 E/W Street : Route 2 WB Ramps
 City/State : Cambridge, MA
 Weather : Cloudy

File Name : 7277A001
 Site Code : 7277A001
 Start Date : 9/27/2016
 Page No : 1

Groups Printed- Cars - Trucks - Buses

Start Time	Lake St From North			Rte 2 WB Ramps From East			Lake St From South			Rte 2 WB Ramps From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:30 PM	0	37	44	14	2	8	46	160	0	0	0	0	311
04:45 PM	0	41	62	21	3	7	56	163	0	0	0	0	353
Total	0	78	106	35	5	15	102	323	0	0	0	0	664
05:00 PM	0	41	83	27	3	2	62	185	0	0	0	0	403
05:15 PM	0	37	88	15	7	5	74	148	0	0	0	0	374
05:30 PM	1	59	74	20	6	5	72	106	0	0	0	0	343
05:45 PM	0	36	80	16	2	9	56	116	0	0	0	0	315
Total	1	173	325	78	18	21	264	555	0	0	0	0	1435
06:00 PM	0	53	75	18	2	6	74	136	0	0	0	0	364
06:15 PM	0	51	73	16	3	6	63	130	0	0	0	0	342
Grand Total	1	355	579	147	28	48	503	1144	0	0	0	0	2805
Apprch %	0.1	38	61.9	65.9	12.6	21.5	30.5	69.5	0	0	0	0	
Total %	0	12.7	20.6	5.2	1	1.7	17.9	40.8	0	0	0	0	
Cars	1	349	565	139	12	48	503	1140	0	0	0	0	2757
% Cars	100	98.3	97.6	94.6	42.9	100	100	99.7	0	0	0	0	98.3
Trucks	0	3	14	1	1	0	0	2	0	0	0	0	21
% Trucks	0	0.8	2.4	0.7	3.6	0	0	0.2	0	0	0	0	0.7
Buses	0	3	0	7	15	0	0	2	0	0	0	0	27
% Buses	0	0.8	0	4.8	53.6	0	0	0.2	0	0	0	0	1

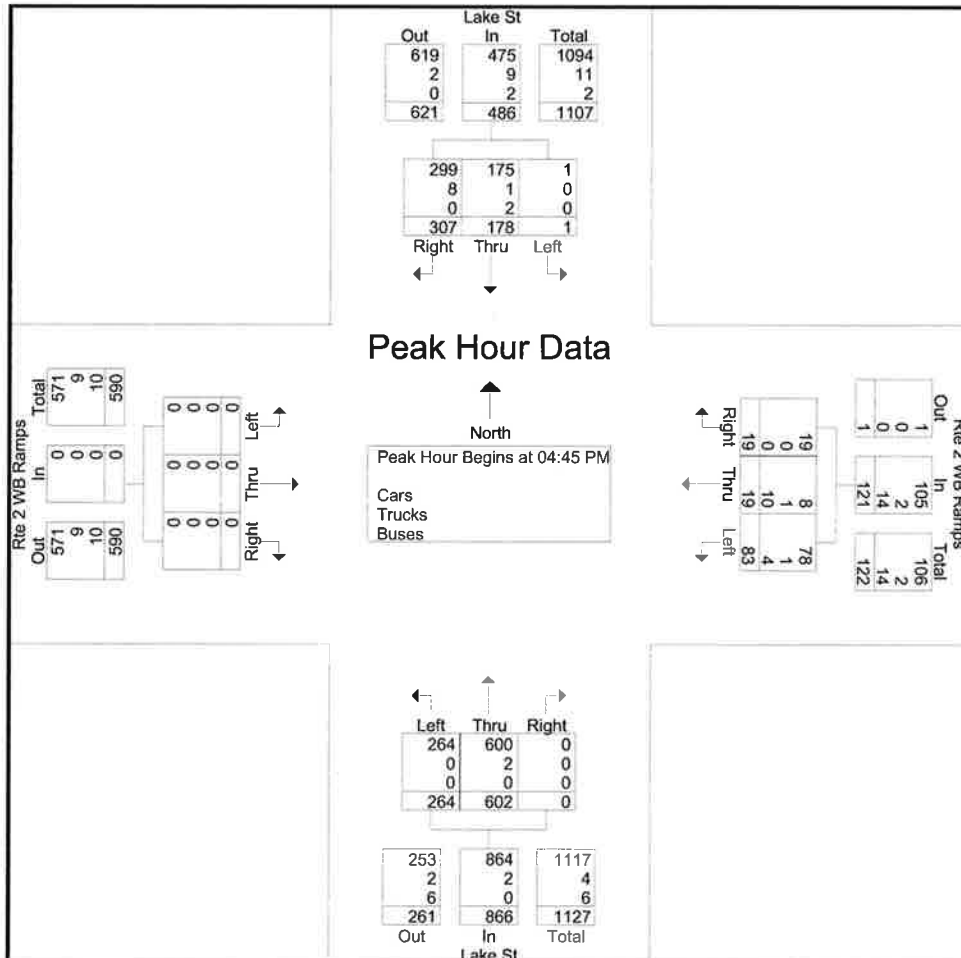
Accurate Counts

978-664-2565

N/S Street : Lake Street
 E/W Street : Route 2 WB Ramps
 City/State : Cambridge, MA
 Weather : Cloudy

File Name : 7277A001
 Site Code : 7277A001
 Start Date : 9/27/2016
 Page No : 2

Start Time	Lake St From North				Rte 2 WB Ramps From East				Lake St From South				Rte 2 WB Ramps 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 04:30 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	41	62	103	21	3	7	31	56	163	0	219	0	0	0	0	353
05:00 PM	0	41	83	124	27	3	2	32	62	185	0	247	0	0	0	0	403
05:15 PM	0	37	88	125	15	7	5	27	74	148	0	222	0	0	0	0	374
05:30 PM	1	59	74	134	20	6	5	31	72	106	0	178	0	0	0	0	343
Total Volume	1	178	307	486	83	19	19	121	264	602	0	866	0	0	0	0	1473
% App. Total	0.2	36.6	63.2		68.6	15.7	15.7		30.5	69.5	0		0	0	0		
PHF	.250	.754	.872	.907	.769	.679	.679	.945	.892	.814	.000	.877	.000	.000	.000	.000	.914
Cars	1	175	299	475	78	8	19	105	264	600	0	864	0	0	0	0	1444
% Cars	100	98.3	97.4	97.7	94.0	42.1	100	86.8	100	99.7	0	99.8	0	0	0	0	98.0
Trucks	0	1	8	9	1	1	0	2	0	2	0	2	0	0	0	0	13
% Trucks	0	0.6	2.6	1.9	1.2	5.3	0	1.7	0	0.3	0	0.2	0	0	0	0	0.9
Buses	0	2	0	2	4	10	0	14	0	0	0	0	0	0	0	0	16
% Buses	0	1.1	0	0.4	4.8	52.6	0	11.6	0	0	0	0	0	0	0	0	1.1



Accurate Counts

978-664-2565

N/S Street : Lake Street
 E/W Street : Route 2 WB Ramps
 City/State : Cambridge, MA
 Weather : Cloudy

File Name : 7277A001
 Site Code : 7277A001
 Start Date : 9/27/2016
 Page No : 1

Groups Printed- Bikes Peds

Start Time	Lake St From North				Rte 2 WB Ramps From East				Lake St From South				Rte 2 WB Ramps From West				Exclu. Total	Inclu. Total	Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds				
04:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	5	5	2	7
04:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	9	10	0	10
Total	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	14	15	2	17
05:00 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	4	4	2	6
05:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	7	9	0	9
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	16	0	16
05:45 PM	0	0	0	1	0	0	0	2	0	2	0	0	0	0	0	0	6	9	2	11
Total	0	0	1	3	0	0	0	2	0	3	0	0	0	0	0	0	33	38	4	42
06:00 PM	0	1	0	1	0	0	0	1	0	2	0	0	0	0	0	0	5	7	3	10
06:15 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	23	23	2	25
Grand Total	0	2	3	4	0	0	0	4	0	6	0	0	0	0	0	0	75	83	11	94
Approch %	0	40	60		0	0	0		0	100	0		0	0	0					
Total %	0	18.2	27.3		0	0	0		0	54.5	0		0	0	0		88.3	11.7		

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Alewife Brook Pkwy From North			Station Access Rd From East			Alewife Brook Pkwy From South			Route 2 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:30 AM	0	89	243	0	48	9	370	65	0	92	0	269	1185
07:45 AM	0	160	269	0	35	13	344	53	0	133	0	231	1238
Total	0	249	512	0	83	22	714	118	0	225	0	500	2423
08:00 AM	0	78	225	0	38	12	321	55	0	127	0	258	1114
08:15 AM	0	165	281	0	43	11	313	44	0	102	0	279	1238
08:30 AM	0	101	223	0	31	10	301	40	0	139	0	267	1112
08:45 AM	0	103	237	0	37	16	247	37	0	116	0	279	1072
Total	0	447	966	0	149	49	1182	176	0	484	0	1083	4536
09:00 AM	0	89	214	0	34	15	306	82	0	110	0	201	1051
09:15 AM	0	111	215	0	40	35	267	64	0	127	0	284	1143
Grand Total	0	896	1907	0	306	121	2469	440	0	946	0	2068	9153
Apprch %	0	32	68	0	71.7	28.3	84.9	15.1	0	31.4	0	68.6	
Total %	0	9.8	20.8	0	3.3	1.3	27	4.8	0	10.3	0	22.6	
Cars	0	879	1888	0	290	114	2420	431	0	936	0	2034	8992
% Cars	0	98.1	99	0	94.8	94.2	98	98	0	98.9	0	98.4	98.2
Trucks	0	17	19	0	16	7	49	9	0	10	0	34	161
% Trucks	0	1.9	1	0	5.2	5.8	2	2	0	1.1	0	1.6	1.8

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 2

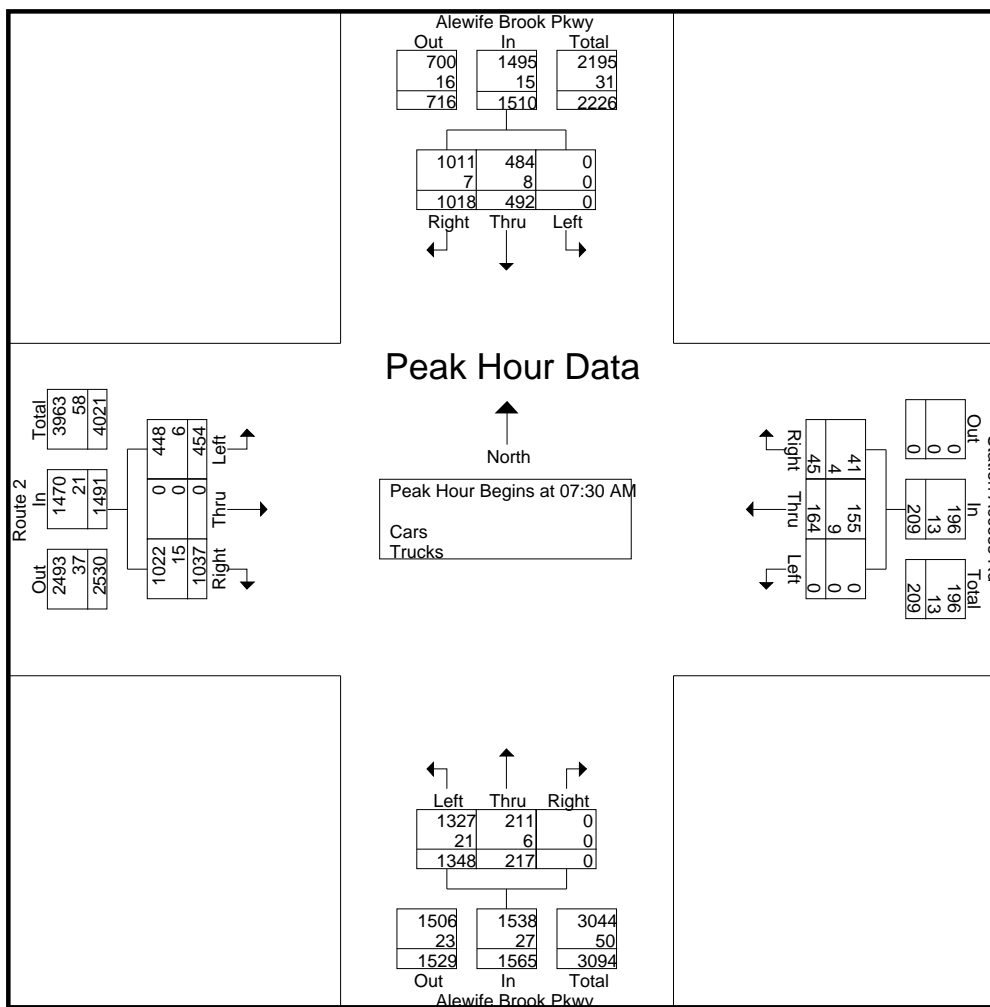
Start Time	Alewife Brook Pkwy From North				Station Access Rd From East				Alewife Brook Pkwy From South				Route 2 From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	89	243	332	0	48	9	57	370	65	0	435	92	0	269	361	1185
07:45 AM	0	160	269	429	0	35	13	48	344	53	0	397	133	0	231	364	1238
08:00 AM	0	78	225	303	0	38	12	50	321	55	0	376	127	0	258	385	1114
08:15 AM	0	165	281	446	0	43	11	54	313	44	0	357	102	0	279	381	1238
Total Volume	0	492	1018	1510	0	164	45	209	1348	217	0	1565	454	0	1037	1491	4775
% App. Total	0	32.6	67.4		0	78.5	21.5		86.1	13.9	0		30.4	0	69.6		
PHF	.000	.745	.906	.846	.000	.854	.865	.917	.911	.835	.000	.899	.853	.000	.929	.968	.964
Cars	0	484	1011	1495	0	155	41	196	1327	211	0	1538	448	0	1022	1470	4699
% Cars	0	98.4	99.3	99.0	0	94.5	91.1	93.8	98.4	97.2	0	98.3	98.7	0	98.6	98.6	98.4
Trucks	0	8	7	15	0	9	4	13	21	6	0	27	6	0	15	21	76
% Trucks	0	1.6	0.7	1.0	0	5.5	8.9	6.2	1.6	2.8	0	1.7	1.3	0	1.4	1.4	1.6

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 3



Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				08:30 AM				07:30 AM				08:00 AM			
+0 mins.	0	89	243	332	0	31	10	41	370	65	0	435	127	0	258	385
+15 mins.	0	160	269	429	0	37	16	53	344	53	0	397	102	0	279	381
+30 mins.	0	78	225	303	0	34	15	49	321	55	0	376	139	0	267	406
+45 mins.	0	165	281	446	0	40	35	75	313	44	0	357	116	0	279	395
Total Volume	0	492	1018	1510	0	142	76	218	1348	217	0	1565	484	0	1083	1567

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 9

Groups Printed- Trucks

Start Time	Alewife Brook Pkwy From North			Station Access Rd From East			Alewife Brook Pkwy From South			Route 2 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:30 AM	0	1	1	0	4	1	2	3	0	1	0	3	16
07:45 AM	0	3	1	0	1	1	8	1	0	1	0	4	20
Total	0	4	2	0	5	2	10	4	0	2	0	7	36
08:00 AM	0	3	3	0	1	0	6	1	0	1	0	6	21
08:15 AM	0	1	2	0	3	2	5	1	0	3	0	2	19
08:30 AM	0	2	6	0	2	2	5	0	0	1	0	3	21
08:45 AM	0	1	0	0	1	1	5	0	0	1	0	3	12
Total	0	7	11	0	7	5	21	2	0	6	0	14	73
09:00 AM	0	2	3	0	3	0	9	2	0	1	0	3	23
09:15 AM	0	4	3	0	1	0	9	1	0	1	0	10	29
Grand Total	0	17	19	0	16	7	49	9	0	10	0	34	161
Apprch %	0	47.2	52.8	0	69.6	30.4	84.5	15.5	0	22.7	0	77.3	
Total %	0	10.6	11.8	0	9.9	4.3	30.4	5.6	0	6.2	0	21.1	

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 13

Groups Printed- Bikes Peds

Start Time	Alewife Brook Pkwy From North				Station Access Rd From East				Alewife Brook Pkwy From South				Route 2 From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	2
Grand Total	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	3
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Alewife Brook Pkwy From North			Station Access Rd From East			Alewife Brook Pkwy From South			Route 2 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:30 PM	0	54	267	0	76	68	375	63	0	120	0	223	1246
04:45 PM	0	58	258	0	136	73	375	71	0	151	0	271	1393
Total	0	112	525	0	212	141	750	134	0	271	0	494	2639
05:00 PM	0	65	270	0	132	82	372	56	0	132	0	204	1313
05:15 PM	0	48	282	0	159	75	371	61	0	139	0	212	1347
05:30 PM	0	71	260	0	147	87	386	43	0	144	0	257	1395
05:45 PM	0	64	242	0	122	57	371	53	0	144	0	226	1279
Total	0	248	1054	0	560	301	1500	213	0	559	0	899	5334
06:00 PM	0	62	253	0	140	68	367	45	0	151	0	269	1355
06:15 PM	0	67	245	0	153	45	382	45	0	155	0	179	1271
Grand Total	0	489	2077	0	1065	555	2999	437	0	1136	0	1841	10599
Apprch %	0	19.1	80.9	0	65.7	34.3	87.3	12.7	0	38.2	0	61.8	
Total %	0	4.6	19.6	0	10	5.2	28.3	4.1	0	10.7	0	17.4	
Cars	0	478	2071	0	1062	552	2965	427	0	1134	0	1836	10525
% Cars	0	97.8	99.7	0	99.7	99.5	98.9	97.7	0	99.8	0	99.7	99.3
Trucks	0	11	6	0	3	3	34	10	0	2	0	5	74
% Trucks	0	2.2	0.3	0	0.3	0.5	1.1	2.3	0	0.2	0	0.3	0.7

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 2

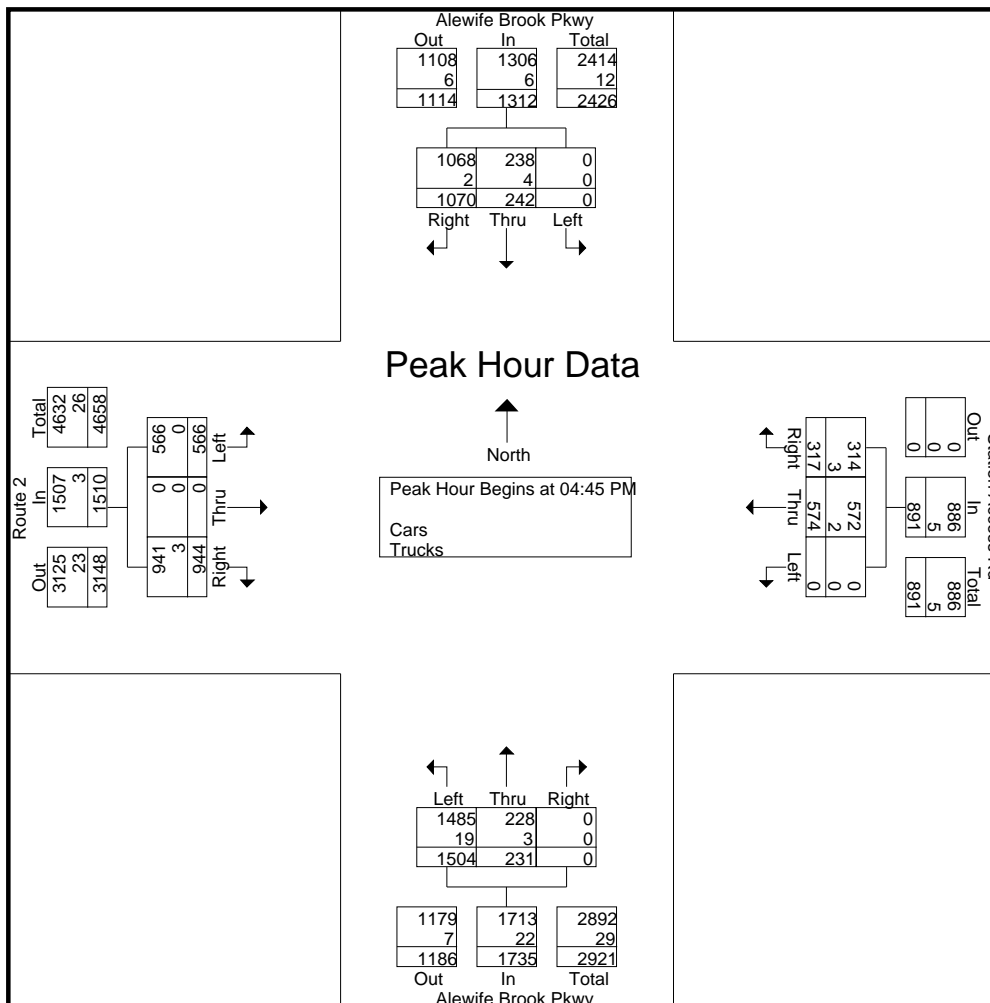
Start Time	Alewife Brook Pkwy From North				Station Access Rd From East				Alewife Brook Pkwy From South				Route 2 From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	58	258	316	0	136	73	209	375	71	0	446	151	0	271	422	1393
05:00 PM	0	65	270	335	0	132	82	214	372	56	0	428	132	0	204	336	1313
05:15 PM	0	48	282	330	0	159	75	234	371	61	0	432	139	0	212	351	1347
05:30 PM	0	71	260	331	0	147	87	234	386	43	0	429	144	0	257	401	1395
Total Volume	0	242	1070	1312	0	574	317	891	1504	231	0	1735	566	0	944	1510	5448
% App. Total	0	18.4	81.6		0	64.4	35.6		86.7	13.3	0		37.5	0	62.5		
PHF	.000	.852	.949	.979	.000	.903	.911	.952	.974	.813	.000	.973	.937	.000	.871	.895	.976
Cars	0	238	1068	1306	0	572	314	886	1485	228	0	1713	566	0	941	1507	5412
% Cars	0	98.3	99.8	99.5	0	99.7	99.1	99.4	98.7	98.7	0	98.7	100	0	99.7	99.8	99.3
Trucks	0	4	2	6	0	2	3	5	19	3	0	22	0	0	3	3	36
% Trucks	0	1.7	0.2	0.5	0	0.3	0.9	0.6	1.3	1.3	0	1.3	0	0	0.3	0.2	0.7

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 3



Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:30 PM				05:15 PM			
+0 mins.	0	58	258	316	0	136	73	209	375	63	0	438	139	0	212	351
+15 mins.	0	65	270	335	0	132	82	214	375	71	0	446	144	0	257	401
+30 mins.	0	48	282	330	0	159	75	234	372	56	0	428	144	0	226	370
+45 mins.	0	71	260	331	0	147	87	234	371	61	0	432	151	0	269	420
Total Volume	0	242	1070	1312	0	574	317	891	1493	251	0	1744	578	0	964	1542

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 9

Groups Printed- Trucks

Start Time	Alewife Brook Pkwy From North			Station Access Rd From East			Alewife Brook Pkwy From South			Route 2 From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:30 PM	0	2	2	0	0	0	4	1	0	0	0	1	10
04:45 PM	0	0	1	0	1	1	7	1	0	0	0	0	11
Total	0	2	3	0	1	1	11	2	0	0	0	1	21
05:00 PM	0	2	0	0	0	0	4	1	0	0	0	1	8
05:15 PM	0	2	0	0	0	1	4	1	0	0	0	2	10
05:30 PM	0	0	1	0	1	1	4	0	0	0	0	0	7
05:45 PM	0	1	1	0	1	0	4	3	0	1	0	0	11
Total	0	5	2	0	2	2	16	5	0	1	0	3	36
06:00 PM	0	3	0	0	0	0	4	1	0	1	0	0	9
06:15 PM	0	1	1	0	0	0	3	2	0	0	0	1	8
Grand Total	0	11	6	0	3	3	34	10	0	2	0	5	74
Apprch %	0	64.7	35.3	0	50	50	77.3	22.7	0	28.6	0	71.4	
Total %	0	14.9	8.1	0	4.1	4.1	45.9	13.5	0	2.7	0	6.8	

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street: Route 2 / Access Rd
 City/State : Cambridge, MA
 Weather : Clear

File Name : 80840014
 Site Code : 80840014
 Start Date : 5/8/2019
 Page No : 13

Groups Printed- Bikes Peds

Start Time	Alewife Brook Pkwy From North				Station Access Rd From East				Alewife Brook Pkwy From South				Route 2 From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3	0	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3	0	3
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Grand Total	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	3	1	4
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		75	25	

Accurate Counts
978-664-2565

N/S Street : Wilson Street
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

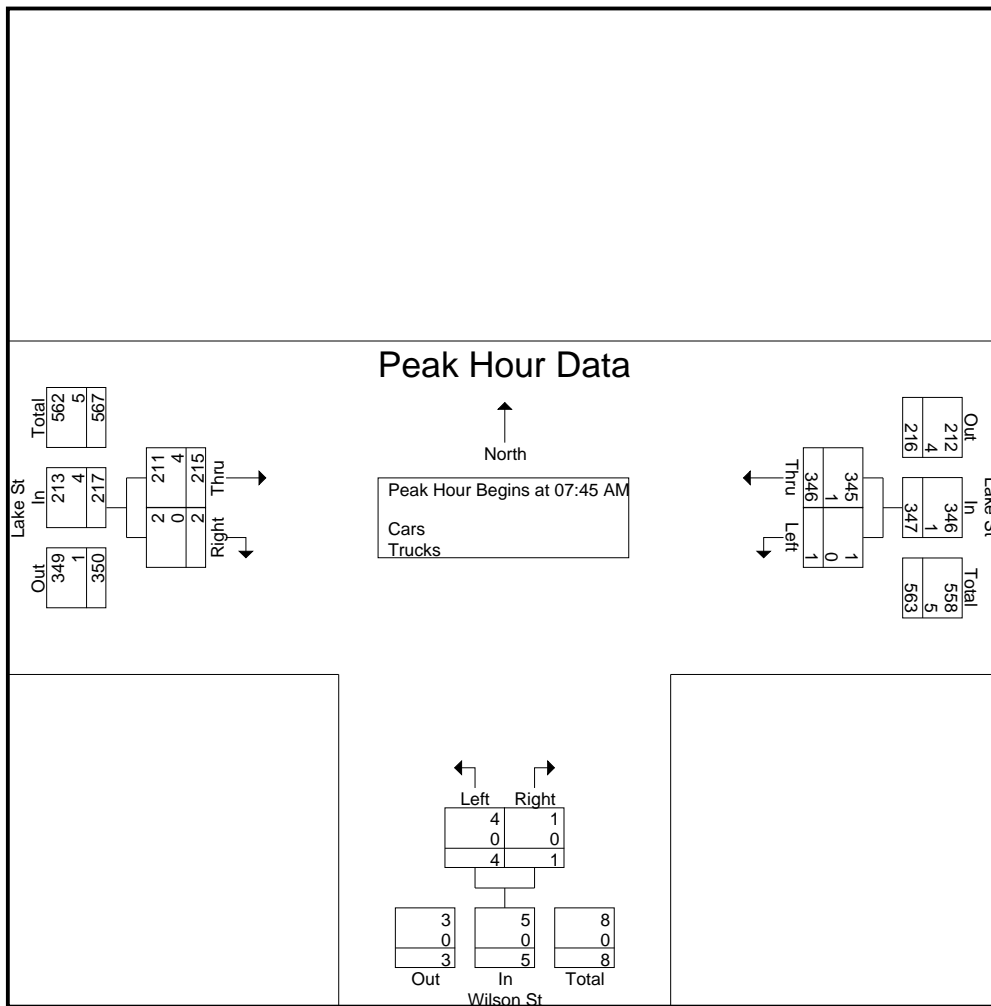
File Name : 84510001
Site Code : 84510001
Start Date : 9/10/2020
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Lake St From East		Wilson St From South		Lake St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	59	2	0	37	1	99
07:15 AM	0	69	1	0	43	0	113
07:30 AM	0	86	0	2	38	0	126
07:45 AM	0	100	0	0	50	0	150
Total	0	314	3	2	168	1	488
08:00 AM	1	77	1	0	44	1	124
08:15 AM	0	87	2	1	72	1	163
08:30 AM	0	82	1	0	49	0	132
08:45 AM	0	70	5	0	62	0	137
Total	1	316	9	1	227	2	556
Grand Total	1	630	12	3	395	3	1044
Apprch %	0.2	99.8	80	20	99.2	0.8	
Total %	0.1	60.3	1.1	0.3	37.8	0.3	
Cars	1	628	12	3	388	3	1035
% Cars	100	99.7	100	100	98.2	100	99.1
Trucks	0	2	0	0	7	0	9
% Trucks	0	0.3	0	0	1.8	0	0.9

Start Time	Lake St From East			Wilson St From South			Lake St 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 07:45 AM										
07:45 AM	0	100	100	0	0	0	50	0	50	150
08:00 AM	1	77	78	1	0	1	44	1	45	124
08:15 AM	0	87	87	2	1	3	72	1	73	163
08:30 AM	0	82	82	1	0	1	49	0	49	132
Total Volume	1	346	347	4	1	5	215	2	217	569
% App. Total	0.3	99.7		80	20		99.1	0.9		
PHF	.250	.865	.868	.500	.250	.417	.747	.500	.743	.873
Cars	1	345	346	4	1	5	211	2	213	564
% Cars	100	99.7	99.7	100	100	100	98.1	100	98.2	99.1
Trucks	0	1	1	0	0	0	4	0	4	5
% Trucks	0	0.3	0.3	0	0	0	1.9	0	1.8	0.9

N/S Street : Wilson Street
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			08:00 AM			08:00 AM		
+0 mins.	0	86	86	1	0	1	44	1	45
+15 mins.	0	100	100	2	1	3	72	1	73
+30 mins.	1	77	78	1	0	1	49	0	49
+45 mins.	0	87	87	5	0	5	62	0	62
Total Volume	1	350	351	9	1	10	227	2	229
% App. Total	0.3	99.7		90	10		99.1	0.9	
PHF	.250	.875	.878	.450	.250	.500	.788	.500	.784
Cars	1	349	350	9	1	10	223	2	225
% Cars	100	99.7	99.7	100	100	100	98.2	100	98.3
Trucks	0	1	1	0	0	0	4	0	4
% Trucks	0	0.3	0.3	0	0	0	1.8	0	1.7

Accurate Counts
978-664-2565

File Name : 84510001
Site Code : 84510001
Start Date : 9/10/2020
Page No : 7

N/S Street : Wilson Street
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

Groups Printed- Trucks

Start Time	Lake St From East		Wilson St From South		Lake St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	1	0	0	2	0	3
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	2
Total	0	2	0	0	3	0	5
08:00 AM	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	3	0	3
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	1	0	1
Total	0	0	0	0	4	0	4
Grand Total	0	2	0	0	7	0	9
Apprch %	0	100	0	0	100	0	
Total %	0	22.2	0	0	77.8	0	

Start Time	Lake St From East			Wilson St From South			Lake St 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	1	1	0	0	0	2	0	2	3
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	1	0	0	0	1	0	1	2
Total Volume	0	2	2	0	0	0	3	0	3	5
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.375	.000	.375	.417

Accurate Counts

978-664-2565

N/S Street : Wilson Street
 E/W Street : Lake Street
 City/State : Arlington, MA
 Weather : Cloudy

File Name : 84510001
 Site Code : 84510001
 Start Date : 9/10/2020
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Lake St From East			Wilson St From South			Lake St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	1	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	2	1	0	0	2	1	3
07:30 AM	0	2	1	0	0	2	1	0	0	3	3	6
07:45 AM	0	1	0	1	0	4	0	0	0	4	2	6
Total	0	3	2	1	0	8	2	0	0	10	6	16
08:00 AM	0	3	1	0	0	0	1	0	0	1	4	5
08:15 AM	0	0	2	0	0	1	0	1	1	4	1	5
08:30 AM	0	0	0	0	0	1	1	0	0	1	1	2
08:45 AM	0	1	1	0	0	0	0	0	0	1	1	2
Total	0	4	4	0	0	2	2	1	1	7	7	14
Grand Total	0	7	6	1	0	10	4	1	1	17	13	30
Apprch %	0	100		100	0		80	20				
Total %	0	53.8		7.7	0		30.8	7.7		56.7	43.3	

Start Time	Lake St From East			Wilson St From South			Lake St 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 07:15 AM										
07:15 AM	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	2	2	0	0	0	1	0	1	3
07:45 AM	0	1	1	1	0	1	0	0	0	2
08:00 AM	0	3	3	0	0	0	1	0	1	4
Total Volume	0	6	6	1	0	1	3	0	3	10
% App. Total	0	100		100	0		100	0		
PHF	.000	.500	.500	.250	.000	.250	.750	.000	.750	.625

Accurate Counts

978-664-2565

N/S Street : Wilson Street
 E/W Street : Lake Street
 City/State : Arlington, MA
 Weather : Cloudy

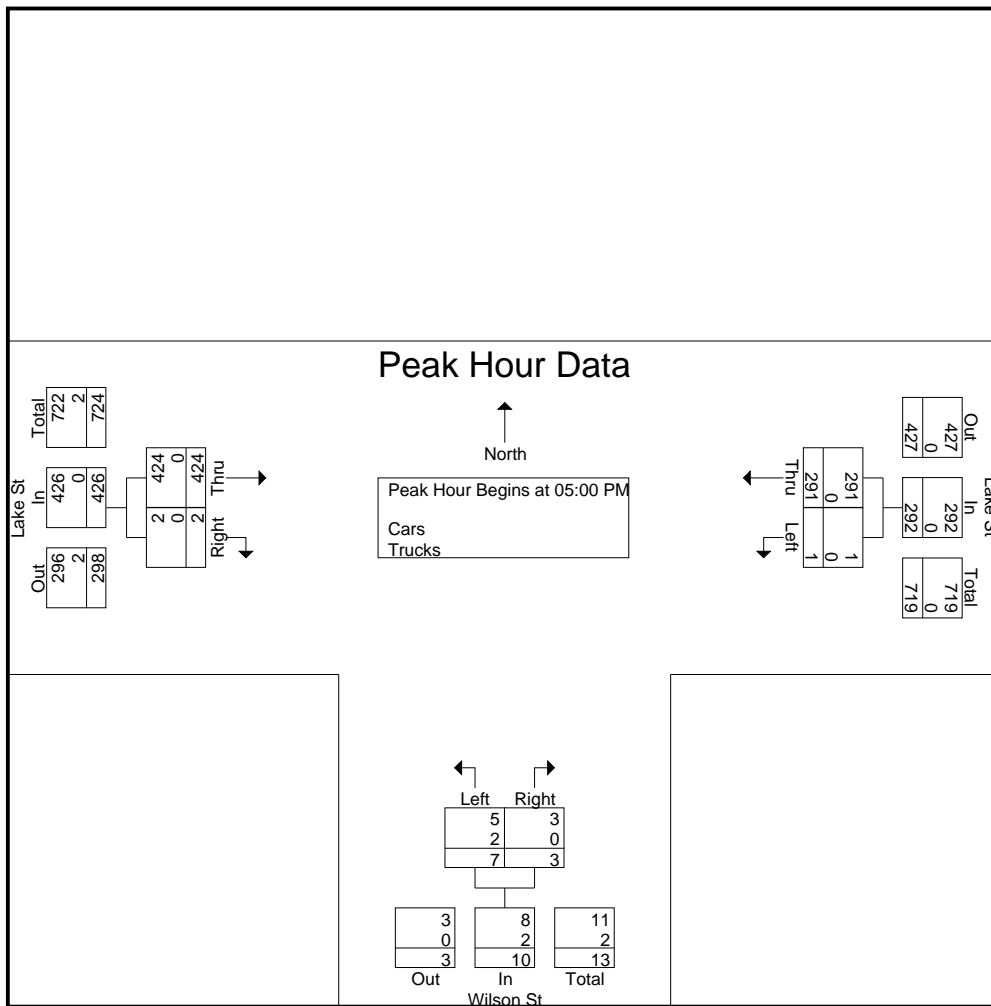
File Name : 84510001
 Site Code : 84510001
 Start Date : 9/10/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Lake St From East		Wilson St From South		Lake St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
04:00 PM	0	62	0	1	147	1	211
04:15 PM	0	59	0	0	101	0	160
04:30 PM	0	71	1	1	101	0	174
04:45 PM	0	59	2	0	98	0	159
Total	0	251	3	2	447	1	704
05:00 PM	1	76	0	0	129	0	206
05:15 PM	0	71	2	0	106	1	180
05:30 PM	0	66	0	2	103	1	172
05:45 PM	0	78	5	1	86	0	170
Total	1	291	7	3	424	2	728
Grand Total	1	542	10	5	871	3	1432
Apprch %	0.2	99.8	66.7	33.3	99.7	0.3	
Total %	0.1	37.8	0.7	0.3	60.8	0.2	
Cars	1	540	8	5	871	3	1428
% Cars	100	99.6	80	100	100	100	99.7
Trucks	0	2	2	0	0	0	4
% Trucks	0	0.4	20	0	0	0	0.3

Start Time	Lake St From East			Wilson St From South			Lake St 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 05:00 PM										
05:00 PM	1	76	77	0	0	0	129	0	129	206
05:15 PM	0	71	71	2	0	2	106	1	107	180
05:30 PM	0	66	66	0	2	2	103	1	104	172
05:45 PM	0	78	78	5	1	6	86	0	86	170
Total Volume	1	291	292	7	3	10	424	2	426	728
% App. Total	0.3	99.7		70	30		99.5	0.5		
PHF	.250	.933	.936	.350	.375	.417	.822	.500	.826	.883
Cars	1	291	292	5	3	8	424	2	426	726
% Cars	100	100	100	71.4	100	80.0	100	100	100	99.7
Trucks	0	0	0	2	0	2	0	0	0	2
% Trucks	0	0	0	28.6	0	20.0	0	0	0	0.3

N/S Street : Wilson Street
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			04:00 PM		
+0 mins.	1	76	77	0	0	0	147	1	148
+15 mins.	0	71	71	2	0	2	101	0	101
+30 mins.	0	66	66	0	2	2	101	0	101
+45 mins.	0	78	78	5	1	6	98	0	98
Total Volume	1	291	292	7	3	10	447	1	448
% App. Total	0.3	99.7		70	30		99.8	0.2	
PHF	.250	.933	.936	.350	.375	.417	.760	.250	.757
Cars	1	291	292	5	3	8	447	1	448
% Cars	100	100	100	71.4	100	80	100	100	100
Trucks	0	0	0	2	0	2	0	0	0
% Trucks	0	0	0	28.6	0	20	0	0	0

Accurate Counts

978-664-2565

N/S Street : Wilson Street
 E/W Street : Lake Street
 City/State : Arlington, MA
 Weather : Cloudy

File Name : 84510001
 Site Code : 84510001
 Start Date : 9/10/2020
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Lake St From East			Wilson St From South			Lake St 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	4	3	0	0	1	0	1	0	4	5	9
04:45 PM	0	0	1	0	0	2	0	2	0	3	2	5
Total	0	4	4	0	0	3	0	3	0	7	7	14
05:00 PM	0	0	0	0	0	1	1	0	0	1	1	2
05:15 PM	0	0	0	0	0	1	0	0	0	1	0	1
05:30 PM	0	1	0	0	0	0	6	1	0	0	8	8
05:45 PM	0	2	0	0	0	4	0	0	0	4	2	6
Total	0	3	0	0	0	6	7	1	0	6	11	17
Grand Total	0	7	4	0	0	9	7	4	0	13	18	31
Apprch %	0	100		0	0		63.6	36.4				
Total %	0	38.9		0	0		38.9	22.2		41.9	58.1	

Start Time	Lake St From East			Wilson St From South			Lake St 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 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	2	2	2
05:00 PM	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	1	0	0	0	6	1	7	8
Total Volume	0	1	1	0	0	0	7	3	10	11
% App. Total	0	100		0	0		70	30		
PHF	.000	.250	.250	.000	.000	.000	.292	.375	.357	.344

Accurate Counts
978-664-2565

N/S Street : Homestead Road
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

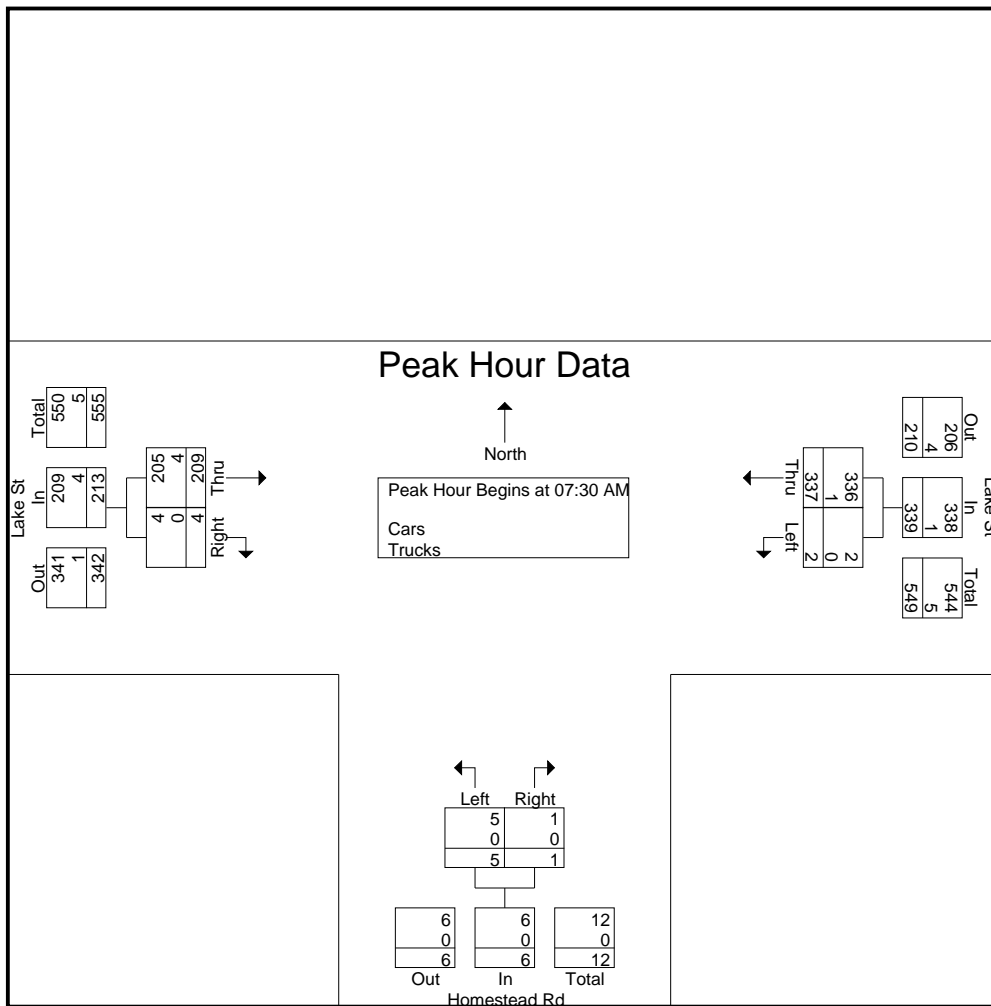
File Name : 84510002
Site Code : 84510002
Start Date : 9/10/2020
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Lake St From East		Homestead Rd From South		Lake St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	59	1	0	39	0	99
07:15 AM	0	63	1	0	39	1	104
07:30 AM	0	91	1	1	41	1	135
07:45 AM	1	89	1	0	48	2	141
Total	1	302	4	1	167	4	479
08:00 AM	0	78	1	0	46	1	126
08:15 AM	1	79	2	0	74	0	156
08:30 AM	0	73	0	0	54	1	128
08:45 AM	0	71	0	0	59	2	132
Total	1	301	3	0	233	4	542
Grand Total	2	603	7	1	400	8	1021
Apprch %	0.3	99.7	87.5	12.5	98	2	
Total %	0.2	59.1	0.7	0.1	39.2	0.8	
Cars	2	601	7	1	394	7	1012
% Cars	100	99.7	100	100	98.5	87.5	99.1
Trucks	0	2	0	0	6	1	9
% Trucks	0	0.3	0	0	1.5	12.5	0.9

Start Time	Lake St From East			Homestead Rd From South			Lake St 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 07:30 AM										
07:30 AM	0	91	91	1	1	2	41	1	42	135
07:45 AM	1	89	90	1	0	1	48	2	50	141
08:00 AM	0	78	78	1	0	1	46	1	47	126
08:15 AM	1	79	80	2	0	2	74	0	74	156
Total Volume	2	337	339	5	1	6	209	4	213	558
% App. Total	0.6	99.4		83.3	16.7		98.1	1.9		
PHF	.500	.926	.931	.625	.250	.750	.706	.500	.720	.894
Cars	2	336	338	5	1	6	205	4	209	553
% Cars	100	99.7	99.7	100	100	100	98.1	100	98.1	99.1
Trucks	0	1	1	0	0	0	4	0	4	5
% Trucks	0	0.3	0.3	0	0	0	1.9	0	1.9	0.9

N/S Street : Homestead Road
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			08:00 AM		
+0 mins.	0	91	91	1	1	2	46	1	47
+15 mins.	1	89	90	1	0	1	74	0	74
+30 mins.	0	78	78	1	0	1	54	1	55
+45 mins.	1	79	80	2	0	2	59	2	61
Total Volume	2	337	339	5	1	6	233	4	237
% App. Total	0.6	99.4		83.3	16.7		98.3	1.7	
PHF	.500	.926	.931	.625	.250	.750	.787	.500	.801
Cars	2	336	338	5	1	6	230	3	233
% Cars	100	99.7	99.7	100	100	100	98.7	75	98.3
Trucks	0	1	1	0	0	0	3	1	4
% Trucks	0	0.3	0.3	0	0	0	1.3	25	1.7

Accurate Counts
978-664-2565

N/S Street : Homestead Road
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510002
Site Code : 84510002
Start Date : 9/10/2020
Page No : 7

Groups Printed- Trucks

Start Time	Lake St From East		Homestead Rd From South		Lake St From West		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00 AM	0	0	0	0	0	0	0
07:15 AM	0	1	0	0	2	0	3
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	2
Total	0	2	0	0	3	0	5
08:00 AM	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	3	0	3
08:30 AM	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	1	1
Total	0	0	0	0	3	1	4
Grand Total	0	2	0	0	6	1	9
Apprch %	0	100	0	0	85.7	14.3	
Total %	0	22.2	0	0	66.7	11.1	

Start Time	Lake St From East			Homestead Rd From South			Lake St 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	1	1	0	0	0	2	0	2	3
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	1	0	0	0	1	0	1	2
Total Volume	0	2	2	0	0	0	3	0	3	5
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.375	.000	.375	.417

Accurate Counts

978-664-2565

N/S Street : Homestead Road
 E/W Street : Lake Street
 City/State : Arlington, MA
 Weather : Cloudy

File Name : 84510002
 Site Code : 84510002
 Start Date : 9/10/2020
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Lake St From East			Homestead Rd From South			Lake St From West			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
07:00 AM	0	0	1	0	0	2	0	0	0	3	0	3
07:15 AM	0	0	0	0	0	3	0	0	1	4	0	4
07:30 AM	0	3	0	0	0	3	2	0	0	3	5	8
07:45 AM	0	1	1	0	0	4	0	0	0	5	1	6
Total	0	4	2	0	0	12	2	0	1	15	6	21
08:00 AM	0	2	1	0	0	1	1	0	0	2	3	5
08:15 AM	0	0	0	0	0	3	0	0	0	3	0	3
08:30 AM	0	0	0	0	0	0	1	0	0	0	1	1
08:45 AM	0	2	0	0	0	1	0	0	0	1	2	3
Total	0	4	1	0	0	5	2	0	0	6	6	12
Grand Total	0	8	3	0	0	17	4	0	1	21	12	33
Apprch %	0	100		0	0		100	0				
Total %	0	66.7		0	0		33.3	0		63.6	36.4	

Start Time	Lake St From East			Homestead Rd From South			Lake St 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 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	3	3	0	0	0	2	0	2	5
07:45 AM	0	1	1	0	0	0	0	0	0	1
08:00 AM	0	2	2	0	0	0	1	0	1	3
Total Volume	0	6	6	0	0	0	3	0	3	9
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.375	.000	.375	.450

Accurate Counts
978-664-2565

File Name : 84510002
Site Code : 84510002
Start Date : 9/10/2020
Page No : 10

N/S Street : Homestead Road
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

Groups Printed- Bikes Peds

Start Time	Lake St From East			Homestead Rd From South			Lake St 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	3	0	0	0	3	0	3
04:15 PM	0	1	0	0	0	0	0	0	0	0	1	1
04:30 PM	0	4	0	0	0	2	0	0	0	2	4	6
04:45 PM	0	0	0	0	0	1	0	0	0	1	0	1
Total	0	5	0	0	0	6	0	0	0	6	5	11
05:00 PM	0	1	0	0	0	2	4	0	0	2	5	7
05:15 PM	0	0	0	0	0	1	0	0	0	1	0	1
05:30 PM	0	1	0	0	0	0	1	0	0	0	2	2
05:45 PM	0	2	0	0	0	3	2	0	0	3	4	7
Total	0	4	0	0	0	6	7	0	0	6	11	17
Grand Total	0	9	0	0	0	12	7	0	0	12	16	28
Apprch %	0	100		0	0		100	0				
Total %	0	56.2		0	0		43.8	0		42.9	57.1	

Start Time	Lake St From East			Homestead Rd From South			Lake St 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 05:00 PM										
05:00 PM	0	1	1	0	0	0	4	0	4	5
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	1	0	0	0	1	0	1	2
05:45 PM	0	2	2	0	0	0	2	0	2	4
Total Volume	0	4	4	0	0	0	7	0	7	11
% App. Total	0	100		0	0		100	0		
PHF	.000	.500	.500	.000	.000	.000	.438	.000	.438	.550

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

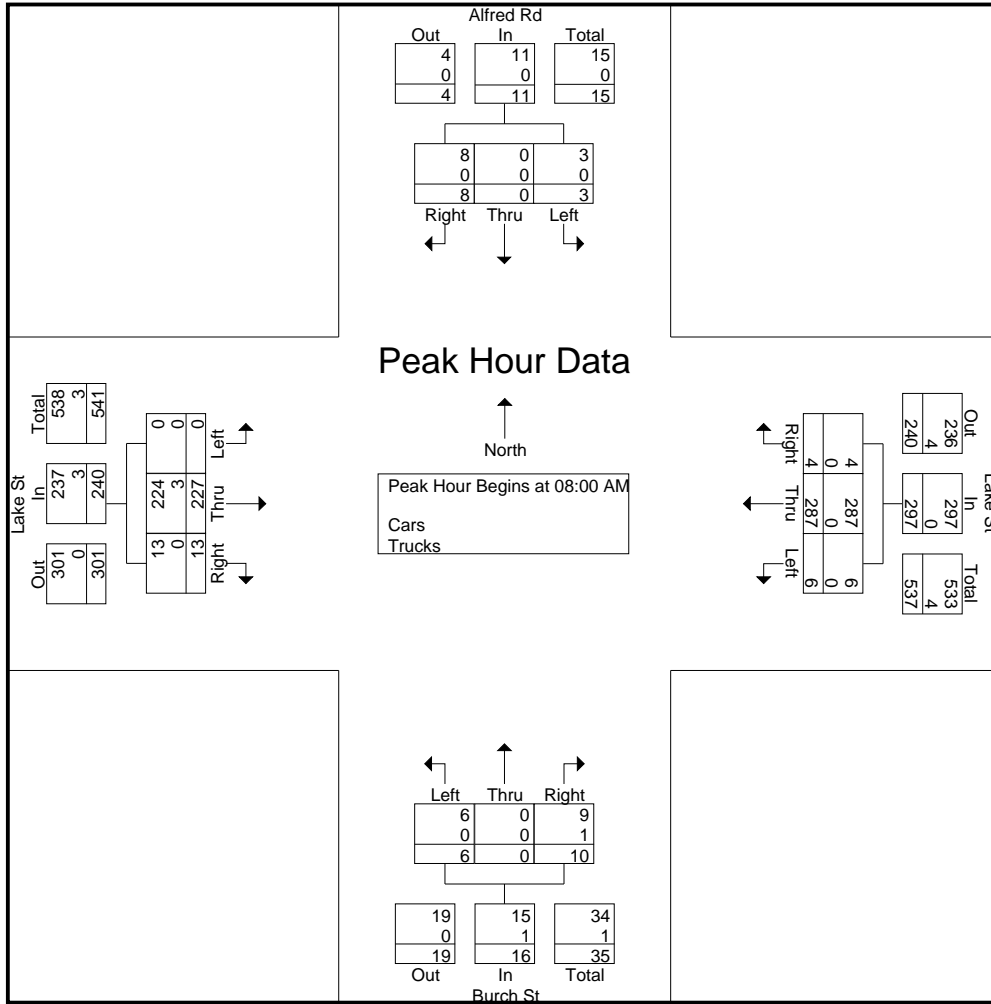
File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	1	0	1	0	0	53	2	0	4	0	0	0	0	39	1	0	0	101	101
07:15 AM	1	0	2	0	1	57	0	0	3	0	0	0	0	40	1	0	0	105	105
07:30 AM	2	0	2	0	0	82	0	0	3	0	2	0	0	40	0	0	0	131	131
07:45 AM	0	0	2	0	1	83	2	0	0	0	2	0	0	50	1	0	0	141	141
Total	4	0	7	0	2	275	4	0	10	0	4	0	0	169	3	0	0	478	478
08:00 AM	0	0	2	0	0	73	0	0	3	0	2	0	0	46	1	0	0	127	127
08:15 AM	0	0	3	0	1	74	2	0	1	0	3	0	0	70	6	0	0	160	160
08:30 AM	0	0	3	0	0	69	2	0	1	0	1	0	0	57	1	0	0	134	134
08:45 AM	3	0	0	0	5	71	0	0	1	0	4	0	0	54	5	0	0	143	143
Total	3	0	8	0	6	287	4	0	6	0	10	0	0	227	13	0	0	564	564
Grand Total	7	0	15	0	8	562	8	0	16	0	14	0	0	396	16	0	0	1042	1042
Apprch %	31.8	0	68.2		1.4	97.2	1.4		53.3	0	46.7		0	96.1	3.9				
Total %	0.7	0	1.4		0.8	53.9	0.8		1.5	0	1.3		0	38	1.5		0	100	
Cars	7	0	15		8	561	8		16	0	13		0	390	16		0	0	1034
% Cars	100	0	100		100	99.8	100		100	0	92.9		0	98.5	100		0	0	99.2
Trucks	0	0	0		0	1	0		0	0	1		0	6	0		0	0	8
% Trucks	0	0	0		0	0.2	0		0	0	7.1		0	1.5	0		0	0	0.8

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	0	0	2	2	0	73	0	73	3	0	2	5	0	46	1	47	127
08:15 AM	0	0	3	3	1	74	2	77	1	0	3	4	0	70	6	76	160
08:30 AM	0	0	3	3	0	69	2	71	1	0	1	2	0	57	1	58	134
08:45 AM	3	0	0	3	5	71	0	76	1	0	4	5	0	54	5	59	143
Total Volume	3	0	8	11	6	287	4	297	6	0	10	16	0	227	13	240	564
% App. Total	27.3	0	72.7		2	96.6	1.3		37.5	0	62.5		0	94.6	5.4		
PHF	.250	.000	.667	.917	.300	.970	.500	.964	.500	.000	.625	.800	.000	.811	.542	.789	.881
Cars	3	0	8	11	6	287	4	297	6	0	9	15	0	224	13	237	560
% Cars	100	0	100	100	100	100	100	100	100	0	90.0	93.8	0	98.7	100	98.8	99.3
Trucks	0	0	0	0	0	0	0	0	0	0	1	1	0	3	0	3	4
% Trucks	0	0	0	0	0	0	0	0	0	0	10.0	6.3	0	1.3	0	1.3	0.7

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:30 AM				08:00 AM			
+0 mins.	1	0	1	2	0	82	0	82	3	0	2	5	0	46	1	47
+15 mins.	1	0	2	3	1	83	2	86	0	0	2	2	0	70	6	76
+30 mins.	2	0	2	4	0	73	0	73	3	0	2	5	0	57	1	58
+45 mins.	0	0	2	2	1	74	2	77	1	0	3	4	0	54	5	59
Total Volume	4	0	7	11	2	312	4	318	7	0	9	16	0	227	13	240
% App. Total	36.4	0	63.6		0.6	98.1	1.3		43.8	0	56.2		0	94.6	5.4	
PHF	.500	.000	.875	.688	.500	.940	.500	.924	.583	.000	.750	.800	.000	.811	.542	.789
Cars	4	0	7	11	2	312	4	318	7	0	9	16	0	224	13	237
% Cars	100	0	100	100	100	100	100	100	100	0	100	100	0	98.7	100	98.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	0	1.2

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
Page No : 7

Groups Printed- Trucks

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	4
Grand Total	0	0	0	0	0	1	0	0	0	0	1	0	0	6	0	0	0	0	8
Apprch %	0	0	0		0	100	0		0	0	100		0	100	0		0	0	
Total %	0	0	0		0	12.5	0		0	0	12.5		0	75	0		0	0	100

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	0	0	0	0	0	0	0	0	0	1	0	1	1
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.750	.000	.750	.500

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	5	0	0	0	1	0	0	0	2	0	0	0	0	8	0	8
07:15 AM	0	0	0	7	0	1	0	1	0	0	0	0	0	0	0	0	8	1	9
07:30 AM	0	0	0	6	0	2	0	1	0	0	0	2	0	4	0	0	9	6	15
07:45 AM	0	1	0	7	0	1	0	1	0	0	0	4	0	0	0	0	12	2	14
Total	0	1	0	25	0	4	0	4	0	0	0	8	0	4	0	0	37	9	46
08:00 AM	0	0	0	14	0	2	0	1	0	0	0	0	0	1	0	2	17	3	20
08:15 AM	0	0	0	7	0	1	0	0	0	0	0	2	0	0	0	1	10	1	11
08:30 AM	0	1	0	4	0	0	0	0	0	0	0	1	0	1	0	0	5	2	7
08:45 AM	1	0	0	2	0	3	0	0	0	0	0	2	0	1	0	0	4	5	9
Total	1	1	0	27	0	6	0	1	0	0	0	5	0	3	0	3	36	11	47
Grand Total	1	2	0	52	0	10	0	5	0	0	0	13	0	7	0	3	73	20	93
Apprch %	33.3	66.7	0		0	100	0		0	0	0		0	100	0				
Total %	5	10	0		0	50	0		0	0	0		0	35	0		78.5	21.5	

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4	6
07:45 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Total Volume	0	1	0	1	0	6	0	6	0	0	0	0	0	5	0	5	12
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.750	.000	.750	.000	.000	.000	.000	.000	.313	.000	.313	.500

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

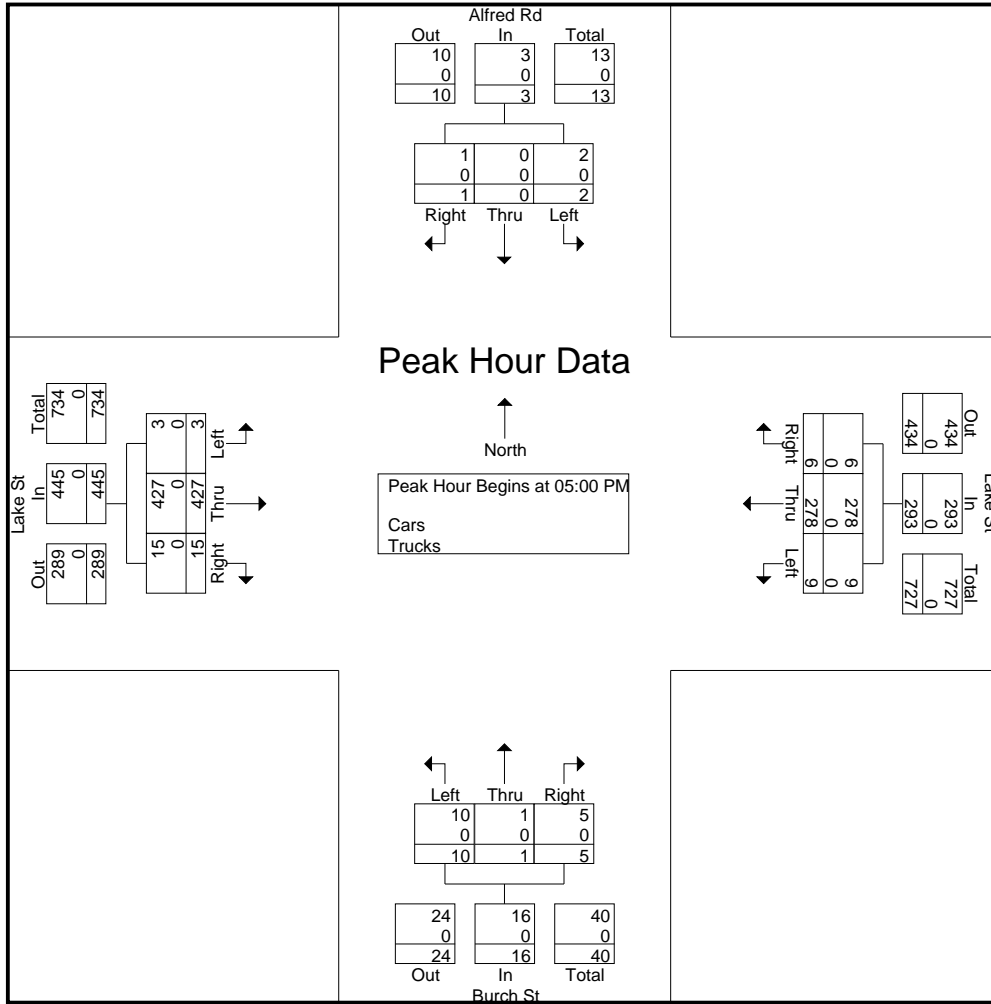
File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
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Groups Printed- Cars - Trucks

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	2	0	0	0	2	64	2	0	1	0	2	0	1	132	4	0	0	210	210
04:15 PM	0	0	0	0	2	56	3	0	2	1	2	0	0	91	6	0	0	163	163
04:30 PM	0	0	1	0	4	67	0	0	2	0	0	0	0	104	2	0	0	180	180
04:45 PM	3	0	1	0	2	59	3	0	3	0	0	0	1	93	5	0	0	170	170
Total	5	0	2	0	10	246	8	0	8	1	4	0	2	420	17	0	0	723	723
05:00 PM	0	0	0	0	0	68	2	0	4	0	3	0	0	129	1	0	0	207	207
05:15 PM	0	0	1	0	2	65	3	0	1	0	1	0	3	109	3	0	0	188	188
05:30 PM	2	0	0	0	3	64	1	0	2	1	0	0	0	105	4	0	0	182	182
05:45 PM	0	0	0	0	4	81	0	0	3	0	1	0	0	84	7	0	0	180	180
Total	2	0	1	0	9	278	6	0	10	1	5	0	3	427	15	0	0	757	757
Grand Total	7	0	3	0	19	524	14	0	18	2	9	0	5	847	32	0	0	1480	1480
Apprch %	70	0	30		3.4	94.1	2.5		62.1	6.9	31		0.6	95.8	3.6				
Total %	0.5	0	0.2		1.3	35.4	0.9		1.2	0.1	0.6		0.3	57.2	2.2		0	100	
Cars	7	0	3		19	522	14		18	2	9		5	847	32		0	0	1478
% Cars	100	0	100		100	99.6	100		100	100	100		100	100	100		0	0	99.9
Trucks	0	0	0		0	2	0		0	0	0		0	0	0		0	0	2
% Trucks	0	0	0		0	0.4	0		0	0	0		0	0	0		0	0	0.1

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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 05:00 PM																	
05:00 PM	0	0	0	0	0	68	2	70	4	0	3	7	0	129	1	130	207
05:15 PM	0	0	1	1	2	65	3	70	1	0	1	2	3	109	3	115	188
05:30 PM	2	0	0	2	3	64	1	68	2	1	0	3	0	105	4	109	182
05:45 PM	0	0	0	0	4	81	0	85	3	0	1	4	0	84	7	91	180
Total Volume	2	0	1	3	9	278	6	293	10	1	5	16	3	427	15	445	757
% App. Total	66.7	0	33.3		3.1	94.9	2		62.5	6.2	31.2		0.7	96	3.4		
PHF	.250	.000	.250	.375	.563	.858	.500	.862	.625	.250	.417	.571	.250	.828	.536	.856	.914
Cars	2	0	1	3	9	278	6	293	10	1	5	16	3	427	15	445	757
% Cars	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:15 PM				04:45 PM			
+0 mins.	2	0	0	2	0	68	2	70	2	1	2	5	1	93	5	99
+15 mins.	0	0	0	0	2	65	3	70	2	0	0	2	0	129	1	130
+30 mins.	0	0	1	1	3	64	1	68	3	0	0	3	3	109	3	115
+45 mins.	3	0	1	4	4	81	0	85	4	0	3	7	0	105	4	109
Total Volume	5	0	2	7	9	278	6	293	11	1	5	17	4	436	13	453
% App. Total	71.4	0	28.6		3.1	94.9	2		64.7	5.9	29.4		0.9	96.2	2.9	
PHF	.417	.000	.500	.438	.563	.858	.500	.862	.688	.250	.417	.607	.333	.845	.650	.871
Cars	5	0	2	7	9	278	6	293	11	1	5	17	4	436	13	453
% Cars	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
Page No : 7

Groups Printed- Trucks

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	1	0	0	0	0	0	0	0	0	0	0	0	1	1
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	2
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0		0		
Total %	0	0	0		0	100	0		0	0	0		0	0	0		0	100	

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.500

Accurate Counts
978-664-2565

N/S Street : Alfred Rd / Burch St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510003
Site Code : 84510003
Start Date : 9/10/2020
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Groups Printed- Bikes Peds

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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	2	0	1	0	0	0	0	0	1	0	0	0	0	3	1	4
04:15 PM	0	0	0	3	0	1	0	1	0	0	0	1	0	0	0	0	5	1	6
04:30 PM	2	0	0	3	0	0	0	1	0	0	0	2	0	0	0	0	6	2	8
04:45 PM	0	0	0	8	0	1	0	0	0	0	0	1	0	0	0	0	9	1	10
Total	2	0	0	16	0	3	0	2	0	0	0	5	0	0	0	0	23	5	28
05:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	3	0	0	1	4	5
05:15 PM	0	0	0	1	0	0	3	1	0	0	0	1	0	1	0	0	3	4	7
05:30 PM	0	0	0	2	0	2	0	0	0	0	0	1	0	1	0	0	3	3	6
05:45 PM	0	0	0	2	0	2	0	0	0	0	0	3	0	2	0	0	5	4	9
Total	0	0	0	6	0	5	3	1	0	0	0	5	0	7	0	0	12	15	27
Grand Total	2	0	0	22	0	8	3	3	0	0	0	10	0	7	0	0	35	20	55
Apprch %	100	0	0		0	72.7	27.3		0	0	0		0	100	0				
Total %	10	0	0		0	40	15		0	0	0		0	35	0		63.6	36.4	

Start Time	Alfred Rd From North				Lake St From East				Burch St From South				Lake 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 05:00 PM																	
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
05:15 PM	0	0	0	0	0	0	3	3	0	0	0	0	0	1	0	1	4
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
05:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Total Volume	0	0	0	0	0	5	3	8	0	0	0	0	0	7	0	7	15
% App. Total	0	0	0	0	0	62.5	37.5		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.625	.250	.667	.000	.000	.000	.000	.000	.583	.000	.583	.938

Accurate Counts
978-664-2565

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

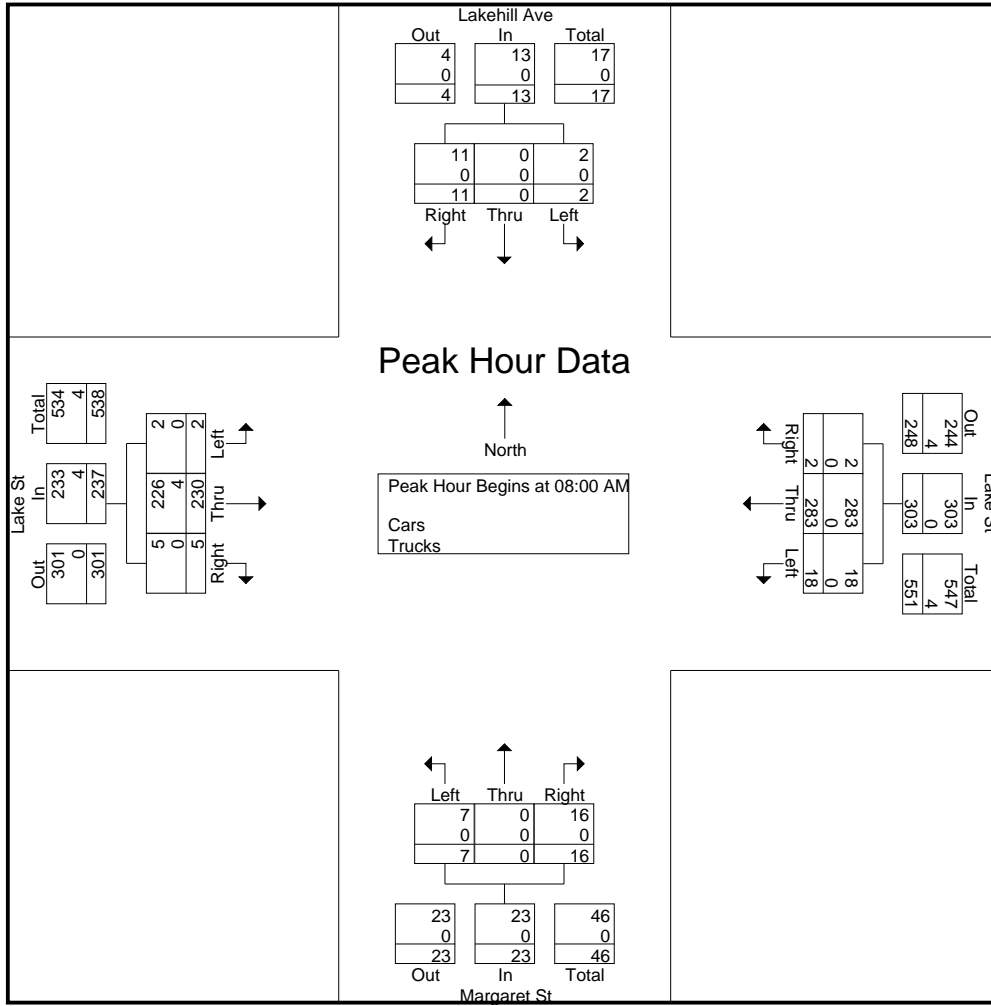
File Name : 84510004
Site Code : 84510004
Start Date : 9/10/2020
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Lakehill Ave From North			Lake St From East			Margaret St From South			Lake St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	1	2	56	0	1	0	5	1	38	0	104
07:15 AM	0	0	4	4	52	0	1	0	2	0	41	0	104
07:30 AM	2	0	5	2	76	1	0	0	3	1	46	0	136
07:45 AM	0	0	1	2	86	0	0	0	3	1	50	1	144
Total	2	0	11	10	270	1	2	0	13	3	175	1	488
08:00 AM	0	0	2	6	70	0	2	0	4	0	49	0	133
08:15 AM	0	0	2	3	75	0	2	0	2	0	69	2	155
08:30 AM	0	0	4	6	65	0	2	0	7	1	55	2	142
08:45 AM	2	0	3	3	73	2	1	0	3	1	57	1	146
Total	2	0	11	18	283	2	7	0	16	2	230	5	576
Grand Total	4	0	22	28	553	3	9	0	29	5	405	6	1064
Apprch %	15.4	0	84.6	4.8	94.7	0.5	23.7	0	76.3	1.2	97.4	1.4	
Total %	0.4	0	2.1	2.6	52	0.3	0.8	0	2.7	0.5	38.1	0.6	
Cars	4	0	22	28	552	3	9	0	29	5	398	6	1056
% Cars	100	0	100	100	99.8	100	100	0	100	100	98.3	100	99.2
Trucks	0	0	0	0	1	0	0	0	0	0	7	0	8
% Trucks	0	0	0	0	0.2	0	0	0	0	0	1.7	0	0.8

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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	0	0	2	2	6	70	0	76	2	0	4	6	0	49	0	49	133
08:15 AM	0	0	2	2	3	75	0	78	2	0	2	4	0	69	2	71	155
08:30 AM	0	0	4	4	6	65	0	71	2	0	7	9	1	55	2	58	142
08:45 AM	2	0	3	5	3	73	2	78	1	0	3	4	1	57	1	59	146
Total Volume	2	0	11	13	18	283	2	303	7	0	16	23	2	230	5	237	576
% App. Total	15.4	0	84.6		5.9	93.4	0.7		30.4	0	69.6		0.8	97	2.1		
PHF	.250	.000	.688	.650	.750	.943	.250	.971	.875	.000	.571	.639	.500	.833	.625	.835	.929
Cars	2	0	11	13	18	283	2	303	7	0	16	23	2	226	5	233	572
% Cars	100	0	100	100	100	100	100	100	100	0	100	100	100	98.3	100	98.3	99.3
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0	1.7	0.7

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	4	4	2	76	1	79	2	0	4	6	0	49	0	49
+15 mins.	2	0	5	7	2	86	0	88	2	0	2	4	0	69	2	71
+30 mins.	0	0	1	1	6	70	0	76	2	0	7	9	1	55	2	58
+45 mins.	0	0	2	2	3	75	0	78	1	0	3	4	1	57	1	59
Total Volume	2	0	12	14	13	307	1	321	7	0	16	23	2	230	5	237
% App. Total	14.3	0	85.7		4	95.6	0.3		30.4	0	69.6		0.8	97	2.1	
PHF	.250	.000	.600	.500	.542	.892	.250	.912	.875	.000	.571	.639	.500	.833	.625	.835
Cars	2	0	12	14	13	307	1	321	7	0	16	23	2	226	5	233
% Cars	100	0	100	100	100	100	100	100	100	0	100	100	100	98.3	100	98.3
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7	0	1.7

Accurate Counts
978-664-2565

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510004
Site Code : 84510004
Start Date : 9/10/2020
Page No : 7

Groups Printed- Trucks

Start Time	Lakehill Ave From North			Lake St From East			Margaret St From South			Lake St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	3	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	4	0	4
Grand Total	0	0	0	0	1	0	0	0	0	0	7	0	8
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	12.5	0	0	0	0	0	87.5	0	

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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	0	0	0	0	0	0	0	0	0	1	0	1	1
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.750	.000	.750	.500

Accurate Counts
978-664-2565

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

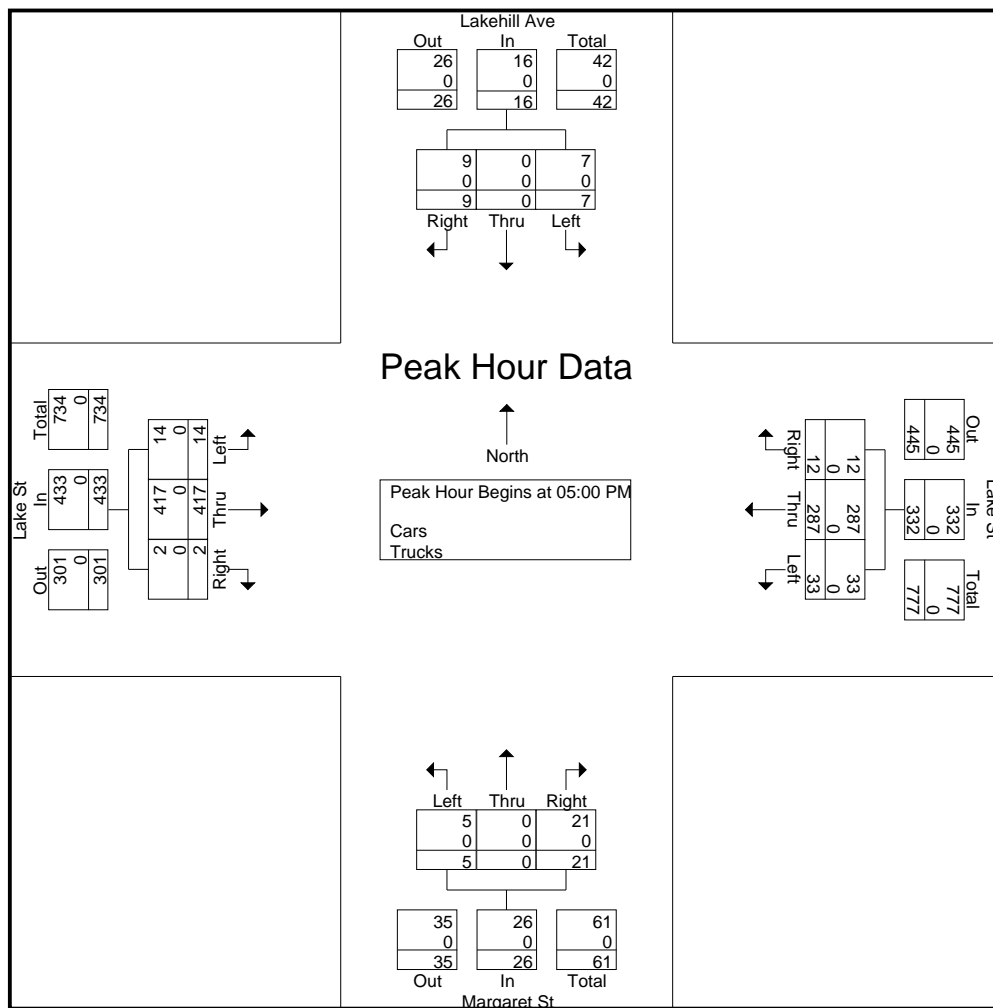
File Name : 84510004
Site Code : 84510004
Start Date : 9/10/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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	5	0	0	0	0	0	0	1	4	0	1	0	0	9	2	11
07:15 AM	0	0	0	5	0	1	0	0	0	0	0	1	0	0	0	0	6	1	7
07:30 AM	0	0	0	9	0	2	0	0	0	0	0	1	1	1	0	2	12	4	16
07:45 AM	0	0	0	7	0	1	0	1	0	0	1	5	0	2	0	3	16	4	20
Total	0	0	0	26	0	4	0	1	0	0	2	11	1	4	0	5	43	11	54
08:00 AM	0	0	0	13	0	2	0	1	0	0	1	0	0	1	0	1	15	4	19
08:15 AM	0	1	0	9	0	1	0	0	0	0	1	1	0	0	0	0	10	3	13
08:30 AM	0	0	0	4	0	0	0	0	0	0	1	1	0	2	0	1	6	3	9
08:45 AM	0	0	0	1	0	2	0	1	0	0	0	1	0	2	0	0	3	4	7
Total	0	1	0	27	0	5	0	2	0	0	3	3	0	5	0	2	34	14	48
Grand Total	0	1	0	53	0	9	0	3	0	0	5	14	1	9	0	7	77	25	102
Apprch %	0	100	0		0	100	0		0	0	100		10	90	0				
Total %	0	4	0		0	36	0		0	0	20		4	36	0		75.5	24.5	

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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 07:30 AM																	
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2	4
07:45 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	2	0	2	4
08:00 AM	0	0	0	0	0	2	0	2	0	0	1	1	0	1	0	1	4
08:15 AM	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0	0	3
Total Volume	0	1	0	1	0	6	0	6	0	0	3	3	1	4	0	5	15
% App. Total	0	100	0		0	100	0		0	0	100		20	80	0		
PHF	.000	.250	.000	.250	.000	.750	.000	.750	.000	.000	.750	.750	.250	.500	.000	.625	.938

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				05:00 PM				04:45 PM			
+0 mins.	1	0	5	6	3	72	1	76	0	0	5	5	2	93	2	97
+15 mins.	4	0	6	10	3	73	1	77	1	0	4	5	5	126	0	131
+30 mins.	2	0	1	3	13	64	8	85	2	0	6	8	4	106	1	111
+45 mins.	2	0	2	4	14	78	2	94	2	0	6	8	3	103	0	106
Total Volume	9	0	14	23	33	287	12	332	5	0	21	26	14	428	3	445
% App. Total	39.1	0	60.9		9.9	86.4	3.6		19.2	0	80.8		3.1	96.2	0.7	
PHF	.563	.000	.583	.575	.589	.920	.375	.883	.625	.000	.875	.813	.700	.849	.375	.849
Cars	9	0	14	23	33	287	12	332	5	0	21	26	14	428	3	445
% Cars	100	0	100	100	100	100	100	100	100	0	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accurate Counts
978-664-2565

N/S Street : Lakehill Ave / Margaret St
E/W Street : Lake Street
City/State : Arlington, MA
Weather : Cloudy

File Name : 84510004
Site Code : 84510004
Start Date : 9/10/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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	3	0	0	0	0	1	0	0	1	0	0	0	0	4	1	5
04:15 PM	0	0	0	5	0	1	0	0	0	0	0	1	0	0	0	0	6	1	7
04:30 PM	0	0	0	5	0	0	0	1	0	0	0	2	0	1	0	0	8	1	9
04:45 PM	0	0	0	6	0	0	0	0	0	0	3	0	0	0	0	0	6	3	9
Total	0	0	0	19	0	1	0	1	1	0	3	4	0	1	0	0	24	6	30
05:00 PM	0	0	0	0	2	1	0	0	0	0	0	1	0	4	0	0	1	7	8
05:15 PM	0	0	2	2	0	0	0	1	0	0	0	0	0	0	0	0	3	2	5
05:30 PM	0	0	0	5	0	2	0	0	0	0	1	0	0	1	0	0	5	4	9
05:45 PM	0	0	0	5	1	2	0	2	0	0	0	2	0	2	0	0	9	5	14
Total	0	0	2	12	3	5	0	3	0	0	1	3	0	7	0	0	18	18	36
Grand Total	0	0	2	31	3	6	0	4	1	0	4	7	0	8	0	0	42	24	66
Apprch %	0	0	100		33.3	66.7	0		20	0	80		0	100	0				
Total %	0	0	8.3		12.5	25	0		4.2	0	16.7		0	33.3	0		63.6	36.4	

Start Time	Lakehill Ave From North				Lake St From East				Margaret St From South				Lake 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 05:00 PM																	
05:00 PM	0	0	0	0	2	1	0	3	0	0	0	0	0	4	0	4	7
05:15 PM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	2	0	2	0	0	1	1	0	1	0	1	4
05:45 PM	0	0	0	0	1	2	0	3	0	0	0	0	0	2	0	2	5
Total Volume	0	0	2	2	3	5	0	8	0	0	1	1	0	7	0	7	18
% App. Total	0	0	100		37.5	62.5	0		0	0	100		0	100	0		
PHF	.000	.000	.250	.250	.375	.625	.000	.667	.000	.000	.250	.250	.000	.438	.000	.438	.643

MINUTEMAN COMMUTER BIKEWAY DATA

Location	Month	Year	AM/PM	Total on Bikes	Total on Foot	Total Trail Users	
Minuteman at Dog Park	Sept		AM				
		2019		615	884	1535	566.6734
			PM				
		2019		555	745	1359	417.3708
Minuteman at Dog Park	Feb		AM				
		2019		271	697	986	
			PM				
		2019		218	563	801	
Minuteman at Lake St	Feb		AM				
		2019		235	140	364	0.37
			PM				
		2019		147	93	246	0.31

July 1 2019 to October 31 2019
Minuteman Bikeway at Swan Place
Pedestrian + Bicycle Volume

Peak Hour	8-9 AM	294
Peak Period	7-9 AM	548
Peak Hour/Peak Period		0.54
Peak Hour	5-6 PM	270
Peak Period	5-7 PM	534
Peak Hour/Peak Period		0.51

Year	Peak Hour	Lake Street Ped/Bike Volume
2020	AM	304
	PM	211

SEASONAL ADJUSTMENT DATA

Station 4065

	Monthly Volume Recorded Volume	Active Days Counted	Average Daily Volume	Relation to Average Month	March to September Relation
January	3382369	24	140932	0.844	
February	3358292	22	152650	0.914	
March	5093243	29	175629	1.052	0.973
April	4822590	28	172235	1.032	
May	5753246	30	191775	1.149	
June	5040562	28	180020	1.078	
July	4859583	30	161986	0.970	
August	5151326	30	171711	1.028	
September	4956663	29	170919	1.024	
October	5150660	30	171689	1.028	
November	4509218	28	161044	0.964	
December	4192605	29	144573	0.866	
	56270357	337	166974	1.000	
Average Month Daily Volume		166974			

Station 4065

Month	Year	Average Daily Volume
May	2019	186499
September	2019	184606

May 2019 to September 2019	0.990
----------------------------	-------

Station 4065

Month	Year	Average Daily Volume
September	2014	168063
September	2016	170919
September	2019	184606

September 2014 to September 2016	1.017
September 2016 to September 2019	1.080

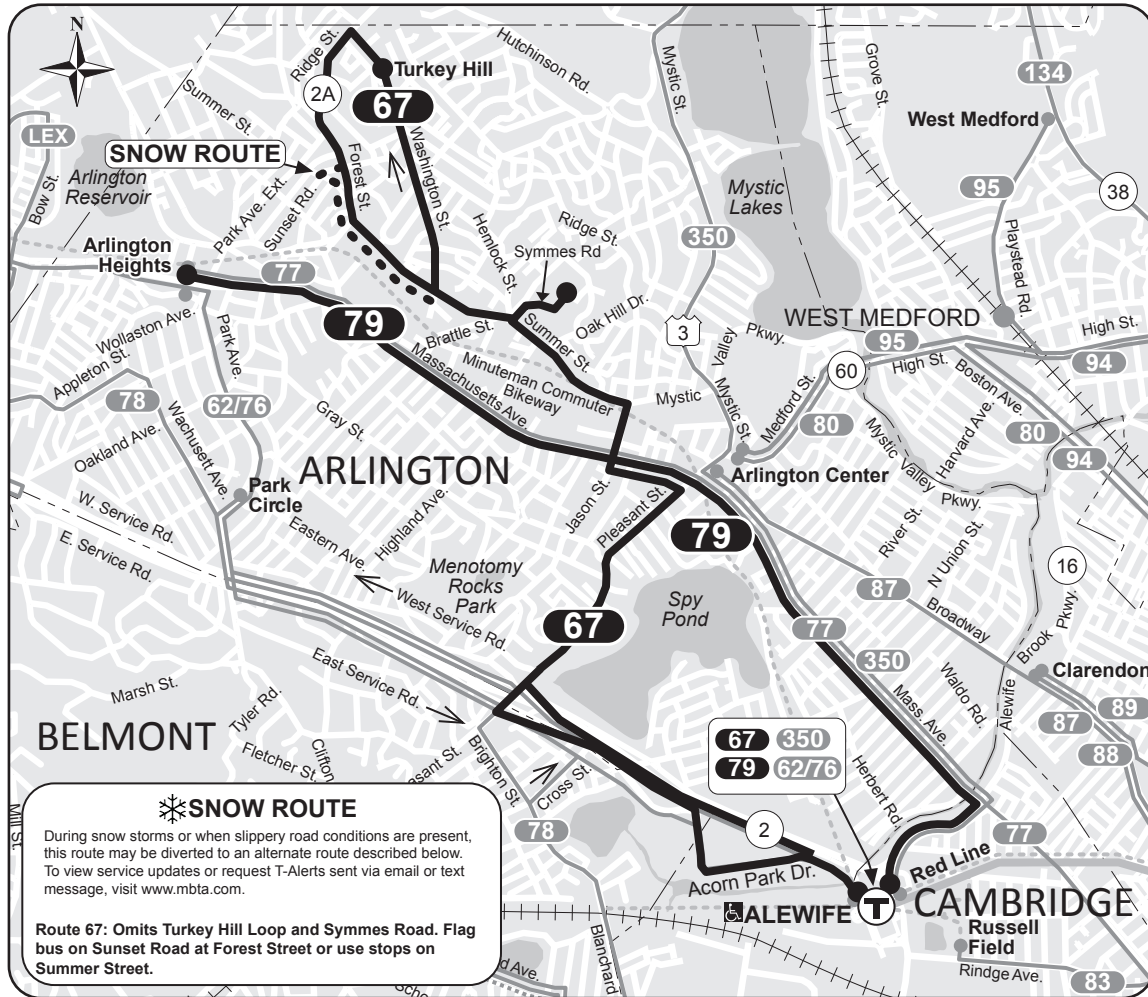
COVID-19 ADJUSTMENT DATA

Station 4065

	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	ADT
Aug-19	1615	955	683	752	1405	4627	8620	10798	11160	11372	11521	11661	11786	11803	11986	11885	12013	12024	11143	8610	6609	5129	3946	2806	184909
Aug-20	966	612	465	532	1058	3350	6542	7951	8177	8435	9121	9764	10188	10457	11218	10996	10246	9802	7890	6063	4697	3376	2474	1686	146067
19/20	1.67	1.56	1.47	1.41	1.33	1.38	1.32	1.36	1.36	1.35	1.26	1.19	1.16	1.13	1.07	1.08	1.17	1.23	1.41	1.42	1.41	1.52	1.59	1.66	
								Adjust Avg of 7-10				Adjust Avg of 16-19					Adjust By ADT			Adjust by Avg Hourly					
								1.357				1.2705					1.266			1.35					

PUBLIC TRANSPORTATION SCHEDULES

Route 67 Turkey Hill - Alewife Station
Route 79 Arlington Heights - Alewife Station



Schedule Change

67•79

Effective August 30, 2020

67 Turkey Hill-Alewife Station
79 Arlington Heights-Alewife Station

Serving

- Arlington High School
- Arlington Town Hall
- Arlington Center
- Red Line



T Massachusetts Bay Transportation Authority **massDOT**
 Massachusetts Department of Transportation

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

67 Weekday					
Inbound			Outbound		
Leave Turkey Hill	Arrive Arlington Center	Arrive Alewife Station	Leave Alewife Station	Arrive Arlington Center	Arrive Turkey Hill
6:18A	6:23A	6:32A	5:53A	6:00A	6:15A
6:52	6:57	7:07	6:26	6:33	6:48
7:22	7:29	7:43	6:59	7:06	7:21
7:49	7:56	8:10	7:24	7:31	7:47
8:17	8:24	8:39	7:53	8:00	8:16
8:45	8:50	9:03	8:23	8:30	8:44
9:12	9:17	9:27	8:49	8:56	9:10
10:02	10:07	10:17	9:39	9:46	10:00
10:52	10:57	11:07	10:29	10:36	10:50
11:42	11:47	11:56	11:19	11:26	11:40
12:32P	12:37P	12:46P	12:09P	12:16P	12:30P
1:22	1:27	1:36	12:59	1:06	1:20
2:12	2:17	2:26	1:48	1:55	2:10
3:02	3:07	3:16	2:38	2:47	3:02
3:52	3:57	4:06	3:27	3:36	3:51
4:42	4:47	4:56	4:17	4:26	4:41
5:10	5:16	5:26	4:44	4:55	5:10
5:37	5:43	5:53	5:11	5:22	5:37
6:05	6:11	6:21	5:38	5:49	6:04
6:32	6:36	6:45	6:05	6:16	6:31
6:57	7:01	7:10	6:33	6:41	6:56
7:37	7:41	7:49	7:15	7:23	7:37
8:20	8:24	8:32	7:58	8:05	8:18

Service Note: Route 67
Serves Symmes Road **OUTBOUND ONLY**.


Route 67
Turkey Hill-Alewife Station

79 Weekday					
Inbound			Outbound		
Leave Arlington Heights	Arrive Arlington Center	Arrive Alewife Station	Leave Alewife Station	Arrive Arlington Center	Arrive Arlington Heights
6:35A	6:41A	6:55A	7:02A	7:09A	7:19A
7:00	7:06	7:20	7:30	7:38	7:52
7:30	7:39	7:59	8:10	8:16	8:26
8:00	8:06	8:24	8:35	8:41	8:51
8:30	8:36	8:54	9:30	9:36	9:46
9:00	9:05	9:20			
9:50	9:55	10:06	2:00P	2:06P	2:16P
			2:45	2:52	3:05
2:20P	2:26P	2:39P	3:10	3:17	3:28
s 3:05	3:11	3:25	3:30	3:37	3:48
s 3:15	3:21	3:34	3:50	3:57	4:09
3:20	3:26	3:39	4:10	4:22	4:34
s 3:25	3:30	3:41	4:30	4:42	4:54
3:40	3:46	3:59	4:50	5:02	5:14
4:00	4:06	4:19	5:10	5:24	5:36
4:20	4:26	4:39	5:30	5:44	5:56
4:40	4:46	4:59	5:50	6:03	6:14
5:00	5:06	5:20	6:15	6:27	6:38
5:20	5:26	5:40	6:35	6:47	6:58
5:45	5:51	6:05	7:05	7:13	7:24
6:05	6:11	6:25			
6:45	6:51	7:02			

s - Leaves from Massachusetts Avenue at Appleton Street and does NOT run during school vacation

Route 79
Arlington Heights-Alewife Station

No service on weekends.

 All buses are accessible to persons with disabilities



Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	\$1.70	\$1.70	\$2.40	\$2.40
CharlieTicket	\$2.00	\$2.00	\$2.90	\$4.90
Cash-on-Board	\$2.00	\$4.00	\$2.90	\$4.90
Student/Youth*	\$0.85	\$0.85	\$1.10	\$1.10
Senior/TAP**	\$0.85	\$0.85	\$1.10	\$1.10

VALID PASSES: LinkPass (\$90.00/mo.); Local Bus (\$55/mo.); *Student/Youth LinkPass (\$30.00/mo.); **Senior/TAP LinkPass (\$30/mo.); and express bus, commuter rail, and boat passes.

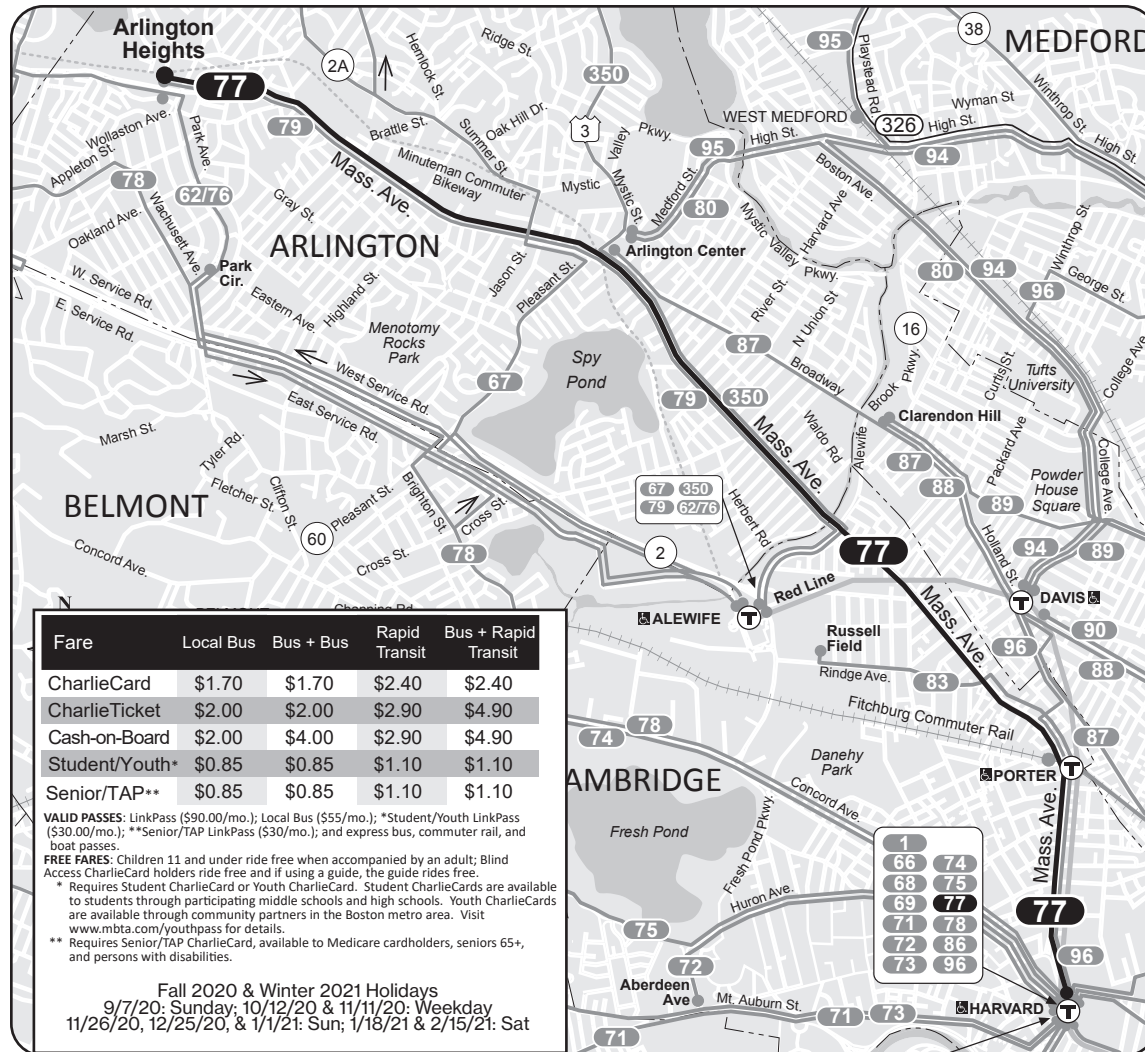
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2020 & Winter 2021 Holidays
9/7/20: Sunday; 10/12/20 & 11/11/20: Weekday
11/26/20, 12/25/20, & 1/1/21: Sun; 1/18/21 & 2/15/21: Sat

Route 77 Arlington Heights - Harvard Station



77

Effective August 30, 2020

Arlington Heights- Harvard Station

Serving

- Porter Station
- Arlington High School
- Arlington Center
- Harvard University
- Eliot Street
- Red Line
- Fitchburg Commuter Rail

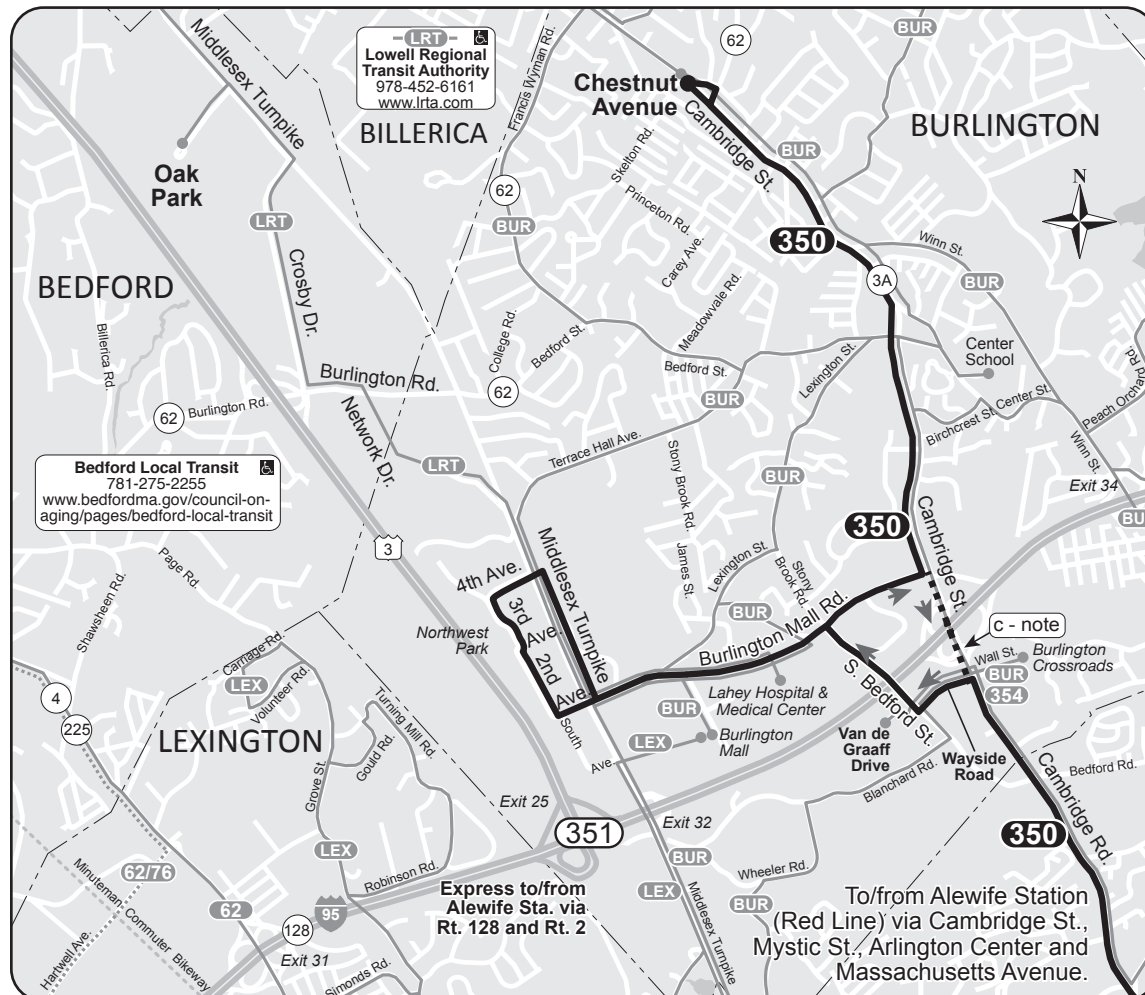


T Massachusetts Bay Transportation Authority **massDOT**
 Massachusetts Department of Transportation

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 (TTY) 617-222-5146 • www.mbta.com

77 Weekday				77 Saturday				77 Sunday															
Inbound				Outbound				Inbound				Outbound											
Leave Arlington Heights	Arrive Arlington Center	Lv/Arrive North Camb.	Arrive Harvard Square	Leave Harvard Station	Arrive North Camb.	Arrive Arlington Center	Arrive Arlington Heights	Leave Arlington Heights	Arrive Arlington Center	Lv/Arrive North Camb.	Arrive Harvard Square	Leave Harvard Station	Arrive North Camb.	Arrive Arlington Center	Arrive Arlington Heights	Leave Harvard Station	Arrive Arlington Center	Arrive Harvard Square	Leave Harvard Station	Arrive Arlington Center	Arrive Arlington Heights		
4:48A	4:54A	5:01A	5:12A	5:11A	5:19A	5:24A	5:29A	4:48A	4:52A	4:59A	5:09A	5:18A	5:27A	5:32A	5:38A	6:00A	6:04A	6:22A	6:25A	6:39A	6:45A		
5:00	5:06	5:13	5:24	5:21	5:29	5:34	5:39	5:03	5:07	5:14	5:24	5:33	5:42	5:47	5:53	6:20	6:24	6:42	6:44	6:58	7:04		
5:12	5:18	5:25	5:36	5:32	5:40	5:45	5:50	5:18	5:22	5:29	5:39	5:48	5:57	6:02	6:08	6:40	6:44	7:03	7:04	7:18	7:24		
5:23	5:29	5:36	5:47	5:43	5:51	5:56	6:01	5:33	5:37	5:44	5:54	6:03	6:12	6:17	6:23	7:00	7:04	7:23	7:24	7:38	7:44		
5:34	5:40	5:47	5:58	5:54	6:02	6:08	6:13	5:48	5:52	5:59	6:10	Every	15 Minutes	Until	7:20	7:24	7:43	7:44	7:58	8:05	8:05		
Every	10 Mins.	or	Less	6:05	6:15	6:21	6:26	6:03	6:09	6:16	6:27	7:33	7:43	7:50	7:58	7:40	7:44	8:03	8:04	8:23	8:30		
10:15	10:23	10:34	10:51	6:18	6:28	6:34	6:39	6:18	6:24	6:31	6:42	7:48	7:58	8:05	8:13	7:55	7:59	8:20	8:24	8:43	8:50		
10:25	10:33	10:44	11:01	6:31	6:41	6:47	6:52	Every	14 Mins.	Until	7:51	8:01	8:11	8:18	8:26	8:10	8:14	8:38	8:44	9:03	9:11		
10:34	10:42	10:53	11:10	6:42	6:52	6:58	7:08	7:15	7:22	7:31	7:45	8:14	8:24	8:31	8:39	8:25	8:29	8:54	9:04	9:24	9:32		
10:43	10:51	11:02	11:19	6:51	7:02	7:12	7:23	7:31	7:38	7:47	8:01	8:28	8:38	8:45	8:53	8:40	8:45	9:10	9:24	9:44	9:52		
10:52	11:00	11:11	11:28	7:00	7:12	7:22	7:33	7:47	7:54	8:03	8:17	Every	14 Mins.	Until	9:02	9:14	9:02	9:27	9:44	10:04	10:12		
11:01	11:09	11:20	11:37	7:09	7:21	7:31	7:42	8:02	8:09	8:18	8:32	9:37	9:48	9:56	10:04	9:14	9:19	9:44	10:04	10:24	10:32		
11:11	11:19	11:30	11:47	Every	10 Mins.	or	Less	8:17	8:24	8:33	8:47	9:50	10:01	10:09	10:17	9:30	9:35	10:00	Every	15 Mins.	or	Less	
11:20	11:28	11:39	11:56	11:19	11:30	11:38	11:47	8:32	8:39	8:48	9:02	10:03	10:14	10:22	10:30	Every	17 Mins.	or	Less	11:46	12:08P	12:17P	
11:29	11:37	11:48	12:06P	11:28	11:39	11:47	11:56	8:45	8:52	9:01	9:15	10:15	10:26	10:34	10:42	11:49	11:55	12:25P	12:01P	12:23P	12:32P	12:32P	
11:38	11:46	11:57	12:15	11:37	11:48	11:56	12:06P	8:57	9:04	9:13	9:27	10:26	10:38	10:46	10:54	12:05P	12:11P	12:41	Every	15 Mins.	or	Less	
11:47	11:56	12:07P	12:25	11:46	11:57	12:05P	12:15	9:09	9:16	9:25	9:39	10:37	10:49	10:57	11:05	Every	17 Mins.	or	Less	7:08	7:28	7:36	
11:56	12:05P	12:16	12:34	11:55	12:08P	12:17	12:27	9:21	9:28	9:37	9:51	10:49	11:01	11:09	11:17	6:20	6:25	6:49	7:01	7:41	7:49	7:49	
12:05P	12:14	12:25	12:43	12:05P	12:17	12:26	12:36	9:33	9:40	9:49	10:03	11:00	11:12	11:20	11:28	6:34	6:38	7:02	7:08	7:56	8:04	8:04	
12:14	12:23	12:34	12:52	Every	10 Mins.	or	Less	9:45	9:52	10:01	10:15	11:12	11:24	11:33	11:42	6:47	6:51	7:15	7:51	8:11	8:19	8:19	
Every	11 Mins.	or	Less	4:14	4:30	4:46	4:58	9:56	10:03	10:12	10:26	11:24	11:36	11:45	11:54	7:01	7:05	7:29	8:07	8:27	8:35	8:35	
4:01	4:10	4:22	4:38	4:24	4:43	4:59	5:11	10:07	10:14	10:23	10:38	11:35	11:47	11:56	12:05P	7:16	7:20	7:44	8:23	8:43	8:51	8:51	
4:11	4:20	4:32	4:49	4:34	4:53	5:09	5:21	10:18	10:25	10:35	10:52	11:47	11:59	12:08P	12:17	7:32	7:36	8:00	8:38	8:58	9:06	9:06	
4:21	4:30	4:42	5:01	4:44	5:03	5:19	5:31	10:40	10:48	10:59	11:16	12:09P	12:21	12:30	12:39	7:48	7:52	8:16	8:54	9:14	9:22	9:22	
4:31	4:40	4:53	5:12	4:54	5:13	5:29	5:41	10:51	10:59	11:10	11:27	Every	12 Mins.	or	Less	8:05	8:09	8:32	9:10	9:30	9:37	9:37	
4:41	4:50	5:04	5:23	5:04	5:23	5:39	5:51	11:02	11:10	11:21	11:38	6:55	7:07	7:15	7:23	8:22	8:26	8:50	9:25	9:42	9:49	9:49	
4:51	5:00	5:14	5:33	5:14	5:33	5:49	6:01	Every	11 Mins.	Until	6:55	7:07	7:15	7:23	8:39	8:43	9:06	9:40	9:57	10:04	10:04	10:04	
5:01	5:10	5:24	5:43	5:24	5:43	5:59	6:11	11:56	12:04P	12:15P	12:32P	7:07	7:19	7:27	7:35	8:55	8:59	9:22	9:54	10:11	10:18	10:18	
5:11	5:20	5:34	5:53	5:34	5:53	6:09	6:21	12:06P	12:14	12:25	12:42	7:19	7:31	7:39	7:47	9:12	9:16	9:39	10:09	10:26	10:33	10:33	
5:21	5:30	5:44	6:03	5:44	6:03	6:19	6:30	Every	12 Mins.	or	Less	7:31	7:43	7:51	7:59	9:28	9:32	9:55	10:22	10:39	10:46	10:46	
5:31	5:40	5:54	6:13	5:54	6:13	6:29	6:36	6:34	6:41	6:51	7:09	7:44	7:56	8:04	8:12	9:44	9:48	10:11	10:36	10:53	11:00	11:00	
5:41	5:50	6:04	6:23	6:04	6:23	6:37	6:44	6:47	6:54	7:04	7:21	7:57	8:09	8:17	8:25	10:00	10:04	10:27	10:49	11:06	11:13	11:13	
5:50	5:59	6:13	6:32	6:14	6:31	6:42	6:49	7:00	7:06	7:16	7:33	8:10	8:22	8:30	8:37	10:15	10:19	10:41	11:02	11:19	11:26	11:26	
6:00	6:09	6:23	6:42	6:23	6:36	6:47	6:54	7:15	7:21	7:31	7:48	8:25	8:36	8:43	8:50	10:32	10:35	10:55	11:15	11:32	11:37	11:37	
6:10	6:19	6:33	6:52	6:32	6:44	6:55	7:02	7:30	7:36	7:46	8:03	8:40	8:51	8:58	9:05	10:48	10:51	11:11	11:30	11:45	11:50	11:50	
Every	10 Minutes	Until	9:20	6:41	6:53	7:04	7:11	7:45	7:51	8:01	8:17	8:55	9:06	9:13	9:20	11:04	11:07	11:27	11:45	12:00M	12:05A	12:05A	
8:50	8:56	9:05	9:20	6:50	7:02	7:13	7:20	8:00	8:05	8:14	8:30	9:10	9:21	9:28	9:35	11:17	11:20	11:40	12:00M	12:15A	12:20	12:20	
9:00	9:06	9:15	9:30	6:59	7:11	7:22	7:29	8:15	8:20	8:29	8:45	9:25	9:36	9:43	9:50	11:35	11:38	11:58	12:10A	12:25	12:30	12:30	
9:10	9:16	9:25	9:40	7:08	7:20	7:31	7:38	8:30	8:35	8:44	9:00	9:40	9:51	9:58	10:05	11:55	11:58	12:18A	12:25	12:40	12:45	12:45	
9:21	9:27	9:36	9:51	7:17	7:29	7:40	7:47	8:45	8:50	8:59	9:15	10:10	10:21	10:28	10:35	12:15A	12:18A	12:38	12:45	1:00	1:05	1:05	
9:32	9:38	9:47	10:02	7:26	7:38	7:49	7:56	9:00	9:05	9:14	9:30	10:26	10:37	10:44	10:51	12:35	12:38	12:58	w 1:05	1:20	1:25	1:25	
9:43	9:49	9:58	10:13	7:35	7:47	7:58	8:05	9:15	9:20	9:29	9:45	10:42	10:53	11:00	11:07	9:44	9:48	10:11	10:36	10:53	11:00	11:00	
9:54	10:00	10:09	10:24	Every	11 Mins.	or	Less	9:31	9:36	9:45	10:01	10:58	11:09	11:16	11:23	10:00	10:04	10:27	10:49	11:06	11:13	11:13	
10:05	10:11	10:20	10:34	10:38	10:49	10:56	11:03	9:48	9:53	10:02	10:18	11:14	11:25	11:32	11:38	11:17	11:20	11:40	12:00M	12:15A	12:20	12:20	
10:16	10:22	10:30	10:43	10:50	11:01	11:08	11:15	10:05	10:10	10:19	10:35	11:30	11:40	11:47	11:53	11:04	11:07	11:27	11:45	12:00M	12:15A	12:20	
10:27	10:33	10:40	10:53	11:02	11:13	11:18	11:23	10:22	10:27	10:35	10:51	11:46	11:56	12:03A	12:09A	11:17	11:20	11:40	12:00M	12:15A	12:20	12:20	
10:38	10:43	10:50	11:03	11:13	11:23	11:28	11:33	10:39	10:44	10:52	11:08	12:02A	12:12A	12:19	12:25	11:35	11:38	11:58	12:10A	12:25	12:30	12:30	
10:50	10:55	11:02	11:15	11:24	11:34	11:39	11:44	10:39	10:44	10:52	11:08	12:18	12:28	12:35	12:41	11:55	11:58	12:18A	12:25	12:40	12:45	12:45	
11:02	11:07	11:14	11:27	11:35	11:45	11:50	11:55	Every	17 Mins.	or	Less	12:18	12:28	12:35	12:41	12:15	12:19	12:26	12:40	12:50	1:05	1:11	1:11
11:14	11:19	11:26	11:39	11:46	11:56	12:01A	12:06A	12:00M	12:04A	12:11A	12:25A	12:35	12:45	12:52	12:58	12:15	12:19	12:26	12:40	12:50	1:00	1:05	1:11
11:26	11:31	11:38	11:51	11:57	12:07A	12:12	12:17	12:30	12:34	12:41	12:55	w 1:05	1:15	1:20	1:26	12:35	12:38	12:58	w 1:05	1:20	1:25	1:25	
11:38	11:43	11:50	12:03A	12:08A	12:18	12:23	12:28	12:45	12:55	1:00	1:05	1:20	1:25	1:30	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:10
11:50	11:55	12:02A	12:15	12:19	12:29	12:34	12:39	12:50	1:00	1:05	1:10	1:25	1:35	1:40	1:45	1:50	1:55	2:00	2:05	2:10	2:15	2:20	2:20
12:02A	12:07A	12:14	12:27	12:30	12:40	12:45	12:50	12:55	1:00	1:05	1:10	1:25	1:35										

Route 350 North Burlington - Alewife Station
Route 351 Bedford Woods Dr - Alewife Station



Service/Schedule Change

350•351

Effective August 30, 2020

350 North Burlington-Alewife Station

351 Bedford Woods Dr - Alewife Station

Serving

- Burlington Mall
- Oak Park
- Northwest Park
- Red Line
- Lahey Hospital & Medical Center
- Four Corners
- Arlington Center



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350 & 351

Weekday

Inbound				
Leave Chestnut & Cambridge	Arrive Burlington Mall Road	Arrive Woburn/Burl. Line	Arrive Arlington Center	Arrive Alewife Station
6:00A	.....	6:05A	6:19A	6:31A
.....	.....	.....	6:23	6:32
6:20	.....	6:25	6:42	7:02
6:38	.....	6:45	7:04	7:24
6:53	.....	7:00	7:19	7:41
7:15	.....	7:22	7:41	8:03
7:35	.....	7:44	8:03	8:25
7:55	.....	8:04	8:23	8:45
8:20	8:35A	8:42	9:03	9:13
8:40	8:55	9:02	9:19	9:29
9:00	9:14	9:21	9:38	9:48
9:20	9:34	9:41	9:58	10:09
10:00	10:14	10:21	10:38	10:49
10:40	10:54	11:01	11:18	11:29
11:20	11:34	11:41	11:58	12:09P
12:00N	12:14P	12:21P	12:38P	12:49
12:40	12:54	1:02	1:19	1:30
1:20	1:34	1:42	1:59	2:10
2:00	2:14	2:22	2:39	2:50
2:40	2:54	3:03	3:21	3:32
3:25	3:40	3:50	4:08	4:19
3:45	4:00	4:10	4:28	4:39
4:10	4:25	4:35	4:53	5:07
4:30	4:45	4:55	5:16	5:32
4:45	5:00	5:10	5:32	5:48
5:10	5:25	5:35	5:57	6:10
5:35	5:50	6:00	6:21	6:34
5:55	6:10	6:18	6:37	6:50
6:15	6:30	6:37	6:52	7:05
6:35	6:49	6:56	7:11	7:24
6:55	7:09	7:16	7:31	7:41
7:45	7:59	8:05	8:18	8:28
8:35	8:49	8:55	9:08	9:18
9:30	9:44	9:50	10:03	10:13
10:25	10:39	10:45	10:58	11:08

ROUTE 350 FARES

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	\$1.70	\$1.70	\$2.40	\$2.40
CharlieTicket	\$2.00	\$2.00	\$2.90	\$4.90
Cash-on-Board	\$2.00	\$4.00	\$2.90	\$4.90
Student/Youth*	\$0.85	\$0.85	\$1.10	\$1.10
Senior/TAP**	\$0.85	\$0.85	\$1.10	\$1.10

VALID PASSES: LinkPass (\$90.00/mo.); Local Bus (\$55/mo.); *Student/Youth LinkPass (\$30.00/mo.); **Senior/TAP LinkPass (\$30/mo.); and express bus, commuter rail, and boat passes.
FREE PARES: 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 or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.
 ** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Outbound

Leave Alewife Station	Arrive Arlington Center	Arrive Woburn/Burl. Line	Arrive Burlington Mall Road	Arrive Chestnut & Cambridge
b 5:53	6:00	.....	.....	.....
b 6:16	6:22	6:39	6:50	7:08
b 6:36	6:42	6:59	7:09	7:25
b 6:56	7:02	7:17	7:27	7:43
7:16	7:22	7:37	7:47	8:03
7:36	7:43	8:02	8:11	8:31
7:56	8:03	8:22	8:31	8:51
8:16	8:23	8:42	8:51	9:11
8:56	9:03	9:22	9:31	9:49
9:36	9:42	9:59	10:08	10:26
10:16	10:22	10:39	10:48	11:06
10:56	11:02	11:19	11:28	11:46
11:36	11:42	11:59	12:08P	12:26P
12:16P	12:22P	12:39P	12:48	1:06
12:56	1:02	1:19	1:28	1:46
1:36	1:42	1:59	2:07	2:24
2:16	2:26	2:45	2:53	3:12
2:41	2:51	3:09	3:18	3:37
3:05	3:13	3:31	3:40	3:59
3:30	3:38	3:56	4:05	4:27
3:55	4:03	4:22	4:31	4:53
4:25	4:35	4:54	5:03	5:25
4:55	5:08	5:28	.....	5:43
5:20	5:33	5:53	.....	6:08
5:40	5:53	6:13	.....	6:28
6:00	6:13	6:33	.....	6:48
6:20	6:33	6:53	.....	7:08
6:42	6:51	7:06	7:15	7:37
7:05	7:14	7:29	7:38	8:00
7:35	7:44	7:59	8:07	8:23
8:31	8:39	8:54	9:02	9:17
9:25	9:33	9:48	9:56	10:11
10:20	10:32	10:50	.....	11:05

Route 351 indicated by shaded areas

ROUTE 351 FARES

Fare	Local Bus	Inner Express	Inner Express + Local Bus	Inner Express + Subway
CharlieCard	\$1.70	\$4.25	\$4.25	\$4.25
CharlieTicket	\$2.00	\$5.25	\$7.25	\$8.15
Cash-on-Board	\$2.00	\$5.25	\$7.25	\$8.15
Student/Youth*	\$0.85	\$2.10	\$2.10	\$2.10
Senior/TAP**	\$0.85	\$2.10	\$2.10	\$2.10

VALID PASSES on 441/442: LinkPass (\$90.00/mo.); Local Bus (\$55/mo.); *Student/Youth LinkPass (\$30.00/mo.); **Senior/TAP LinkPass (\$30/mo.); and express bus, commuter rail, and boat passes.
VALID PASSES on 448/449: Inner Express Bus (\$136.00/mo.); Outer Express Bus (\$168/mo.); commuter rail zone 1 or higher, and boat passes.
FREE PARES: 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 or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.
 ** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

350

Saturday

Inbound			Outbound		
Leave Chestnut & Cambridge	Arrive Burlington Mall Road	Arrive Alewife Station	Leave Alewife Station	Arrive Burlington Mall Road	Arrive Chestnut & Cambridge
7:10A	.....	7:38A	6:25A	6:51A	7:05A
7:50	.....	8:18	7:05	7:31	7:45
8:30	8:45A	9:14	7:45	8:11	8:25
9:30	9:45	10:17	8:30	8:59	9:18
10:30	10:46	11:19	9:30	10:01	10:22
11:30	11:46	12:21P	10:30	11:01	11:22
			11:30	12:01P	12:21P
12:30P	12:46P	1:25			
1:30	1:46	2:25	12:30P	1:02	1:22
2:30	2:46	3:21	1:30	2:02	2:22
3:30	3:46	4:21	2:30	3:02	3:22
4:30	4:46	5:20	3:30	4:01	4:19
5:30	5:46	6:17	4:30	4:58	5:16
6:25	6:41	7:10	5:30	5:55	6:13
7:20	7:35	8:04	6:25	6:50	7:08
8:10	8:25	8:54	7:15	7:40	7:58
9:00	9:15	9:44	8:10	8:33	8:52
9:50	10:05	10:34	9:00	9:23	9:42
			9:50	.....	10:20
			10:40	.....	11:10

350

Sunday

Inbound			Outbound		
Leave Chestnut & Cambridge	Arrive Burlington Mall Road	Arrive Alewife Station	Leave Alewife Station	Arrive Burlington Mall Road	Arrive Chestnut & Cambridge
7:55A	.....	8:24A	7:05A	7:31A	7:49A
9:20	.....	9:52	8:30	8:57	9:16
10:50	.....	11:22	9:55	10:24	10:43
			11:25	11:54	12:13P
12:20P	12:34P	1:06P			
1:15	1:29	2:00	12:20P	12:49P	1:08
2:10	2:24	2:56	1:15	1:45	2:04
3:05	3:19	3:53	2:10	2:38	2:57
4:00	4:14	4:50	3:05	3:33	3:52
4:55	5:09	5:42	4:00	4:28	4:47
5:50	6:04	6:37	4:55	5:23	5:42
6:50	7:04	7:35	5:50	6:18	6:37
			6:50	.....	7:26

Fall 2020 & Winter 2021 Holidays
 9/7/20; Sunday; 10/12/20 & 11/11/20: Weekday
 11/26/20, 12/25/20, & 1/1/21: Sun; 1/18/21 & 2/15/21: Sat

NOTE:
 Route 351 Alewife service operates via Berth 8

Route 351 may be limited or suspended. Visit mbta.com for latest updates.

All buses are accessible to persons with disabilities

b - Omits Northwest Park

**Route 350
 North Burlington-
 Alewife Station**

**Route 351
 Bedford Woods Dr -
 Alewife Station**

T Fares				
PRICE PER TRIP	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	\$1.70	\$1.70	\$2.40	\$2.40
CharlieTicket	\$2.00	\$2.00	\$2.90	\$4.90***
Cash-on-Board	\$2.00	\$4.00	\$2.90	\$4.90***
Student/Youth*	\$0.85	\$0.85	\$1.10	\$1.10
Senior/TAP**	\$0.85	\$0.85	\$1.10	\$1.10
UNLIMITED TRIP PASSES				
1-Day	\$12.75	\$12.75	\$12.75	\$12.75
7-Day	\$22.50	\$22.50	\$22.50	\$22.50
Monthly	\$55.00	\$55.00	\$90.00	\$90.00
Senior/TAP Monthly \$30.00/month for unlimited travel on Local Bus and Rapid Transit				

VALID PASSES: LinkPass (\$84.50/mo.); Student/Youth LinkPass* (\$30/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: if using a guide, the guide rides free

* Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards are available to students through participating middle schools and high schools. Youth CharlieCards are available through community partners in the Boston metro area. Visit www.mbta.com/youthpass for details.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

*** For Silver Line SL4 or SL5 pay \$2.75. Also see "transfers."

TRANSFERS

If paying with a CharlieTicket or CharlieCard, discounted transfers that are available are automatic — just use the same ticket or card throughout your trip. If paying with cash onboard a vehicle, free transfers are only allowed between rapid transit lines and inside paid platform areas at gated stations.

SCHEDULES

Schedules are available at the following stations: Park Street, Airport, Malden, Harvard, Haymarket (Green Line Level), Back Bay and Downtown Crossing (Orange Line Level) or see station personnel. Schedules also available at the Transportation Building (10 Park Plaza), 45 High St, and online at mbta.com.

For real-time subway and bus tracking, download the Transit app on any smartphone.



Rapid Transit

Effective August 30, 2020



T Massachusetts Bay Transportation Authority **massDOT**
Massachusetts Department of Transportation

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

Rapid Transit Line	Weekday				Saturday			Sunday		
	First Trip	Peak	Off Peak	Last Trip	First Trip	Arriving Every	Last Trip	First Trip	Arriving Every	Last Trip
Red Line Alewife Braintree	5:24 AM 5:08 AM	9 mins	12-16 mins	12:20 AM 12:17 AM	5:24 AM 5:09 AM	12-16 mins	12:20 AM 12:17 AM	6:08AM 6:00AM	12-16 mins	12:20 AM 12:17 AM
Alewife Ashmont	5:16 AM 5:16 AM	9 mins	12-16 mins	w 12:27 AM w 12:30 AM	5:16 AM 5:16 AM	12-16 mins	w 12:27 AM w 12:30 AM	6:00AM 6:00AM	12-16 mins	w 12:27 AM w 12:30 AM
“M” Ashmont Mattapan	5:17 AM 5:05 AM	5 mins	8-12 Day 26 Late	w 1:05 AM 12:53 AM	5:15 AM 5:05 AM	8-12 Day 26 Early/Late	w 1:05 AM 12:53 AM	6:03AM 5:51AM	8-12 Day 26 Early/Late	w 1:05 AM 12:53 AM
Blue Line Wonderland Orient Heights Bowdoin	5:13 AM 5:14 AM 5:30 AM	5 mins	9-13 mins	12:28 AM 12:33 AM w 1:00 AM	5:25 AM 5:13 AM 5:29 AM	9-13 mins	12:28 AM 12:33 AM w 1:00 AM	5:58AM 6:03AM 6:21AM	9-13 mins	12:28 AM 12:33 AM w 1:00 AM
Orange Line Oak Grove Forest Hills	5:16 AM 5:16 AM	6 mins	9-11 mins	w 12:30 AM w 12:28 AM	5:16 AM 5:16 AM	9-11 mins	w 12:30 AM w 12:28 AM	6:00AM 6:00AM	9-11 mins	w 12:30 AM w 12:28 AM
Green Line* B Boston College Park Street	5:01 AM 5:45 AM	5-6 mins	7-9 mins	12:10 AM w 12:52 AM	4:45 AM ² 5:40 AM	7-8 mins	12:09 AM w 12:52 AM	5:20AM ² 6:12AM	9 mins	12:10 AM w 12:52 AM
C Cleveland Circle North Station	4:57 AM ¹ 5:48 AM	6-8 mins	9-11 mins	12:07 AM w 12:46 AM	4:50 AM ² 5:30 AM	9-10 mins	12:10 AM w 12:46 AM	5:30AM ² 6:06AM	10 mins	12:10 AM w 12:46 AM
D Riverside Government Ctr.	4:56 AM 5:45 AM	6 mins	8-11 mins	12:05 AM w 12:49 AM	4:55 AM 5:38 AM	8-9 mins	12:02 AM w 12:49 AM	5:25AM 6:10AM	11-12 mins	12:05 AM w 12:49 AM
E Lechmere* Heath Street	5:00 AM ⁴ 5:45 AM	6-7 mins	8-10 mins	12:30 AM 12:47 AM ³	5:01 AM 5:39 AM	10 mins	12:30 AM 12:47 AM ³	5:35AM 6:15AM	12 mins	12:30 AM 12:47 AM ³
Silver Line SL1 Logan Airport South Station	5:38 AM 5:40 AM	7-12 mins	10-12 mins	f 1:03 AM w 1:02 AM	5:48 AM 5:45 AM	10-12 mins	1:15 AM w 12:59 AM	5:50AM 6:12AM	10-12 mins	f 1:12 AM w 1:00 AM
SL2 Design Center South Station	6:07 AM 5:44 AM	6 mins	14-16 mins	12:37 AM 12:50 AM	6:03 AM 5:47 AM	14-16 mins	12:35 AM 12:45 AM	6:51AM 6:35AM	14-16 mins	12:51 AM 12:36 AM
SL3 Chelsea Station South Station	4:55 AM 4:20 AM	6-11 mins	8-13 mins	f 1:05 AM w 12:35 AM	5:30 AM 4:56 AM	8-13 mins	1:22 AM w 12:55 AM	6:26AM 5:53AM	8-13 mins	f 1:25 AM w 12:55 AM
SL4 Nubian Station South Station	5:20 AM 5:38 AM	6-11 mins	6-11 mins	12:20 AM 12:37 AM	5:23 AM 5:40 AM	13-20 mins	12:20 AM 12:40 AM	6:02AM 6:20AM	13-20 mins	12:20 AM 12:40 AM
SL5 Nubian Station Downtown Xing	5:15 AM 5:32 AM	11-14 mins	13-20 mins	12:51 AM w 1:07 AM	5:19 AM 5:34 AM	6-11 mins	12:43 AM w 1:00 AM	6:00AM 6:16AM	6-11 mins	12:25 AM w 12:47 AM

Peak Service:
Weekdays 7 AM - 9 AM, 4 PM - 6:30 PM

Green Line Notes:

New and ongoing infrastructure projects may result in diversions on some branches at various times.

See **GL service changes at mbta.com/GLwork**

View service alerts at mbta.com/alerts

* E trains start/end at North Station for Green Line Extension work – shuttles provided between North Station and Lechmere.

More: mbta.com/GLEwork

1 - The first two C train AM northbound trips run through to Lechmere Station on weekdays.

2 - The first B and second C train AM northbound trips run through to Lechmere Station on weekends.

3 - On weekdays the 12:27 AM trip (weekends the 12:32 AM trip) from Heath St is the last connecting train to other lines downtown. The 12:37AM and 12:47AM trips (weekends the 12:47AM trip) from Heath St. runs in service to Lechmere with no guaranteed connections.

4 - Early morning service from Lechmere to Riverside departs Lechmere at 5:00 AM.

f - After exiting Ted Williams Tunnel bus will only service World Trade Center and South Station stops.

w - Last trips wait at some stations, primarily in the Downtown area, for connecting service. Departure times are approximate.

Fall 2020 & Winter 2021 Holidays
9/7/20: Sunday; 10/12/20 & 11/11/20: Weekday
11/26/20, 12/25/20, & 1/1/21: Sun; 1/18/21 & 2/15/21: Sat

MOTOR VEHICLE CRASH DATA

Masshighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Route 2

ST #

MINOR STREET(S) : Route 16

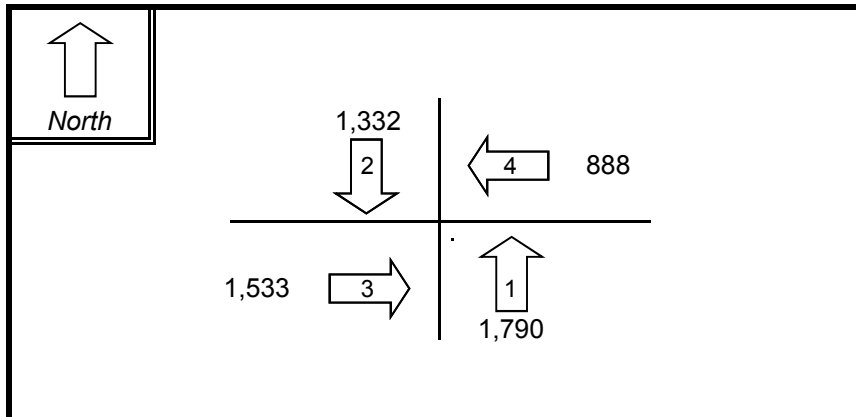
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	1,790	1,332	1,533	888		5,543

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

Masshighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Route 2 EB On/Off Ramps

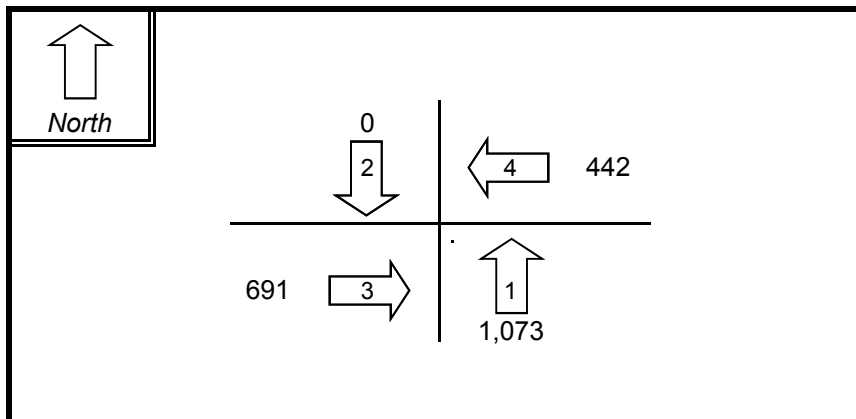
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	1,073		691	442		2,206

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

Masshighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Route 2 EB On/Off Ramps

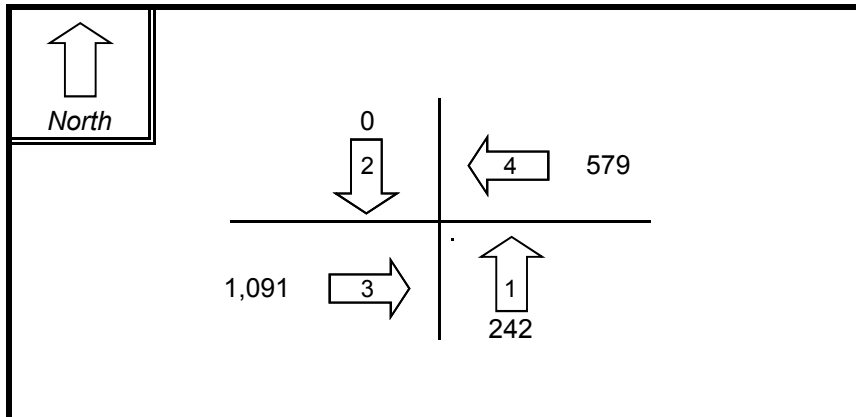
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	242		1,091	579		1,912

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Wilson Avenue

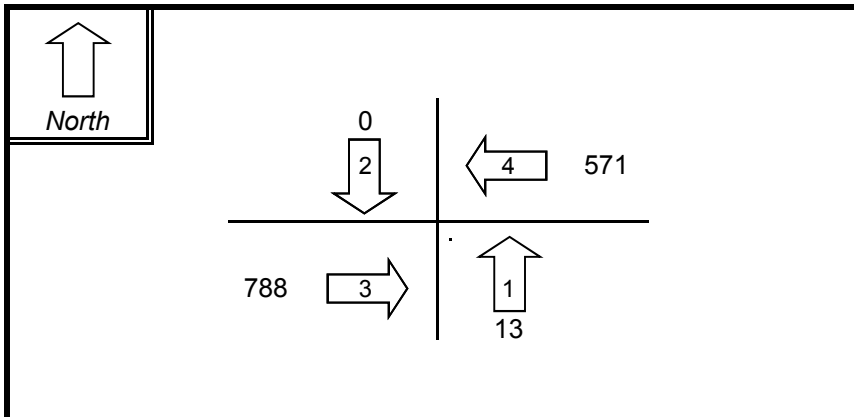
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	13		788	571		1,372

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

Masshighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Littlejohn Street

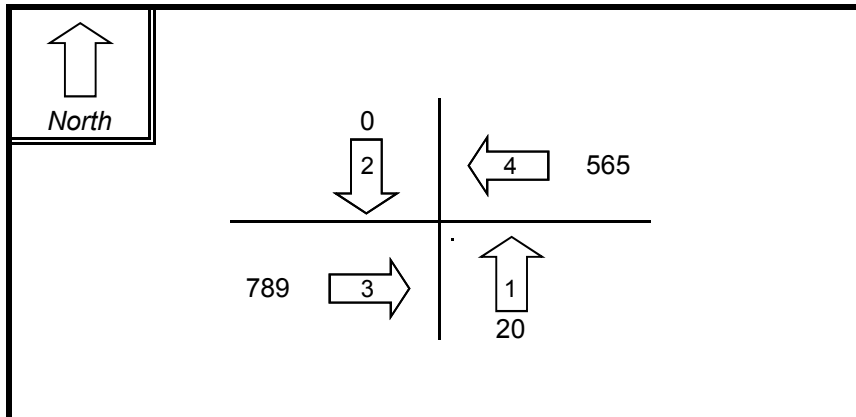
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	20		789	565		1,374

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Homestead Road

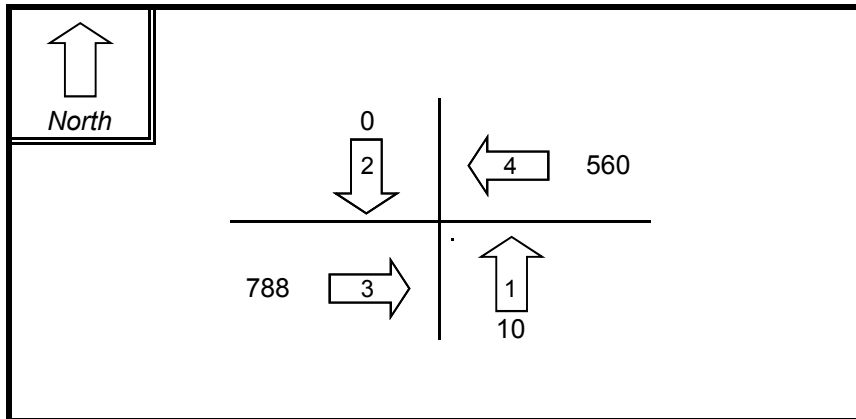
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	10		788	560		1,358

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Burch Street

ST #

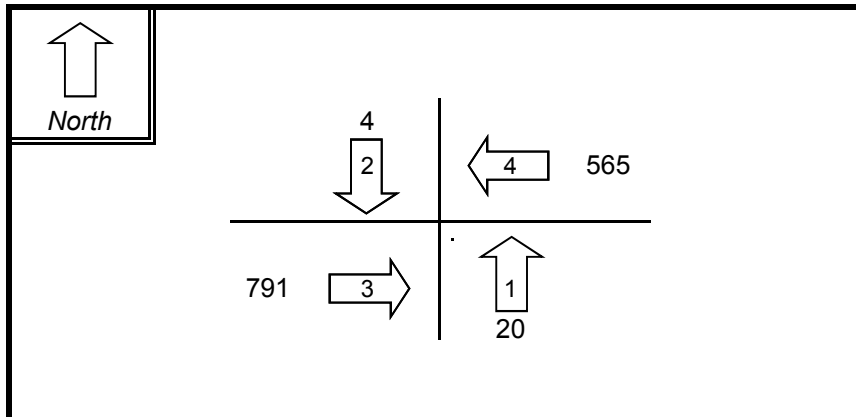
Alfred Road

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	20	4	791	565		1,380

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Margaret Street

ST #

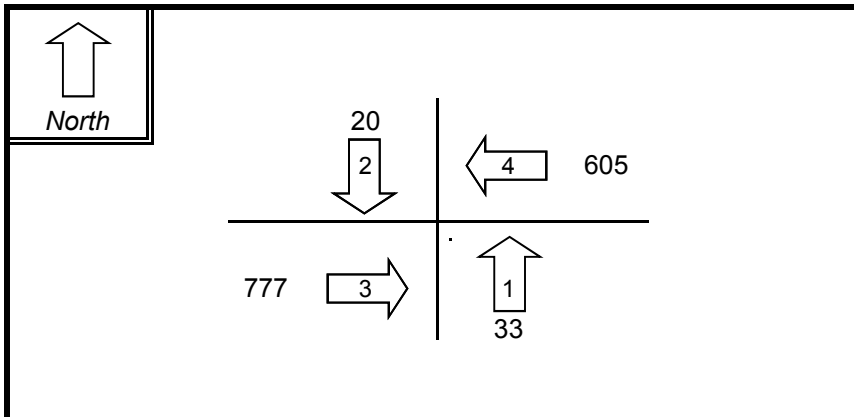
Lakehill Avenue

ST #

ST #

ST #

**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	33	20	777	605		1,435

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Minuteman Commuter Bikeway

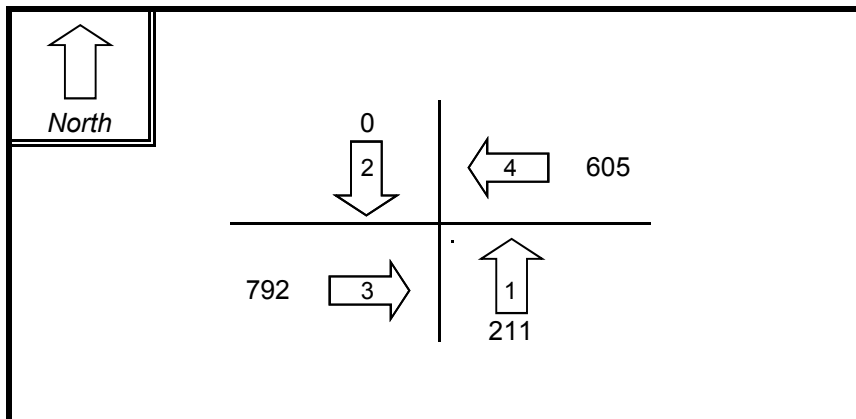
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION
REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	211		792	605		1,608

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73
Accident Rate for District 4 unsignalized intersections = 0.57

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Lake Street

ST #

MINOR STREET(S) : Brooks Avenue

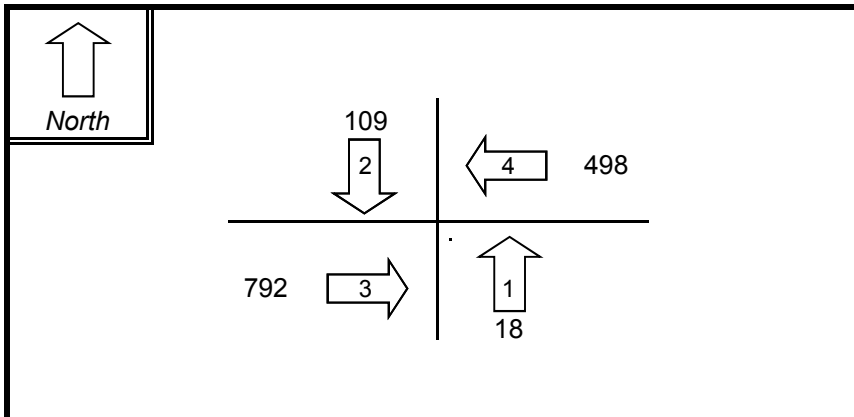
ST #

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**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	18	109	792	498		1,417

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

Masshighway

CRASH RATE WORKSHEET

CITY/TOWN : Arlington COUNT DATE : 2020

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED :

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Massachusetts Avenue

ST #

MINOR STREET(S) : Lake Street

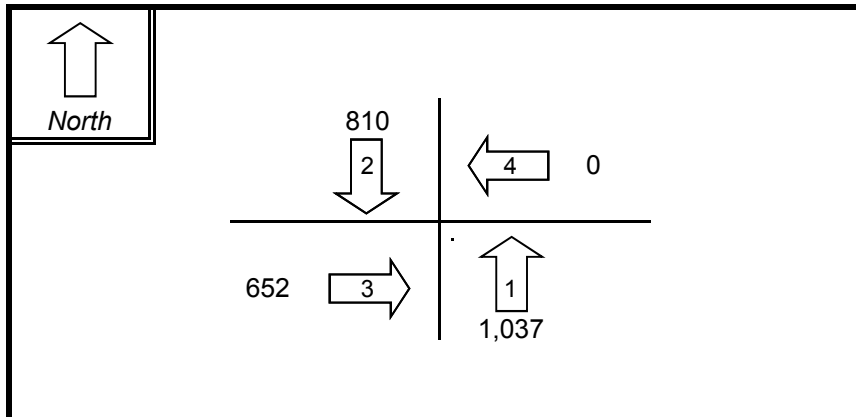
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM**
(Label Approaches)



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	1,037	810	652			2,499

" K " FACTOR : APPROACH ADT : ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : # OF YEARS : AVERAGE # OF ACCIDENTS (A) :

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

Comments : Accident Rate for District 4 signalized intersections = 0.73

Accident Rate for District 4 unsignalized intersections = 0.57

MassDOT Crash Report for Lake Street at Brooks Avenue in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
03/04/2013	Property damage only (none injured)	4:47 PM	2		Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: N / V2: N	Clear		BROOKS AVE / LAKE ST	
08/08/2013	Not Reported	6:18 PM	2	D1: (No improper driving),(No improper driving) / D2: (Followed too closely),(Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: N / V2: N	Clear/Clear		BROOKS AVE / LAKE ST	
09/23/2013	Property damage only (none injured)	9:18 AM	3	D1: (Followed too closely),(Other improper action) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: S / V2: S / V3: S	Clear		LAKE ST. / BROOKS AVE.	
02/05/2014	Property damage only (none injured)	2:26 PM	2	D1: (Followed too closely),(Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Rear-end	Snow	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	snow/steet, hail (freezing rain or drizzle)	64	LAKE ST.	BROOKS AVENUE
02/18/2014	Not Reported	2:02 PM	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Snow	V1: Slowing or stopped in traffic / V2: Turning right	V1: W / V2: N	Snow		BROOKS AVE / LAKE STREET	
03/19/2014	Property damage only (none injured)	7:49 AM	2	D1: (Followed too closely),(Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: S / V2: S	Clear	67	LAKE ST	BROOKS AVENUE
10/06/2014	Property damage only (none injured)	7:58 PM	2	D1: (No improper driving) / D2: (Followed too closely),(Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: N / V2: N	Clear		LAKE ST. / BROOKS AVE.	
03/23/2015	Property damage only (none injured)	11:16 AM	1	D1: (Over-correcting/over-steering)	Daylight	Single vehicle crash	Dry	V1: Turning right	V1: S	Clear		BROOKS AVENUE / LAKE STREET	
09/05/2016	Property damage only (none injured)	5:23 PM	2	D1: (Inattention),(Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Backing	V1: E / V2: E	Clear		BROOKS AVE / LAKE STREET	
11/06/2017	Property damage only (none injured)	5:13 PM	2		Dark - lighted roadway	Head-on	Wet	V1: Turning left / V2: Travelling straight ahead	V1: N / V2: S	Rain/Cloudy		BROOKS AVE / LAKE ST	
11/08/2017	Not Reported	2:21 PM	1	D1: (Unknown)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead	V1: S	Clear/Clear		BROOKS AVENUE / LAKE STREET	

MassDOT Crash Report for Lake Street at Burch Street-Alfred Road in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway
07/25/2013	Property damage only (none injured)	7:24 AM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: S / V2: S	Cloudy	102	LAKE ST
09/03/2013	Not Reported	7:11 PM	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dusk	Angle	Dry	V1: Turning left / V2: Slowing or stopped in traffic	V1: E / V2: W	Clear		BURCH ST / LAKE ST
03/27/2017	Property damage only (none injured)	9:20 AM	2	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Wet	V1: Overtaking/passing / V2: Travelling straight ahead	V1: N / V2: N	Rain/Cloudy		BURCH STREET / LAKE STREET

MassDOT Crash Report for Lake Street at Homestead Road in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway
11/06/2017	Property damage only (none injured)	2:41 PM	2		Daylight	Sideswipe, same direction	Wet	V1: Overtaking/passing / V2: Slowing or stopped in traffic	V1: N / V2: N	Cloudy		HOMESTEAD ROAD / LAKE STREET

MassDOT Crash Report for Lake Street at Littlejohn Street in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway
09/09/2014	Property damage only (none injured)	7:39 AM	2	D1: (Unknown) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1: S / V2: S	Clear/Clear		LITTLE JOHN STREET / LAKE STREET
06/13/2015	Non-fatal injury	9:03 PM	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Head-on	Dry	V1: Parked / V2: Travelling straight ahead	V1: Not Reported / V2: N	Clear	148	LAKE STREET
09/19/2015	Non-fatal injury	4:55 PM	1	D1: (No improper driving)	Daylight	Angle	Dry	V1: Turning left	V1: S	Clear		LAKE ST / LITTLEJOHN ST
04/13/2016	Property damage only (none injured)	8:21 AM	2	D1: (Inattention),(Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Clear		LAKE STREET / LITTLEJOHN STREET

MassDOT Crash Report for Lake Street at Margaret Street at Lakehill Avenue in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway
04/25/2013	Property damage only (none injured)	8:22 AM	2	D1: (Inattention),(Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Turning right / V2: Slowing or stopped in traffic	V1: N / V2: N	Cloudy		LAKE ST / MARGARET ST
05/04/2013	Property damage only (none injured)	8:55 AM	2	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Parked	V1: W / V2: Reported but invalid	Clear		LAKE ST / MARGARET ST
05/09/2014	Not Reported	9:47 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(Failed to yield right of way)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1: N / V2: W	Clear	81	LAKE ST
02/10/2016	Property damage only (none injured)	8:37 AM	2		Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: N	Cloudy/Snow		LAKE ST / LAKEHILL AVE. / MARGARET ST.
09/01/2016	Not Reported	4:08 PM	2		Daylight	Head-on	Dry	V1: Turning left / V2: Travelling straight ahead	V1: S / V2: N	Cloudy		LAKE ST / MARGARET ST
08/08/2017	Not Reported	6:18 PM	2		Daylight	Sideswipe, same direction	Dry	V1: Turning left / V2: Travelling straight ahead	V1: W / V2: W	Clear		LAKE ST / MARGARET ST
09/16/2017	Non-fatal injury	11:24 AM	3		Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: S / V2: S / V3: S	Cloudy		LAKEHILL AVE / LAKE ST

MassDOT Crash Report for Lake Street at Minuteman Commuter Bikeway in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
08/23/2013	Property damage only (none injured)	11:04 AM	1	D1: (Failed to yield right of way)	Daylight	Pedestrian	Dry	V1: Travelling straight ahead	V1: N	Cloudy		LAKE STREET	MARGARET STREET
07/23/2014	Property damage only (none injured)	8:28 AM	1	D1: (No improper driving),(No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead	V1: N	Clear/Clear	72	LAKE ST	BIKE PATH
09/30/2014	Property damage only (none injured)	3:44 PM	1	D1: (No improper driving)	Not reported	Pedestrian	Not reported	V1: Slowing or stopped in traffic	V1: S	Not Reported		LAKE STREET	
02/13/2015	Not Reported	4:26 PM	1	D1: (No improper driving),(No improper driving)	Daylight	Pedestrian	Snow	V1: Slowing or stopped in traffic	V1: S	Clear/Clear		/ LAKE STREET	
10/04/2015	Property damage only (none injured)	2:11 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: S / V2: S	Clear		LAKE STREET	
05/11/2016	Non-fatal injury	6:26 AM	1	D1: (No improper driving)	Daylight	Sideswipe, opposite direction	Dry	V1: Travelling straight ahead	V1: N	Clear		LAKE STREET / MINUTEMAN COMMUTER BIKEWAY	
05/25/2016	Property damage only (none injured)	3:05 PM	2	D1: (Inattention),(Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: S / V2: S	Clear	75	LAKE ST	
06/06/2016	Property damage only (none injured)	9:52 AM	3		Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead / V3: Travelling straight ahead	V1: S / V2: S / V3: S	Clear	74	LAKE ST	
09/13/2016	Property damage only (none injured)	10:07 AM	2		Daylight	Angle	Dry	V1: Backing / V2: Parked	V1: W / V2: S	Clear	68	LAKE ST	
01/25/2017	Not Reported	11:52 AM	1		Daylight	Bicyclist	Dry	V1: Travelling straight ahead	V1: S	Clear		// LAKE STREET	LAKEHILL AVENUE
10/10/2017	Property damage only (none injured)	6:48 PM	3		Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: S / V2: S / V3: S	Clear		LAKE STREET	
12/27/2016	Non-fatal injury	11:54 AM	1	D1: (No improper driving)	Daylight	Pedestrian	Wet	V1: Travelling straight ahead	V1: N	Clear		LAKE STREET	MARGARET STREET
08/24/2017	Property damage only (none injured)	7:27 AM	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Bicyclist	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: Not Reported	Clear		LAKE STREET	
06/23/2014	Property damage only (none injured)	6:07 PM	1	D1: (No improper driving)	Daylight	Bicyclist	Dry	V1: Travelling straight ahead	V1: S	Clear		LAKE STREET / BIKE PATH	
11/08/2014	Non-fatal injury	10:49 AM	3	D1: (Inattention),(Unknown) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: S / V2: S / V3: S	Clear	73	LAKE ST.	MINUTEMAN TRAIL
10/29/2016	Property damage only (none injured)	2:40 PM	3	D1: (Inattention),(Distracted) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: S / V2: S / V3: S	Clear	71	LAKE ST	MINUTEMAN TRAIL BIKE PATH
10/22/2014	Non-fatal injury	12:51 PM	2	D1: (Distracted) / D2: (No improper driving),(No improper driving)	Daylight	Rear-end	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: S / V2: S	Rain/Cloudy	71	LAKE STREET	
09/15/2015	Not Reported	3:55 PM	2	D1: (Operating defective equipment) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: S / V2: S	Clear	71	LAKE ST	

MassDOT Crash Report for Lake Street at Route 2 EB On-Off Ramps in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
01/28/2014	Property damage only (none injured)	1:00 AM	1	D1: (Failure to keep in proper lane or running off road)	Dark - lighted roadway	Single vehicle crash	Dry	V1: Travelling straight ahead	V1: W	Clear		LAKE STREET / RAMP-RT 2 EB/ACORN PARK RD TO LAKE ST	
02/06/2014	Property damage only (none injured)	10:46 AM	1	D1: (Other improper action)	Daylight	Single vehicle crash	Snow	V1: Turning right	V1: E	Snow		RAMP-RT 2 EB/ACORN PARK RD TO LAKE ST	
08/01/2014	Property damage only (none injured)	9:10 AM	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Turning right	V1: E / V2: N	Clear		RAMP-LAKE STREET TO RT 2 EB	LAKE STREET
11/23/2017	Property damage only (none injured)	10:18 AM	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: N	Clear/Clear		LAKE STREET / RAMP-LAKE ST TO RT 2 EB /	
12/23/2017	Property damage only (none injured)	4:51 AM	1	D1: (Driving too fast for conditions)	Dark - lighted roadway	Single vehicle crash	Ice	V1: Travelling straight ahead	V1: N	Not Reported		LAKE STREET	RAMP-LAKE ST TO RT 2 EB

MassDOT Crash Report for Lake Street at Route 2 WB On-Off Ramps in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
03/11/2013	Not Reported	8:05 AM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Not reported	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: Not Reported / V2: Not Reported	Clear		LAKE STREET / RAMP-LAKE ST TO RT 2 WB / LAKE ST	
11/03/2013	Property damage only (none injured)	1:47 AM	1	D1: (Operating vehicle in erratic, reckless, careless, negligent or aggressive manner),(Disregarded traffic signs, signals, road markings)	Dark - lighted roadway	Single vehicle crash	Wet	V1: Travelling straight ahead	V1: W	Clear/Clear	200	LAKE ST	
10/15/2015	Not Reported	7:08 PM	2	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Entering traffic lane / V2: Entering traffic lane	V1: N / V2: N	Clear		CONCORD TURNPIKE / LAKE STREET	
07/12/2016	Non-fatal injury	5:51 PM	2		Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: N / V2: N	Clear		LAKE STREET Rte 2 E	RAMP 2 WB TO LAKE STREET
06/02/2017	Non-fatal injury	12:52 PM	1		Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead	V1: N	Clear		LAKE STREET / RAMP-RT 2 WB TO LAKE ST / RAMP-LAKE ST TO RT 2 WB	

MassDOT Crash Report for Lake Street at Wilson Avenue in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway
08/12/2014	Property damage only (none injured)	11:50 AM	2	D1: (Unknown)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Parked	V1: S / V2: S	Cloudy	181	LAKE ST
05/01/2015	Property damage only (none injured)	6:14 PM	2	D1: (No improper driving) / D2: (Made an improper turn)	Daylight	Angle	Dry	V1: Turning left / V2: Overtaking/passing	V1: E / V2: N	Clear		LAKE ST / WILSON AVE

MassDOT Crash Report for Massachusetts Avenue at Lake Street in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
03/02/2013	Property damage only (none injured)	5:16 PM	1	D1: (No improper driving)	Daylight	Angle	Dry	V1: Turning right	V1: S	Cloudy		LAKE ST / MASSACHUSETTS AVENUE	
05/22/2013	Property damage only (none injured)	1:01 PM	1	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead	V1: E	Clear	204	MASS AVE	LAKE STREET
04/24/2013	Property damage only (none injured)	6:54 AM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Cloudy		LAKE ST / MASSACHUSETTS AVENUE	
01/15/2014	Property damage only (none injured)	5:55 PM	2	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		LAKE ST / MASSACHUSETTS AVENUE	
07/02/2014	Not Reported	6:47 PM	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Other improper action)	Dusk	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: W / V2: W / V3: W	Cloudy	204	MASSACHUSETTS AVENUE	LAKE STREET
11/20/2014	Property damage only (none injured)	6:07 PM	1	D1: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead	V1: S	Clear		LAKE ST / MASSACHUSETTS AVENUE	
01/11/2015	Property damage only (none injured)	2:29 PM	2	D1: (Made an improper turn) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Making U-turn / V2: Travelling straight ahead	V1: S / V2: Not Reported	Cloudy/Cloudy	191	MASSACHUSETTS AVENUE	
04/15/2015	Property damage only (none injured)	3:44 PM	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: N	Cloudy		LAKE ST / MASSACHUSETTS AVENUE	
04/29/2015	Not Reported	8:29 AM	2	D1: (No improper driving),(No improper driving) / D2: (No improper driving),(No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Turning right / V2: Travelling straight ahead	V1: E / V2: E	Clear/Clear	204	MASSACHUSETTS AVENUE	
05/01/2015	Property damage only (none injured)	5:54 AM	2	D1: (No improper driving) / D2: (Followed too closely),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		MASSACHUSETTS AVENUE / LAKE ST	
05/24/2015	Property damage only (none injured)	10:02 PM	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		LAKE ST / MASSACHUSETTS AVENUE	
06/05/2015	Not Reported	2:28 PM	2	D1: (No improper driving),(No improper driving) / D2: (Illness)	Daylight	Rear-end	Dry	V1: Parked / V2: Travelling straight ahead	V1: W / V2: W	Clear/Clear		LAKE ST / MASSACHUSETTS AVENUE	
08/07/2015	Non-fatal injury	4:56 PM	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road),(Illness)	Daylight	Sideswipe, opposite direction	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: E	Clear		LAKE ST / MASSACHUSETTS AVENUE	
11/19/2015	Not Reported	3:35 PM	2	D1: (No improper driving),(No improper driving) / D2: (No improper driving),(No improper driving)	Daylight	Angle	Dry	V1: Slowing or stopped in traffic / V2: Backing	V1: W / V2: W	Cloudy/Cloudy		LAKE ST / MASSACHUSETTS AVENUE Rte 185 W	
12/10/2015	Not Reported	6:27 AM	2	D1: (Unknown) / D2: (Unknown)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Turning right / V2: Turning right	V1: E / V2: E	Clear		LAKE STREET / MASSACHUSETTS AVENUE	
01/17/2016	Property damage only (none injured)	2:51 PM	2	D1: (Inattention),(Other improper action) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	Cloudy	2	LAKE ST.	MASSACHUSETTS AVENUE Rte 3A 2
09/13/2016	Property damage only (none injured)	12:09 PM	1		Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1: S	Clear		LAKE ST / MASSACHUSETTS AVENUE	
06/03/2017	Property damage only (none injured)	1:12 PM	1	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead	V1: W	Cloudy		MASSACHUSETTS AVENUE Rte 2A W	LAKE STREET
07/08/2017	Property damage only (none injured)	12:11 PM	2		Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Backing	V1: E / V2: E	Clear/Clear	204	MASSACHUSETTS AVENUE	
10/26/2017	Property damage only (none injured)	9:42 AM	2		Daylight	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Parked	V1: E / V2: E	Cloudy/Rain	204	MASSACHUSETTS AVENUE	
11/27/2017	Property damage only (none injured)	12:07 PM	2	D1: (No improper driving) / D2: (Made an improper turn),(Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Turning right / V2: Leaving traffic lane	V1: S / V2: E	Clear		LAKE STREET / MASSACHUSETTS AVENUE	
06/03/2017	Property damage only (none injured)	1:12 PM	2	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: E	Cloudy		MASSACHUSETTS AVENUE Rte 3 W / LAKE STREET	

MassDOT Crash Report for Route 2 at Route 16 in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
01/23/2013	Property damage only (none injured)	1:20 PM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Cloudy		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY Rte 3A S
08/03/2013	Property damage only (none injured)	5:30 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	CONCORD TURNPIKE Rte 2 E
09/21/2013	Non-fatal injury	11:57 AM	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	CONCORD TURNPIKE Rte 2 E
03/24/2014	Property damage only (none injured)	1:37 PM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: W / V2: W	Cloudy		ALEWIFE BROOK PARKWAY Rte 2 E	CONCORD TURNPIKE Rte 2 W
08/09/2014	Property damage only (none injured)	7:31 AM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Clear		ALEWIFE STATION ACCESS ROAD / ALEWIFE BROOK PARKWAY Rte US3 N	
10/06/2014	Non-fatal injury	2:51 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: S	Clear		CONCORD TURNPIKE Rte SR2 W / CONCORD TURNPIKE Rte SR2 W / ALEWIFE BROOK PARKWAY	
10/15/2014	Property damage only (none injured)	11:20 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Rain		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE Rte 2 W
10/23/2014	Non-fatal injury	6:55 PM	3	D1: (Followed too closely) / D2: (No improper driving) / D3: (No improper driving)	Dark - roadway not lighted	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: E / V2: E / V3: E	Clear		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY Rte 3A S
03/19/2015	Non-fatal injury	8:44 AM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: S / V2: N	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	CONCORD TURNPIKE
04/08/2015	Property damage only (none injured)	7:34 PM	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY Rte 3
07/22/2015	Property damage only (none injured)	1:00 AM	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		Rte 2 E	ALEWIFE BROOK PARKWAY
09/09/2015	Property damage only (none injured)	3:35 PM	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Turning left	V1: S / V2: S	Clear		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE	
09/26/2015	Property damage only (none injured)	10:55 AM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	
10/08/2015	Non-fatal injury	10:23 AM	2		Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	ALEWIFE LOOP DRIVEWAY
10/29/2015	Property damage only (none injured)	3:40 PM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: S / V2: S	Clear		CONCORD TURNPIKE Rte SR2 E / ALEWIFE BROOK PARKWAY Rte SR3A / ALEWIFE STATION ACCESS ROAD	
01/11/2016	Non-fatal injury	12:06 PM	3	D1: (Other improper action) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: E / V2: E / V3: E	Clear		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY Rte 3
01/11/2016	Property damage only (none injured)	8:12 AM	3	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: E / V2: E / V3: E	Clear		ALEWIFE BROOK PARKWAY Rte US3 S / CONCORD TURNPIKE Rte SR2 E	
01/13/2016	Property damage only (none injured)	9:42 PM	2	D2: (Physical impairment)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: Not Reported / V2: N	Clear		ALEWIFE BROOK PARKWAY	
01/26/2016	Property damage only (none injured)	7:52 AM	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1: E / V2: E	Clear		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE
04/01/2016	Property damage only (none injured)	6:43 PM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Dusk	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1: N / V2: W	Clear		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE /	
05/03/2016	Property damage only (none injured)	1:38 AM	1	D1: (Made an improper turn)	Dark - lighted roadway	Single vehicle crash	Dry	V1: Not reported	V1: N	Clear		Rte 2 W	ALEWIFE BROOK PARKWAY
06/15/2016	Property damage only (none injured)	7:18 PM	2	D1: (No improper driving) / D2:	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: S	Clear		ALEWIFE STATION ACCESS ROAD / ALEWIFE BROOK PARKWAY Rte US3 N	
07/29/2016	Non-fatal injury	1:42 PM	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: S / V2: S	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	WHITTEMORE AVENUE
09/01/2016	Non-fatal injury	7:44 AM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Clear		ALEWIFE BROOK PARKWAY / ALEWIFE LOOP DRIVEWAY	
10/11/2016	Property damage only (none injured)	11:06 AM	2		Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: N	Clear		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE	

MassDOT Crash Report for Route 2 at Route 16 in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
10/17/2016	Property damage only (none injured)	8:01 AM		D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Cloudy		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY
11/02/2016	Property damage only (none injured)	1:35 PM	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	Clear		ALEWIFE BROOK PARKWAY	ALEWIFE STATION ACCESS ROAD
11/29/2016	Property damage only (none injured)	4:25 PM	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Angle	Wet	V1: Entering traffic lane / V2: Travelling straight ahead	V1: W / V2: N	Cloudy/Rain		ALEWIFE BROOK PARKWAY Rte UNKNOW	WHITTEMORE AVENUE
12/09/2016	Non-fatal injury	8:07 AM	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Clear		ALEWIFE BROOK PARKWAY Rte 2 E	CONCORD TURNPIKE
12/17/2016	Property damage only (none injured)	1:10 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Cloudy		ALEWIFE BROOK PARKWAY / ALEWIFE LOOP DRIVEWAY /	
01/15/2017	Property damage only (none injured)	8:42 AM	2	D1: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE	
03/11/2017	Property damage only (none injured)	1:36 AM	1	D1: (Over-correcting/over-steering)	Dark - lighted roadway	Single vehicle crash	Snow	V1: Slowing or stopped in traffic	V1: E	Snow		CONCORD TURNPIKE / ALEWIFE BROOK PARKWAY	
08/11/2017	Non-fatal injury	3:52 PM	3	D1: (Followed too closely) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: E / V2: E / V3: E	Clear		ALEWIFE BROOK PARKWAY Rte 3 S	CONCORD TURNPIKE Rte 2 W
09/06/2017	Property damage only (none injured)	6:10 PM	3	D1: (No improper driving) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: E / V2: E / V3: E	Clear		CONCORD TURNPIKE Rte 2 E	CONCORD TURNPIKE
10/30/2017	Property damage only (none injured)	4:13 PM	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY Rte 3A S
09/27/2017	Property damage only (none injured)	10:28 AM	3	D1: (Followed too closely) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: N / V2: N / V3: N	Clear		ALEWIFE BROOK PARKWAY Rte SR3A S / ALEWIFE BROOK PARKWAY Rte SR16 E / WHITTEMORE AVENUE	
03/11/2016	Property damage only (none injured)	2:16 AM	2	D1: (Physical impairment) / D2: (No improper driving)	Dark - lighted roadway	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: E / V2: E	Not Reported		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE	
12/18/2015	Property damage only (none injured)	8:46 PM	2	D1: (No improper driving) / D2: (Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: N / V2: S	Clear		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE
10/29/2015	Property damage only (none injured)	8:30 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW W	CONCORD TURNPIKE
11/02/2015	Non-fatal injury	3:33 PM	1	D1: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic	V1: E	Clear		CONCORD TURNPIKE Rte SR2 E / ALEWIFE BROOK PARKWAY Rte SR3A	
09/01/2015	Property damage only (none injured)	10:50 PM	2	D1: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Travelling straight ahead / V2: Not reported	V1: E / V2: Not Reported	Clear		Rte 16	CONCORD TURNPIKE
07/14/2015	Property damage only (none injured)	5:24 PM	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	RAMP-RT 2 EB TO ALEWIFE STA/ACORN PARK D
07/18/2015	Non-fatal injury	12:24 PM	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Other improper action)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: E / V2: E / V3: E	Cloudy		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY
07/05/2015	Non-fatal injury	4:56 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte SR2 E / ALEWIFE BROOK PARKWAY Rte SR3 / ALEWIFE STATION ACCESS ROAD	
06/15/2015	Property damage only (none injured)	11:18 AM	3	D1: (Operating defective equipment) / D2: (No improper driving) / D3: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: E / V2: E / V3: E	Clear		ALEWIFE BROOK PARKWAY Rte SR3A S / CONCORD TURNPIKE Rte SR2 E	
06/09/2015	Property damage only (none injured)	6:15 PM	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE / CONCORD TURNPIKE Rte SR2 E / ALEWIFE BROOK PARKWAY	
05/20/2015	Property damage only (none injured)	10:50 AM	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		CONCORD TURNPIKE Rte SR2 W / ALEWIFE BROOK PARKWAY	
04/15/2015	Non-fatal injury	3:27 PM	5	D1: (No improper driving) / D2: (No improper driving) / D3: (No improper driving) / D4: (No improper driving) / D5: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic / V4: Slowing or stopped in traffic / V5: Changing lanes	V1: E / V2: E / V3: E / V4: E / V5: E	Clear		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY
04/07/2015	Property damage only (none injured)	1:50 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Not Reported		ALEWIFE BROOK PARKWAY Rte US3 N / ALEWIFE STATION ACCESS ROAD	
03/17/2015	Property damage only (none injured)	4:45 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Clear		ALEWIFE STATION ACCESS ROAD / ALEWIFE BROOK PARKWAY Rte US3 N	

MassDOT Crash Report for Route 2 at Route 16 in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
02/05/2015	Property damage only (none injured)	9:20 AM	1	D1: (Failure to keep in proper lane or running off road)	Daylight	Single vehicle crash	Wet	V1: Travelling straight ahead	V1: N	Snow		ALEWIFE BROOK PARKWAY Rte UNKNOW	ALEWIFE LOOP DRIVEWAY
01/28/2015	Property damage only (none injured)	4:20 PM	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Snow	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	Cloudy		ALEWIFE BROOK PARKWAY Rte 16 E	
01/09/2015	Property damage only (none injured)	12:17 PM	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	ALEWIFE LOOP DRIVEWAY
10/08/2014	Property damage only (none injured)	6:22 PM	2		Dusk	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: W	Clear		ALEWIFE BROOK PARKWAY Rte SR16 E / ALEWIFE BROOK PARKWAY Rte SR2 E / CONCORD TURNPIKE Rte SR2 W	
09/10/2014	Property damage only (none injured)	10:24 AM	2	D1: (No improper driving) / D2: (Made an improper turn)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1: W / V2: S	Clear		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY
09/08/2014	Property damage only (none injured)	3:58 PM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1: W / V2: W	Clear		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY
07/22/2014	Property damage only (none injured)	11:02 AM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: W / V2: W	Not Reported		ALEWIFE BROOK PARKWAY Rte UNKNOW	CONCORD TURNPIKE
07/10/2014	Non-fatal injury	11:24 PM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Clear		ALEWIFE STATION ACCESS ROAD / ALEWIFE BROOK PARKWAY Rte US3 N	
06/18/2014	Property damage only (none injured)	12:45 AM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Clear		ALEWIFE BROOK PARKWAY Rte US3 S / CONCORD TURNPIKE Rte SR2 W / ALEWIFE STATION ACCESS ROAD	
06/14/2014	Property damage only (none injured)	3:06 AM	1	D1: (Fatigued/asleep)	Dark - lighted roadway	Single vehicle crash	Wet	V1: Travelling straight ahead	V1: E	Rain		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY Rte 3A S
05/05/2014	Property damage only (none injured)	8:55 AM	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Overtaking/passing	V1: E / V2: E	Cloudy		CONCORD TURNPIKE Rte 2 E	CONCORD TURNPIKE
05/22/2014	Non-fatal injury	10:51 AM	3	D1: (Failed to yield right of way) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead / V3: Travelling straight ahead	V1: W / V2: N / V3: S	Cloudy		ALEWIFE BROOK PARKWAY Rte UNKNOW N	WHITTEMORE AVENUE
05/07/2014	Property damage only (none injured)	11:43 AM	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	
05/03/2014	Property damage only (none injured)	10:41 PM	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE	CONCORD TURNPIKE Rte 2 E
04/23/2014	Property damage only (none injured)	9:35 AM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: W / V2: W	Rain		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE Rte 2 W
03/29/2014	Not Reported	2:46 AM	1		Dark - lighted roadway	Single vehicle crash	Dry	V1: Travelling straight ahead	V1: W	Clear		CONCORD TURNPIKE Rte 2 W	ALEWIFE BROOK PARKWAY
01/20/2014	Property damage only (none injured)	6:40 PM	2	D1: (Followed too closely) / D2: (No improper driving)	Dark - roadway not lighted	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: E / V2: E	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	CONCORD TURNPIKE
01/21/2014	Property damage only (none injured)	3:15 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		CONCORD TURNPIKE Rte SR2 W / ALEWIFE BROOK PARKWAY	
01/16/2014	Property damage only (none injured)	11:33 AM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Cloudy		ALEWIFE BROOK PARKWAY Rte 3 N	ALEWIFE STATION ACCESS ROAD
01/09/2014	Property damage only (none injured)	9:09 PM	3	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving) / D3: (No improper driving)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Changing lanes / V2: Travelling straight ahead / V3: Travelling straight ahead	V1: N / V2: N / V3: N	Clear		ALEWIFE BROOK PARKWAY / CONCORD TURNPIKE /	
11/09/2013	Property damage only (none injured)	9:27 AM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1: S / V2: S	Clear		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE
09/30/2013	Property damage only (none injured)	7:23 PM	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY Rte 3 S
08/26/2013	Property damage only (none injured)	12:05 AM	2	D1: (Inattention) / D2: (Inattention)	Dark - lighted roadway	Sideswipe, opposite direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: W	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	CONCORD TURNPIKE
08/07/2013	Property damage only (none injured)	11:20 AM	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: W / V2: W	Cloudy		ALEWIFE BROOK PARKWAY Rte UNKNOW	CONCORD TURNPIKE
05/16/2013	Property damage only (none injured)	6:15 AM	2	D1: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Not reported	V1: E / V2: Not Reported	Clear		ALEWIFE BROOK PARKWAY Rte 3 S / CONCORD TURNPIKE / ALEWIFE STATION ACCESS ROAD	

MassDOT Crash Report for Route 2 at Route 16 in Arlington MA 2013-2017

Crash Date	Crash Severity	Crash Time	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway
06/14/2013	Property damage only (none injured)	7:05 PM	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Clear		CONCORD TURNPIKE Rte 2 E	CONCORD TURNPIKE Rte 2 E
05/14/2013	Non-fatal injury	12:15 AM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: N	Not Reported		ALEWIFE STATION ACCESS ROAD / CONCORD TURNPIKE / ALEWIFE BROOK PARKWAY Rte 3 S	
05/13/2013	Non-fatal injury	11:00 PM	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: N	Not Reported		ALEWIFE BROOK PARKWAY Rte 3 S / CONCORD TURNPIKE Rte 2 E	
05/25/2013	Non-fatal injury	11:53 AM	2	D1: (No improper driving) / D2: (Driving too fast for conditions)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1: W / V2: W	Clear		ALEWIFE BROOK PARKWAY	
05/13/2013	Property damage only (none injured)	3:01 PM	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: W / V2: W	Clear		CONCORD TURNPIKE Rte 2 W	RAMP-ALEWIFE BROOK PARKWAY SB TO RT 2 WB
05/12/2013	Property damage only (none injured)	8:54 PM	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Other / V2: Other	V1: N / V2: N	Clear		ALEWIFE BROOK PARKWAY	CONCORD TURNPIKE
03/24/2013	Property damage only (none injured)	3:40 AM	1	D1: (Physical impairment)	Dark - roadway not lighted	Single vehicle crash	Dry	V1: Turning left	V1: W	Clear		ALEWIFE STATION ACCESS ROAD	ALEWIFE BROOK PARKWAY Rte 3 N
03/20/2013	Property damage only (none injured)	5:29 PM	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: E	Not Reported		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY
03/20/2013	Property damage only (none injured)	10:06 AM	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1: W / V2: W / V3: W	Clear		CONCORD TURNPIKE Rte 2 W / ALEWIFE BROOK PARKWAY Rte 3 S	
03/14/2013	Property damage only (none injured)	4:52 PM	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: S / V2: S / V3: S	Clear		ALEWIFE BROOK PARKWAY Rte UNKNOW	WHITTEMORE AVENUE
01/30/2013	Non-fatal injury	11:50 PM	3	D1: (Physical impairment) / D2: (No improper driving) / D3: (No improper driving)	Dark - lighted roadway	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1: W / V2: W / V3: W	Clear		ALEWIFE BROOK PARKWAY	
01/19/2013	Property damage only (none injured)	4:45 PM	2	D1: (Other improper action)	Dusk	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1: E / V2: E	Cloudy		CONCORD TURNPIKE Rte 2 E	ALEWIFE BROOK PARKWAY
01/29/2013	Property damage only (none injured)	11:10 PM	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Angle	Wet	V1: Entering traffic lane / V2: Travelling straight ahead	V1: W / V2: N	Rain/Fog, smog, smoke		ALEWIFE BROOK PARKWAY Rte 16 W	CONCORD TURNPIKE

GROWTH RATE DATA

Massachusetts Highway Department 4925 Annual Growth Rate 2013-2019

Location ID:	4925	Seasonal Factor Group:	U3
County:	Middlesex	Daily Factor Group:	
Functional Class	3 - Other Principal Arterial	Axle Factor Group:	U3
Location:	Waverly Oaks Road	Growth Factor Group:	U3
	West of Beaver Road		

Year	AADT
2019	7529
2013	8331

A = 2019/2013 0.9037

B = A^(1/6) 0.9800

Average Annual Growth Rate	-2.00
Use	

TRIP GENERATION CALCULATIONS

Institute of Transportation Engineers (ITE)
Trip Generation, 10th Edition
Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 176

AVERAGE WEEKDAY DAILY

$$T = 5.45 * (X) - 1.75$$

$$T = 5.45 * 176 - (1.75)$$

$$T = 957.45$$

$$T = 958 \text{ vehicle trips}$$

with 50% (479 vpd) entering and 50% (479 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.98 * \ln(X) - 0.98$$

$$\ln T = 0.98 * \ln 176 - (0.98)$$

$$\ln T = 4.09$$

$$T = 59.57$$

$$T = 60 \text{ vehicle trips}$$

with 26% (16 vph) entering and 74% (44 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$\ln T = 0.96 * \ln(X) - 0.63$$

$$\ln T = 0.96 * \ln 176 - (0.63)$$

$$\ln T = 4.33$$

$$T = 76.22$$

$$T = 76 \text{ vehicle trips}$$

with 61% (46 vph) entering and 39% (30 vph) exiting.

JOURNEY TO WORK DATA

Journey to Work: Exiting/Exiting Traffic

Town/City/County	Percent	Route 2 EB Enter WB Exit	Alwife Brook Parkway NB	Alwife Brook Parkway SB	Mass Ave NB	Mass Ave SB	Lake Street WB
Andover town	1.46	0.97				0.49	
Salem city	1.33	0.67				0.67	
Acton town	1.05	1.05					
Arlington town	6.20				5.89	0.31	
Bedford town	1.81	1.81					
Belmont town	2.01						2.01
Billerica town	1.13	1.13					
Burlington town	3.30	3.30					
Cambridge city	6.26			2.09		4.17	
Chelmsford town	1.25	1.25					
Concord town	1.05	1.05					
Everett city	1.25				0.42	0.84	
Framingham town	1.63	1.08					0.54
Lexington town	3.52	3.52					
Malden city	1.18				0.39	0.78	
Medford city	2.56				1.70	0.85	
Newton city	2.65	0.88					1.77
Somerville city	2.48			0.83		1.65	
Stoneham town	1.02				0.51	0.51	
Waltham city	3.41						3.41
Watertown Town city	2.26						2.26
Weston town	1.44	1.44					
Winchester town	1.49	0.99			0.50		
Woburn city	2.43	1.22			1.22		
Brookline town	1.67			0.56		0.56	0.56
Wellesley town	1.95	1.30					0.65
Norwell town	1.16	0.39		0.39		0.39	
Boston city	8.23			2.74	2.74	2.74	
Worcester city	1.13	1.13					
Barnstable County	0.19	0.09				0.09	
Bristol County	0.20	0.10				0.10	
Essex County	6.18	3.09				3.09	
Middlesex County	12.83	12.83					
Norfolk County	5.58	2.79				2.79	
Plymouth County	1.19	0.60				0.60	
Suffolk County	1.60			0.80		0.80	
Worcester County	3.92	3.92					
TOTAL	100.00	46.61	0.00	7.40	13.37	21.43	11.20
USE	100	45	0	10	15	20	10

CAPACITY ANALYSIS

2020 Baseline Weekday Morning Peak Hour
2020 Baseline Weekday Evening Peak Hour
2027 No-Build Weekday Morning Peak Hour
2027 No-Build Weekday Evening Peak Hour
2027 Build Weekday Morning Peak Hour
2027 Build Weekday Evening Peak Hour

2020 Baseline Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	574	3	1	1121	5	1
Future Vol, veh/h	574	3	1	1121	5	1
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	75	75	87	87	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	765	4	1	1289	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	769	0	2058
Stage 1	-	-	-	-	767
Stage 2	-	-	-	-	1291
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	-	-	854	-	61
Stage 1	-	-	-	-	462
Stage 2	-	-	-	-	260
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	854	-	61
Mov Cap-2 Maneuver	-	-	-	-	61
Stage 1	-	-	-	-	462
Stage 2	-	-	-	-	259

Approach	EB	WB	NB
HCM Control Delay, s	0	0	62
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	854	-
HCM Lane V/C Ratio	0.113	-	-	0.001	-
HCM Control Delay (s)	62	-	-	9.2	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	561	14	5	1098	24	6
Future Vol, veh/h	561	14	5	1098	24	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	748	19	5	1181	32	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	767	0	1949
Stage 1	-	-	-	-	758
Stage 2	-	-	-	-	1191
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	-	-	856	-	72
Stage 1	-	-	-	-	466
Stage 2	-	-	-	-	291
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	856	-	71
Mov Cap-2 Maneuver	-	-	-	-	71
Stage 1	-	-	-	-	466
Stage 2	-	-	-	-	286

Approach	EB	WB	NB
HCM Control Delay, s	0	0	80.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	85	-	-	856	-
HCM Lane V/C Ratio	0.471	-	-	0.006	-
HCM Control Delay (s)	80.4	-	-	9.2	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0	-

HCM 6th TWSC
 26: Homestead Road & Lake Street

11/06/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	562	5	3	1096	7	1
Future Vol, veh/h	562	5	3	1096	7	1
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	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	749	7	3	1178	9	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	756	0	1937
Stage 1	-	-	-	-	753
Stage 2	-	-	-	-	1184
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	-	-	864	-	73
Stage 1	-	-	-	-	469
Stage 2	-	-	-	-	293
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	864	-	72
Mov Cap-2 Maneuver	-	-	-	-	72
Stage 1	-	-	-	-	469
Stage 2	-	-	-	-	290

Approach	EB	WB	NB
HCM Control Delay, s	0	0	56.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	80	-	-	864	-
HCM Lane V/C Ratio	0.133	-	-	0.004	-
HCM Control Delay (s)	56.8	-	-	9.2	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

HCM 6th TWSC
 29: Burch Street /Alfred Road & Lake Street

11/06/2020

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	545	18	8	1080	5	8	0	14	4	0	11
Future Vol, veh/h	0	545	18	8	1080	5	8	0	14	4	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	96	96	96	80	80	80	92	92	92
Heavy Vehicles, %	0	1	0	0	0	0	0	0	10	0	0	0
Mvmt Flow	0	690	23	8	1125	5	10	0	18	4	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1130	0	0	713	0	0	1852	1848	702	1855	1857	1128
Stage 1	-	-	-	-	-	-	702	702	-	1144	1144	-
Stage 2	-	-	-	-	-	-	1150	1146	-	711	713	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.3	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.39	3.5	4	3.3
Pot Cap-1 Maneuver	626	-	-	896	-	-	58	75	425	57	74	251
Stage 1	-	-	-	-	-	-	432	443	-	245	277	-
Stage 2	-	-	-	-	-	-	243	276	-	427	438	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	626	-	-	896	-	-	54	73	425	54	72	251
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	73	-	54	72	-
Stage 1	-	-	-	-	-	-	432	443	-	245	270	-
Stage 2	-	-	-	-	-	-	226	269	-	409	438	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			43.3			37.5		
HCM LOS							E			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	121	626	-	-	896	-	-	127
HCM Lane V/C Ratio	0.227	-	-	-	0.009	-	-	0.128
HCM Control Delay (s)	43.3	0	-	-	9.1	0	-	37.5
HCM Lane LOS	E	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

HCM 6th TWSC
33: Margaret Street/Lakehill Avenue & Lake Street

11/06/2020

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	553	7	24	1069	3	9	0	22	3	0	15
Future Vol, veh/h	3	553	7	24	1069	3	9	0	22	3	0	15
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	97	97	97	75	75	75	75	75	75
Heavy Vehicles, %	0	2	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	658	8	25	1102	3	12	0	29	4	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1105	0	0	970	0	0	2138	2129	966	1839	2132	1104
Stage 1	-	-	-	-	-	-	974	974	-	1154	1154	-
Stage 2	-	-	-	-	-	-	1164	1155	-	685	978	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	639	-	-	719	-	-	36	50	311	59	50	259
Stage 1	-	-	-	-	-	-	305	333	-	242	274	-
Stage 2	-	-	-	-	-	-	239	274	-	441	331	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	639	-	-	537	-	-	22	33	232	46	33	259
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	33	-	46	33	-
Stage 1	-	-	-	-	-	-	225	246	-	240	241	-
Stage 2	-	-	-	-	-	-	194	241	-	381	245	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			139.9			34.4		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	62	639	-	-	537	-	-	146
HCM Lane V/C Ratio	0.667	0.006	-	-	0.046	-	-	0.164
HCM Control Delay (s)	139.9	10.7	0	-	12	0	-	34.4
HCM Lane LOS	F	B	A	-	B	A	-	D
HCM 95th %tile Q(veh)	2.9	0	-	-	0.1	-	-	0.6

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations	↘		↕	↗	↖	↗	
Traffic Volume (vph)	247	279	822	580	381	438	
Future Volume (vph)	247	279	822	580	381	438	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Fr _t	0.928			0.850			
Fl _t Protected	0.977				0.950		
Satd. Flow (prot)	1933	0	3421	1492	1728	1863	
Fl _t Permitted	0.977				0.147		
Satd. Flow (perm)	1933	0	3421	1492	267	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	49			209			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	
Adj. Flow (vph)	271	307	893	630	414	476	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	578	0	893	630	414	476	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020

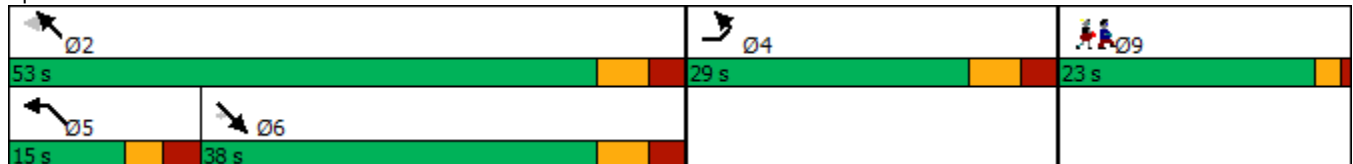


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.12		0.75	0.96	1.43	0.49	
Control Delay	108.2		31.9	48.1	232.9	17.9	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	108.2		31.9	48.1	232.9	17.9	
LOS	F		C	D	F	B	
Approach Delay	108.2		38.6			117.9	
Approach LOS	F		D			F	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.43
Intersection Signal Delay:	75.7
Intersection LOS:	E
Intersection Capacity Utilization:	91.3%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020
















Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	578	893	630	414	476
v/c Ratio	1.12	0.75	0.96	1.43	0.49
Control Delay	108.2	31.9	48.1	232.9	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	108.2	31.9	48.1	232.9	17.9
Queue Length 50th (ft)	~306	198	213	~211	133
Queue Length 95th (ft)	#659	#371	#561	#512	317
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	516	1196	657	289	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.75	0.96	1.43	0.49

Intersection Summary

- ~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	284	435	166	390	253	208	493
Future Volume (vph)	284	435	166	390	253	208	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2132	1812	1685	3455	0	2036	1706
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2132	1812	1685	3455	0	2036	1706
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		322					407
Link Speed (mph)	30			30		30	
Link Distance (ft)	239			505		387	
Travel Time (s)	5.4			11.5		8.8	
Peak Hour Factor	0.91	0.91	0.84	0.84	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	1%	0%	1%	1%
Adj. Flow (vph)	312	478	198	464	278	229	542
Shared Lane Traffic (%)							
Lane Group Flow (vph)	312	478	198	464	0	507	542
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020

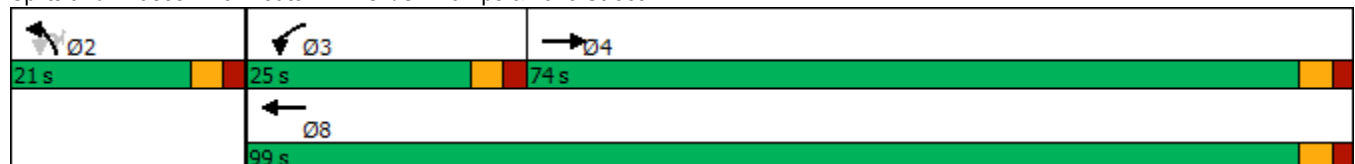


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	14.3	57.9	12.2	31.6		16.2	16.2
Actuated g/C Ratio	0.25	1.00	0.21	0.55		0.28	0.28
v/c Ratio	0.59	0.26	0.56	0.25		0.89	0.70
Control Delay	24.7	0.4	27.5	7.0		44.0	12.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.7	0.4	27.5	7.0		44.0	12.1
LOS	C	A	C	A		D	B
Approach Delay	10.0			13.1		27.5	
Approach LOS	A			B		C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	57.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	18.2
Intersection LOS:	B
Intersection Capacity Utilization:	62.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020



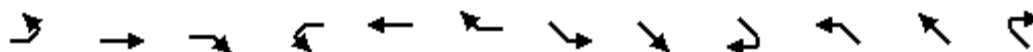
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	312	478	198	464	507	542
v/c Ratio	0.59	0.26	0.56	0.25	0.89	0.70
Control Delay	24.7	0.4	27.5	7.0	44.0	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	0.4	27.5	7.0	44.0	12.1
Queue Length 50th (ft)	95	0	62	39	167	36
Queue Length 95th (ft)	176	0	116	53	#400	#191
Internal Link Dist (ft)	159			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2132	1812	588	3455	568	769
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.26	0.34	0.13	0.89	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

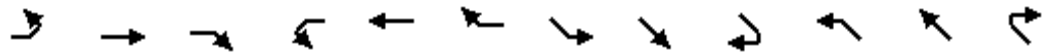
11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	210	567	0	0	435	691	0	0	0	121	6	10
Future Volume (vph)	210	567	0	0	435	691	0	0	0	121	6	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.956	
Satd. Flow (prot)	1805	1881	0	0	1837	1492	0	0	0	1579	1583	1830
Fl _t Permitted	0.950									0.950	0.956	
Satd. Flow (perm)	1805	1881	0	0	1837	1492	0	0	0	1579	1583	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						520						136
Link Speed (mph)		30			30			30				30
Link Distance (ft)		505			380			459				529
Travel Time (s)		11.5			8.6			10.4				12.0
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	5%	50%	0%
Adj. Flow (vph)	239	644	0	0	473	751	0	0	0	149	7	12
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	239	644	0	0	473	751	0	0	0	77	79	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases						8						2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	10.8	31.4			16.0	16.0				16.0	16.0	16.0
Actuated g/C Ratio	0.18	0.53			0.27	0.27				0.27	0.27	0.27
v/c Ratio	0.73	0.65			0.96	0.96				0.18	0.19	0.02
Control Delay	37.8	13.8			56.5	34.1				18.4	18.4	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	37.8	13.8			56.5	34.1				18.4	18.4	0.1
LOS	D	B			E	C				B	B	A
Approach Delay		20.3			42.7						17.1	
Approach LOS		C			D						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	59.4
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	32.1
Intersection LOS:	C
Intersection Capacity Utilization:	71.7%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/06/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	239	644	473	751	77	79	12
v/c Ratio	0.73	0.65	0.96	0.96	0.18	0.19	0.02
Control Delay	37.8	13.8	56.5	34.1	18.4	18.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	13.8	56.5	34.1	18.4	18.4	0.1
Queue Length 50th (ft)	81	150	168	80	22	23	0
Queue Length 95th (ft)	#164	238	#335	#314	47	48	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	349	1014	495	782	426	427	592
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	0.68	0.64	0.96	0.96	0.18	0.19	0.02

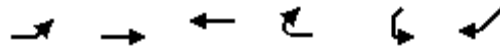
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020

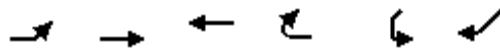


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	1523	0	0	1019		
Future Volume (vph)	0	0	1523	0	0	1019		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4729	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4729	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						9		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.90	0.92	0.92	0.85		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%		
Adj. Flow (vph)	0	0	1692	0	0	1199		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	1692	0	0	1199		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020

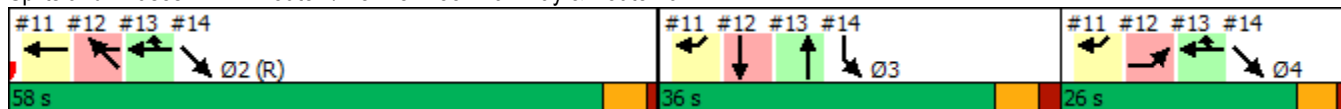


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			0.81			0.98		
Control Delay			5.7			52.6		
Queue Delay			2.3			0.0		
Total Delay			8.0			52.6		
LOS			A			D		
Approach Delay			8.0		52.6			
Approach LOS			A		D			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	26.5
Intersection LOS:	C
Intersection Capacity Utilization:	81.5%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020



Lane Group	WBT	SWR
Lane Group Flow (vph)	1692	1199
v/c Ratio	0.81	0.98
Control Delay	5.7	52.6
Queue Delay	2.3	0.0
Total Delay	8.0	52.6
Queue Length 50th (ft)	41	502
Queue Length 95th (ft)	m40	#613
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2088	1226
Starvation Cap Reductn	262	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.93	0.98

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
12: Alewife Brook Parkway & Route 2

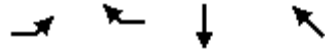
11/06/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations	↗↗	↗	↑↑	↑↑
Traffic Volume (vph)	486	163	489	1360
Future Volume (vph)	486	163	489	1360
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Flt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3224	1581	3291	3291
Flt Permitted	0.950			
Satd. Flow (perm)	3224	1581	3291	3291
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.97	0.94	0.85	0.90
Heavy Vehicles (%)	1%	6%	2%	2%
Adj. Flow (vph)	501	173	575	1511
Shared Lane Traffic (%)				
Lane Group Flow (vph)	501	173	575	1511
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/06/2020

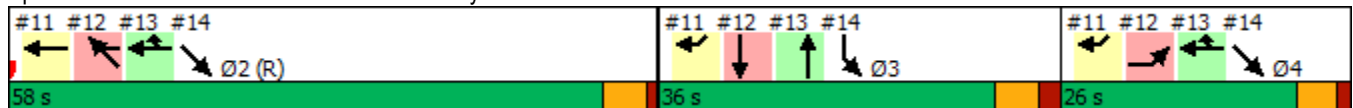


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)				5.0
Flash Dont Walk (s)				8.0
Pedestrian Calls (#/hr)				0
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	0.89	0.25	0.70	1.04
Control Delay	67.3	14.2	46.2	68.0
Queue Delay	0.0	2.4	0.0	0.8
Total Delay	67.3	16.6	46.2	68.8
LOS	E	B	D	E
Approach Delay			46.2	68.8
Approach LOS			D	E

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 60.6
 Intersection LOS: E
 Intersection Capacity Utilization 100.1%
 ICU Level of Service G
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

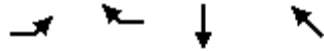
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/06/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	501	173	575	1511
v/c Ratio	0.89	0.25	0.70	1.04
Control Delay	67.3	14.2	46.2	68.0
Queue Delay	0.0	2.4	0.0	0.8
Total Delay	67.3	16.6	46.2	68.8
Queue Length 50th (ft)	197	82	213	~665
Queue Length 95th (ft)	#291	134	259	#804
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	564	698	822	1453
Starvation Cap Reductn	0	405	0	0
Spillback Cap Reductn	0	1	0	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.59	0.70	1.04

Intersection Summary

~ 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.

Lanes, Volumes, Timings

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	163	52	0	216	0	0	0	0
Future Volume (vph)	0	0	0	0	163	52	0	216	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)						2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	6%	9%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	177	57	0	240	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	177	57	0	240	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

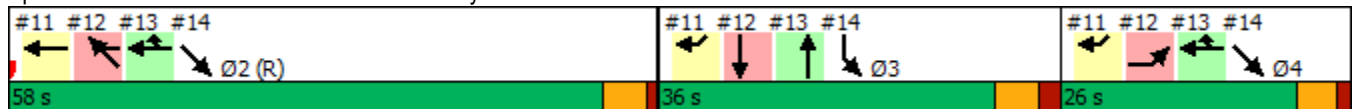


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.17	0.06		0.30				
Control Delay					8.3	7.6		37.8				
Queue Delay					0.1	0.0		0.0				
Total Delay					8.4	7.6		37.8				
LOS					A	A		D				
Approach Delay					8.2			37.8				
Approach LOS					A			D				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 23.2
 Intersection LOS: C
 Intersection Capacity Utilization 27.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

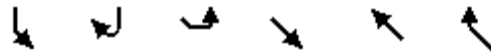
11/06/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	177	57	240
v/c Ratio	0.17	0.06	0.30
Control Delay	8.3	7.6	37.8
Queue Delay	0.1	0.0	0.0
Total Delay	8.4	7.6	37.8
Queue Length 50th (ft)	48	15	80
Queue Length 95th (ft)	78	30	117
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1061	877	788
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	203	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.06	0.30
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

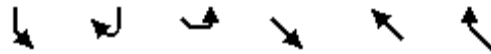
11/06/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations	↙↘			↖↗				
Traffic Volume (vph)	489	0	0	1064	0	0		
Future Volume (vph)	489	0	0	1064	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	234							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.85	0.92	0.92	0.97	0.92	0.92		
Heavy Vehicles (%)	2%	2%	2%	1%	2%	2%		
Adj. Flow (vph)	575	0	0	1097	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	575	0	0	1097	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15					9
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

11/06/2020

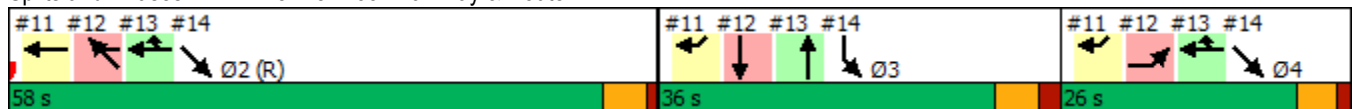


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.59			0.50				
Control Delay	2.3			11.4				
Queue Delay	0.9			0.0				
Total Delay	3.2			11.4				
LOS	A			B				
Approach Delay	3.2			11.4				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization:	57.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2















11/06/2020



Lane Group	SBL	SET
Lane Group Flow (vph)	575	1097
v/c Ratio	0.59	0.50
Control Delay	2.3	11.4
Queue Delay	0.9	0.0
Total Delay	3.2	11.4
Queue Length 50th (ft)	5	209
Queue Length 95th (ft)	0	258
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	973	2188
Starvation Cap Reductn	168	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.71	0.50
Intersection Summary		

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/06/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	578	0	0	1096	0	0	0	0	0	0	0
Future Volume (vph)	0	578	0	0	1096	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	16	16	16	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	2049	0	0	2153	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	2049	0	0	2153	0	0	0	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			215			175			206	
Travel Time (s)		3.1			4.9			4.0			4.7	
Peak Hour Factor	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	688	0	0	1130	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	688	0	0	1130	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2							
Detector Template		Thru			Thru							
Leading Detector (ft)		100			100							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		6			6							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA			NA							
Protected Phases		4			8							
Permitted Phases												
Detector Phase		4			8							

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/06/2020

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/06/2020

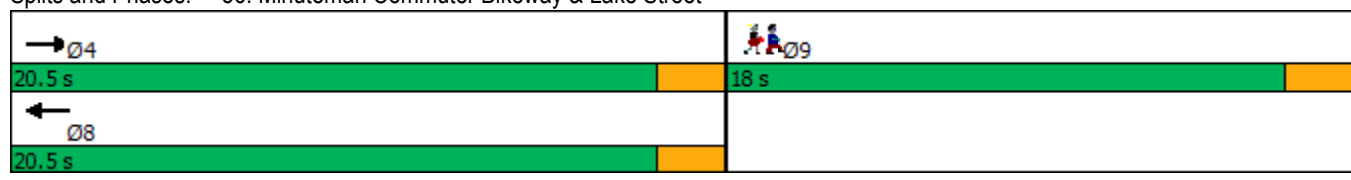


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.5			20.5							
Total Split (s)		20.5			20.5							
Total Split (%)		53.2%			53.2%							
Maximum Green (s)		18.5			18.5							
Yellow Time (s)		2.0			2.0							
All-Red Time (s)		0.0			0.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		2.0			2.0							
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		33.5			33.5							
Actuated g/C Ratio		0.63			0.63							
v/c Ratio		0.54			0.84							
Control Delay		7.6			15.8							
Queue Delay		0.0			48.7							
Total Delay		7.6			64.5							
LOS		A			E							
Approach Delay		7.6			64.5							
Approach LOS		A			E							

Intersection Summary

Area Type:	Other
Cycle Length:	38.5
Actuated Cycle Length:	53.5
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	43.0
Intersection LOS:	D
Intersection Capacity Utilization:	61.0%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 36: Minuteman Commuter Bikeway & Lake Street



Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	47%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	304
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

36: Minuteman Commuter Bikeway & Lake Street

11/06/2020



Lane Group	EBT	WBT
Lane Group Flow (vph)	688	1130
v/c Ratio	0.54	0.84
Control Delay	7.6	15.8
Queue Delay	0.0	48.7
Total Delay	7.6	64.5
Queue Length 50th (ft)	101	232
Queue Length 95th (ft)	149	#517
Internal Link Dist (ft)	55	135
Turn Bay Length (ft)		
Base Capacity (vph)	1283	1348
Starvation Cap Reductn	0	424
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	1.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	30	520	28	4	957	0	22	4	3	3	7	117
Future Volume (vph)	30	520	28	4	957	0	22	4	3	3	7	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993						0.986			0.876	
Flt Protected		0.997						0.963			0.999	
Satd. Flow (prot)	0	1984	0	0	1944	0	0	1804	0	0	1663	0
Flt Permitted		0.932			0.998			0.711			0.993	
Satd. Flow (perm)	0	1854	0	0	1940	0	0	1332	0	0	1653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4						4			150	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.75	0.75	0.75	0.78	0.78	0.78
Heavy Vehicles (%)	0%	1%	5%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	33	571	31	5	1100	0	29	5	4	4	9	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	635	0	0	1105	0	0	38	0	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		14.0	14.0	
Total Split (s)	28.0	28.0		28.0	28.0		10.0	24.0		14.0	14.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		13.8%	33.1%		19.3%	19.3%	
Maximum Green (s)	24.0	24.0		24.0	24.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		25.0			25.0			6.9			6.9	
Actuated g/C Ratio		0.58			0.58			0.16			0.16	
v/c Ratio		0.59			0.98			0.18			0.42	
Control Delay		12.8			37.7			18.9			9.1	
Queue Delay		5.7			0.0			0.0			0.0	
Total Delay		18.5			37.7			18.9			9.1	
LOS		B			D			B			A	
Approach Delay		18.5			37.7			18.9			9.1	
Approach LOS		B			D			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	72.5
Actuated Cycle Length:	43
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	28.7
Intersection LOS:	C
Intersection Capacity Utilization:	72.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 39: Brooks Avenue & Lake Street

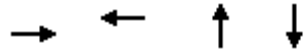


Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	20.5
Total Split (s)	20.5
Total Split (%)	28%
Maximum Green (s)	16.0
Yellow Time (s)	4.0
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	16
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/06/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	635	1105	38	163
v/c Ratio	0.59	0.98	0.18	0.42
Control Delay	12.8	37.7	18.9	9.1
Queue Delay	5.7	0.0	0.0	0.0
Total Delay	18.5	37.7	18.9	9.1
Queue Length 50th (ft)	55	147	6	2
Queue Length 95th (ft)	#408	#772	28	35
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1079	1127	647	513
Starvation Cap Reductn	378	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.98	0.06	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2020 Baseline Weekday Evening Peak Hour

HCM 6th TWSC
10: Wilson Avenue & Lake Street

11/06/2020

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	785	3	1	570	9	4
Future Vol, veh/h	785	3	1	570	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	94	94	75	75
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	946	4	1	606	12	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	950	0	1556
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	608
Critical Hdwy	-	-	4.1	-	6.69
Critical Hdwy Stg 1	-	-	-	-	5.69
Critical Hdwy Stg 2	-	-	-	-	5.69
Follow-up Hdwy	-	-	2.2	-	3.761
Pot Cap-1 Maneuver	-	-	731	-	107
Stage 1	-	-	-	-	337
Stage 2	-	-	-	-	495
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	731	-	107
Mov Cap-2 Maneuver	-	-	-	-	107
Stage 1	-	-	-	-	337
Stage 2	-	-	-	-	494

Approach	EB	WB	NB
HCM Control Delay, s	0	0	35.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	135	-	-	731	-
HCM Lane V/C Ratio	0.128	-	-	0.001	-
HCM Control Delay (s)	35.6	-	-	9.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	783	6	9	556	15	5
Future Vol, veh/h	783	6	9	556	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	900	7	10	625	20	7

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	907	0	1549 904
Stage 1	-	-	-	-	904 -
Stage 2	-	-	-	-	645 -
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	-	-	759	-	127 338
Stage 1	-	-	-	-	398 -
Stage 2	-	-	-	-	526 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	759	-	124 338
Mov Cap-2 Maneuver	-	-	-	-	124 -
Stage 1	-	-	-	-	398 -
Stage 2	-	-	-	-	515 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	34.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	147	-	-	759	-
HCM Lane V/C Ratio	0.181	-	-	0.013	-
HCM Control Delay (s)	34.8	-	-	9.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

HCM 6th TWSC
26: Homestead Road & Lake Street

11/06/2020

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	787	1	1	559	6	4
Future Vol, veh/h	787	1	1	559	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	905	1	1	628	8	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	906	0	1536
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	630
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	-	-	759	-	129
Stage 1	-	-	-	-	398
Stage 2	-	-	-	-	535
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	759	-	129
Mov Cap-2 Maneuver	-	-	-	-	129
Stage 1	-	-	-	-	398
Stage 2	-	-	-	-	534

Approach	EB	WB	NB
HCM Control Delay, s	0	0	27.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	-	-	759	-
HCM Lane V/C Ratio	0.078	-	-	0.001	-
HCM Control Delay (s)	27.8	-	-	9.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
29: Burch Street /Alfred Road & Lake Street

11/06/2020

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	768	19	11	546	8	13	1	6	3	0	1
Future Vol, veh/h	4	768	19	11	546	8	13	1	6	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	893	22	13	635	9	17	1	8	4	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	644	0	0	915	0	0	1580	1584	904	1585	1591	640
Stage 1	-	-	-	-	-	-	914	914	-	666	666	-
Stage 2	-	-	-	-	-	-	666	670	-	919	925	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	951	-	-	754	-	-	89	110	338	89	108	479
Stage 1	-	-	-	-	-	-	330	355	-	452	460	-
Stage 2	-	-	-	-	-	-	452	459	-	328	351	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	951	-	-	754	-	-	86	106	338	84	104	479
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	106	-	84	104	-
Stage 1	-	-	-	-	-	-	326	351	-	447	448	-
Stage 2	-	-	-	-	-	-	439	447	-	316	347	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			46.9			40.8		
HCM LOS							E			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	112	951	-	-	754	-	-	106
HCM Lane V/C Ratio	0.238	0.005	-	-	0.017	-	-	0.05
HCM Control Delay (s)	46.9	8.8	0	-	9.9	0	-	40.8
HCM Lane LOS	E	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	0.2

HCM 6th TWSC
 33: Margaret Street/Lakehill Avenue & Lake Street

11/06/2020

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	756	3	42	548	15	6	0	27	9	0	11
Future Vol, veh/h	18	756	3	42	548	15	6	0	27	9	0	11
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	88	88	88	81	81	81	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	911	4	48	623	17	7	0	33	11	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	640	0	0	1219	0	0	1996	1997	1217	1702	1991	632
Stage 1	-	-	-	-	-	-	1261	1261	-	728	728	-
Stage 2	-	-	-	-	-	-	735	736	-	974	1263	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	954	-	-	579	-	-	45	61	223	73	61	484
Stage 1	-	-	-	-	-	-	211	244	-	418	432	-
Stage 2	-	-	-	-	-	-	414	428	-	305	243	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	954	-	-	432	-	-	27	36	167	49	36	484
Mov Cap-2 Maneuver	-	-	-	-	-	-	27	36	-	49	36	-
Stage 1	-	-	-	-	-	-	150	174	-	398	357	-
Stage 2	-	-	-	-	-	-	333	354	-	233	173	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	79.9	54.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	954	-	-	432	-	-	97
HCM Lane V/C Ratio	0.474	0.023	-	-	0.11	-	-	0.258
HCM Control Delay (s)	79.9	8.9	0	-	14.4	0	-	54.5
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	2	0.1	-	-	0.4	-	-	0.9

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations	↘		↗	↖	↖	↗	
Traffic Volume (vph)	397	255	635	175	323	714	
Future Volume (vph)	397	255	635	175	323	714	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Frt	0.947			0.850			
Flt Protected	0.970				0.950		
Satd. Flow (prot)	1978	0	3421	1507	1745	1863	
Flt Permitted	0.970				0.242		
Satd. Flow (perm)	1978	0	3421	1507	444	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	28			81			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%	
Adj. Flow (vph)	451	290	690	190	351	776	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	741	0	690	190	351	776	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020

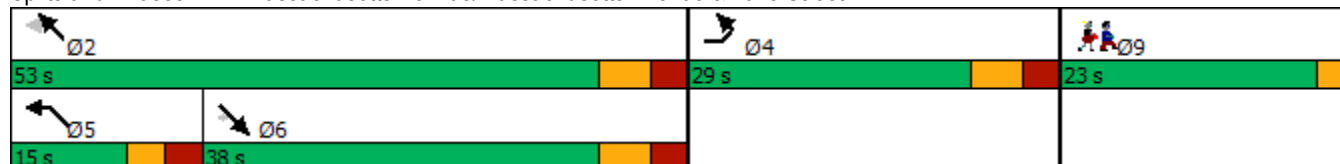


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.45		0.58	0.33	0.96	0.80	
Control Delay	240.7		27.5	15.6	57.9	28.1	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	240.7		27.5	15.6	57.9	28.1	
LOS	F		C	B	E	C	
Approach Delay	240.7		24.9			37.4	
Approach LOS	F		C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.45
Intersection Signal Delay:	88.2
Intersection LOS:	F
Intersection Capacity Utilization:	89.7%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/06/2020



Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	741	690	190	351	776
v/c Ratio	1.45	0.58	0.33	0.96	0.80
Control Delay	240.7	27.5	15.6	57.9	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	240.7	27.5	15.6	57.9	28.1
Queue Length 50th (ft)	~498	142	37	89	278
Queue Length 95th (ft)	#887	265	113	#359	#702
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	511	1196	579	367	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.45	0.58	0.33	0.96	0.80

Intersection Summary

~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	520	171	159	283	14	488	571
Future Volume (vph)	520	171	159	283	14	488	571
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2153	1664	1652	3490	0	2046	1723
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2153	1664	1652	3490	0	2046	1723
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		69					433
Link Speed (mph)	30			30		30	
Link Distance (ft)	239			505		387	
Travel Time (s)	5.4			11.5		8.8	
Peak Hour Factor	0.94	0.94	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	0%	10%	2%	0%	0%	0%	0%
Adj. Flow (vph)	553	182	183	325	15	508	595
Shared Lane Traffic (%)							
Lane Group Flow (vph)	553	182	183	325	0	523	595
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020

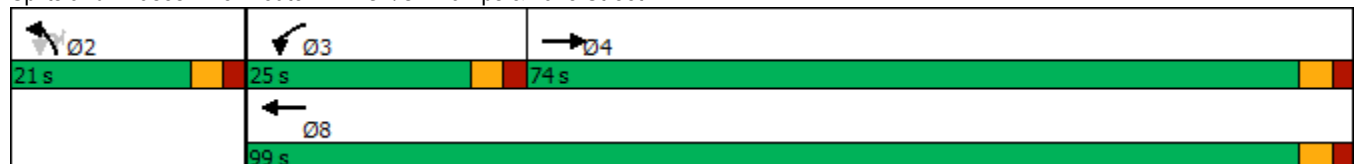


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	24.1	68.8	13.0	42.2		16.4	16.4
Actuated g/C Ratio	0.35	1.00	0.19	0.61		0.24	0.24
v/c Ratio	0.73	0.11	0.59	0.15		1.08	0.81
Control Delay	26.1	0.1	35.0	5.4		93.4	18.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.1	0.1	35.0	5.4		93.4	18.6
LOS	C	A	C	A		F	B
Approach Delay	19.7			16.1		53.6	
Approach LOS	B			B		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	68.8
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	35.0
Intersection LOS:	C
Intersection Capacity Utilization:	76.5%
ICU Level of Service:	D
Analysis Period (min):	15

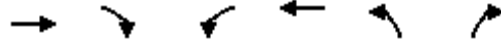
Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/06/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	553	182	183	325	523	595
v/c Ratio	0.73	0.11	0.59	0.15	1.08	0.81
Control Delay	26.1	0.1	35.0	5.4	93.4	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	0.1	35.0	5.4	93.4	18.6
Queue Length 50th (ft)	196	0	71	26	~253	57
Queue Length 95th (ft)	335	0	142	37	#556	#279
Internal Link Dist (ft)	159			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2045	1664	491	3490	486	739
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.11	0.37	0.09	1.08	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

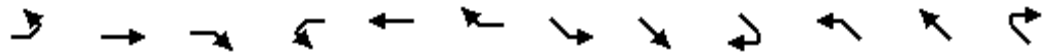
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

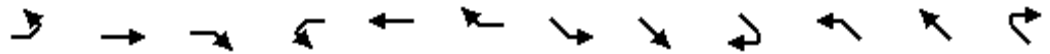
11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	327	764	0	0	245	334	0	0	0	197	21	24
Future Volume (vph)	327	764	0	0	245	334	0	0	0	197	21	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.961	
Satd. Flow (prot)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Fl _t Permitted	0.950									0.950	0.961	
Satd. Flow (perm)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						367						136
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		505			380			459			529	
Travel Time (s)		11.5			8.6			10.4			12.0	
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	372	868	0	0	269	367	0	0	0	207	22	25
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	372	868	0	0	269	367	0	0	0	114	115	25
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases												2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	11.5	30.0			14.0	14.0				16.0	16.0	16.0
Actuated g/C Ratio	0.20	0.52			0.24	0.24				0.28	0.28	0.28
v/c Ratio	1.04	0.89			0.62	0.58				0.25	0.24	0.04
Control Delay	87.4	26.7			26.5	6.7				19.1	19.0	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	87.4	26.7			26.5	6.7				19.1	19.0	0.1
LOS	F	C			C	A				B	B	A
Approach Delay		44.9			15.0						17.2	
Approach LOS		D			B						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	58.1
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	32.7
Intersection LOS:	C
Intersection Capacity Utilization:	58.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/06/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	372	868	269	367	114	115	25
v/c Ratio	1.04	0.89	0.62	0.58	0.25	0.24	0.04
Control Delay	87.4	26.7	26.5	6.7	19.1	19.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.4	26.7	26.5	6.7	19.1	19.0	0.1
Queue Length 50th (ft)	~155	246	84	0	33	34	0
Queue Length 95th (ft)	#289	#461	149	55	72	72	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	358	1039	497	669	453	470	603
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	1.04	0.84	0.54	0.55	0.25	0.24	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

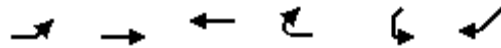
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020

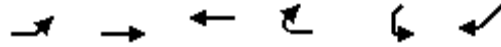


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	2131	0	0	1091		
Future Volume (vph)	0	0	2131	0	0	1091		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4776	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4776	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						2		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.97	0.97	0.98	0.98		
Heavy Vehicles (%)	2%	2%	1%	0%	0%	1%		
Adj. Flow (vph)	0	0	2197	0	0	1113		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	2197	0	0	1113		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020

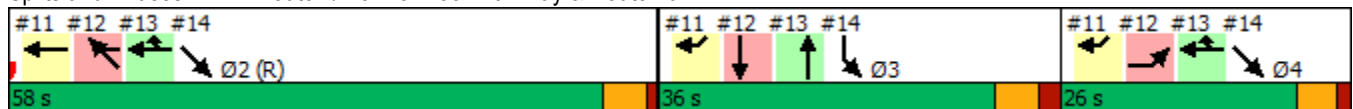


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			1.04			0.91		
Control Delay			29.4			41.9		
Queue Delay			1.5			0.0		
Total Delay			30.9			41.9		
LOS			C			D		
Approach Delay			30.9		41.9			
Approach LOS			C		D			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.14
Intersection Signal Delay:	34.6
Intersection LOS:	C
Intersection Capacity Utilization:	97.3%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/06/2020



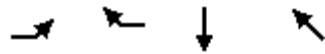
Lane Group	WBT	SWR
Lane Group Flow (vph)	2197	1113
v/c Ratio	1.04	0.91
Control Delay	29.4	41.9
Queue Delay	1.5	0.0
Total Delay	30.9	41.9
Queue Length 50th (ft)	~656	442
Queue Length 95th (ft)	m52	#606
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2109	1222
Starvation Cap Reductn	8	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.05	0.91

Intersection Summary

- ~ 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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

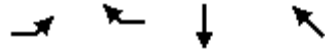
11/06/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations				
Traffic Volume (vph)	581	571	241	1560
Future Volume (vph)	581	571	241	1560
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Flt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3257	1660	3291	3324
Flt Permitted	0.950			
Satd. Flow (perm)	3257	1660	3291	3324
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.90	0.95	0.98	0.97
Heavy Vehicles (%)	0%	1%	2%	1%
Adj. Flow (vph)	646	601	246	1608
Shared Lane Traffic (%)				
Lane Group Flow (vph)	646	601	246	1608
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/06/2020

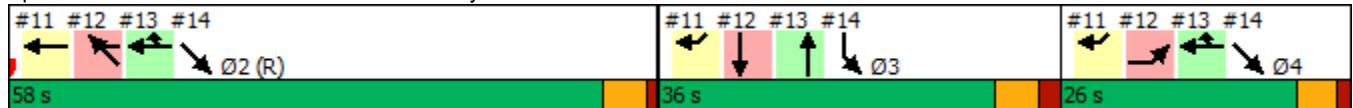


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)	5.0			
Flash Dont Walk (s)	8.0			
Pedestrian Calls (#/hr)	0			
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	1.14	0.82	0.30	1.10
Control Delay	125.6	27.9	37.7	86.8
Queue Delay	0.0	1.3	0.0	2.1
Total Delay	125.6	29.2	37.7	89.0
LOS	F	C	D	F
Approach Delay			37.7	89.0
Approach LOS			D	F

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 80.9
 Intersection LOS: F
 Intersection Capacity Utilization 130.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

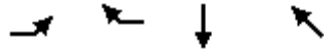
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/06/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	646	601	246	1608
v/c Ratio	1.14	0.82	0.30	1.10
Control Delay	125.6	27.9	37.7	86.8
Queue Delay	0.0	1.3	0.0	2.1
Total Delay	125.6	29.2	37.7	89.0
Queue Length 50th (ft)	~300	399	81	~741
Queue Length 95th (ft)	#418	#578	119	#880
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	569	733	822	1468
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	36	0	73
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.14	0.86	0.30	1.15

Intersection Summary

~ 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.

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	571	317	0	230	0	0	0	0
Future Volume (vph)	0	0	0	0	571	317	0	230	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)								2				
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	1%	1%	0%	1%	0%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	601	334	0	237	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	601	334	0	237	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

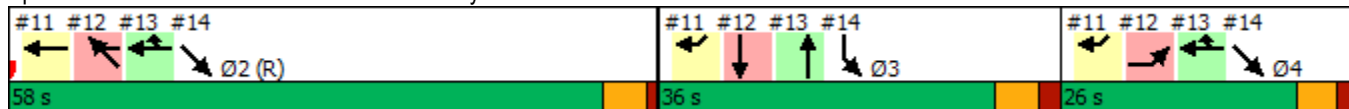


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.54	0.35		0.29				
Control Delay					13.1	10.4		37.7				
Queue Delay					1.7	0.0		0.0				
Total Delay					14.8	10.4		37.7				
LOS					B	B		D				
Approach Delay					13.2			37.7				
Approach LOS					B			D				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.14
Intersection Signal Delay:	18.2
Intersection LOS:	B
Intersection Capacity Utilization:	50.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/06/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	601	334	237
v/c Ratio	0.54	0.35	0.29
Control Delay	13.1	10.4	37.7
Queue Delay	1.7	0.0	0.0
Total Delay	14.8	10.4	37.7
Queue Length 50th (ft)	227	106	78
Queue Length 95th (ft)	320	159	115
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1114	947	804
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	336	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.77	0.35	0.29
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

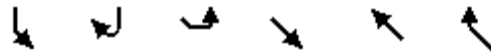
11/06/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations	↙↘			↖↗				
Traffic Volume (vph)	241	0	0	952	0	0		
Future Volume (vph)	241	0	0	952	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	254							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.98	0.98	0.90	0.90	0.92	0.92		
Heavy Vehicles (%)	2%	0%	0%	1%	2%	2%		
Adj. Flow (vph)	246	0	0	1058	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	246	0	0	1058	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15			9		
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

11/06/2020

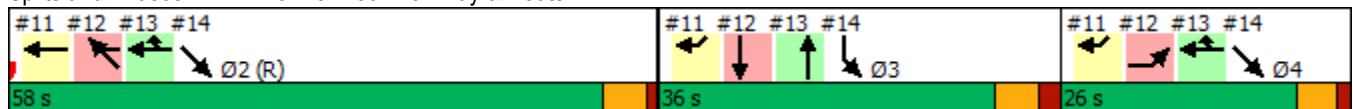


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.25			0.48				
Control Delay	0.7			11.2				
Queue Delay	0.5			0.0				
Total Delay	1.3			11.2				
LOS	A			B				
Approach Delay	1.3			11.2				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.14
Intersection Signal Delay:	9.3
Intersection LOS:	A
Intersection Capacity Utilization:	46.7%
ICU Level of Service:	A
Analysis Period (min):	15

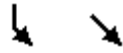
Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2

11/06/2020



Lane Group	SBL	SET
Lane Group Flow (vph)	246	1058
v/c Ratio	0.25	0.48
Control Delay	0.7	11.2
Queue Delay	0.5	0.0
Total Delay	1.3	11.2
Queue Length 50th (ft)	0	198
Queue Length 95th (ft)	0	245
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	988	2188
Starvation Cap Reductn	419	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.48
Intersection Summary		

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/06/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	79	648	65	5	492	1	9	5	4	0	5	104
Future Volume (vph)	79	648	65	5	492	1	9	5	4	0	5	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989						0.972			0.871	
Flt Protected		0.995			0.999			0.976				
Satd. Flow (prot)	0	1994	0	0	1961	0	0	1802	0	0	1655	0
Flt Permitted		0.903			0.992			0.807				
Satd. Flow (perm)	0	1810	0	0	1948	0	0	1490	0	0	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7						5			135	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.75	0.75	0.75	0.77	0.77	0.77
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	90	736	74	6	559	1	12	7	5	0	6	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	900	0	0	566	0	0	24	0	0	141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/06/2020

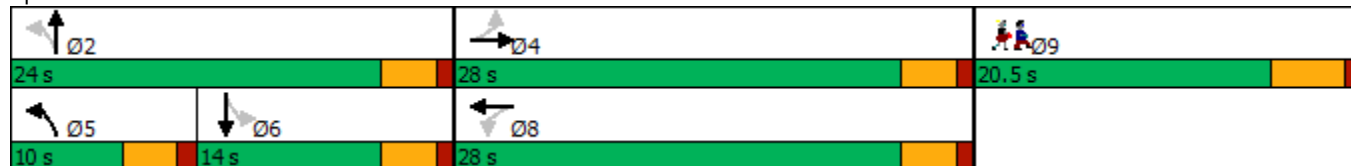


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	21.0		14.0	14.0	
Total Split (s)	28.0	28.0		28.0	28.0		10.0	24.0		14.0	14.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		13.8%	33.1%		19.3%	19.3%	
Maximum Green (s)	24.0	24.0		24.0	24.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		25.0			25.0			6.6			6.6	
Actuated g/C Ratio		0.58			0.58			0.15			0.15	
v/c Ratio		0.85			0.50			0.10			0.38	
Control Delay		21.8			10.4			17.5			8.7	
Queue Delay		48.8			0.0			0.0			0.0	
Total Delay		70.6			10.4			17.5			8.7	
LOS		E			B			B			A	
Approach Delay		70.6			10.4			17.5			8.7	
Approach LOS		E			B			B			A	

Intersection Summary

Area Type: Other
 Cycle Length: 72.5
 Actuated Cycle Length: 42.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 43.6
 Intersection LOS: D
 Intersection Capacity Utilization 86.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 39: Brooks Avenue & Lake Street

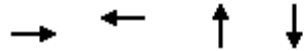


Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	20.5
Total Split (s)	20.5
Total Split (%)	28%
Maximum Green (s)	16.0
Yellow Time (s)	4.0
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	9
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/06/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	900	566	24	141
v/c Ratio	0.85	0.50	0.10	0.38
Control Delay	21.8	10.4	17.5	8.7
Queue Delay	48.8	0.0	0.0	0.0
Total Delay	70.6	10.4	17.5	8.7
Queue Length 50th (ft)	97	43	4	1
Queue Length 95th (ft)	#636	#286	20	30
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1060	1138	728	505
Starvation Cap Reductn	272	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.14	0.50	0.03	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2027 No-Build Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	614	3	1	1189	5	1
Future Vol, veh/h	614	3	1	1189	5	1
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	75	75	87	87	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	819	4	1	1367	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	823	0	2190
Stage 1	-	-	-	-	821
Stage 2	-	-	-	-	1369
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	-	-	816	-	51
Stage 1	-	-	-	-	436
Stage 2	-	-	-	-	239
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	816	-	51
Mov Cap-2 Maneuver	-	-	-	-	51
Stage 1	-	-	-	-	436
Stage 2	-	-	-	-	238

Approach	EB	WB	NB
HCM Control Delay, s	0	0	74
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	60	-	-	816	-
HCM Lane V/C Ratio	0.133	-	-	0.001	-
HCM Control Delay (s)	74	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	14	5	1166	24	6
Future Vol, veh/h	601	14	5	1166	24	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	801	19	5	1254	32	8

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	820	0	2075 811
Stage 1	-	-	-	-	811 -
Stage 2	-	-	-	-	1264 -
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	-	-	818	-	60 383
Stage 1	-	-	-	-	440 -
Stage 2	-	-	-	-	268 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	818	-	59 383
Mov Cap-2 Maneuver	-	-	-	-	59 -
Stage 1	-	-	-	-	440 -
Stage 2	-	-	-	-	263 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	107.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	818	-
HCM Lane V/C Ratio	0.563	-	-	0.007	-
HCM Control Delay (s)	107.5	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	2.4	-	-	0	-

HCM 6th TWSC
 26: Homestead Road & Lake Street

11/10/2020

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	605	5	3	1164	7	1
Future Vol, veh/h	605	5	3	1164	7	1
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	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	807	7	3	1252	9	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	814	0	2069
Stage 1	-	-	-	-	811
Stage 2	-	-	-	-	1258
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	-	-	822	-	60
Stage 1	-	-	-	-	440
Stage 2	-	-	-	-	270
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	822	-	59
Mov Cap-2 Maneuver	-	-	-	-	59
Stage 1	-	-	-	-	440
Stage 2	-	-	-	-	267

Approach	EB	WB	NB
HCM Control Delay, s	0	0	69.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	66	-	-	822	-
HCM Lane V/C Ratio	0.162	-	-	0.004	-
HCM Control Delay (s)	69.8	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

HCM 6th TWSC
 29: Burch Street /Alfred Road & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	585	18	8	1148	5	8	0	14	4	0	11
Future Vol, veh/h	0	585	18	8	1148	5	8	0	14	4	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	96	96	96	80	80	80	92	92	92
Heavy Vehicles, %	0	1	0	0	0	0	0	0	10	0	0	0
Mvmt Flow	0	741	23	8	1196	5	10	0	18	4	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1201	0	0	764	0	0	1974	1970	753	1977	1979	1199
Stage 1	-	-	-	-	-	-	753	753	-	1215	1215	-
Stage 2	-	-	-	-	-	-	1221	1217	-	762	764	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.3	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.39	3.5	4	3.3
Pot Cap-1 Maneuver	588	-	-	858	-	-	47	63	397	47	62	228
Stage 1	-	-	-	-	-	-	405	420	-	224	256	-
Stage 2	-	-	-	-	-	-	222	256	-	400	416	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	588	-	-	858	-	-	44	61	397	44	60	228
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	61	-	44	60	-
Stage 1	-	-	-	-	-	-	405	420	-	224	249	-
Stage 2	-	-	-	-	-	-	204	249	-	382	416	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			53.5			44.2		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	101	588	-	-	858	-	-	108
HCM Lane V/C Ratio	0.272	-	-	-	0.01	-	-	0.151
HCM Control Delay (s)	53.5	0	-	-	9.2	0	-	44.2
HCM Lane LOS	F	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.5

HCM 6th TWSC
 33: Margaret Street/Lakehill Avenue & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	593	7	24	1136	3	9	0	22	3	0	16
Future Vol, veh/h	3	593	7	24	1136	3	9	0	22	3	0	16
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	97	97	97	75	75	75	75	75	75
Heavy Vehicles, %	0	2	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	706	8	25	1171	3	12	0	29	4	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1174	0	0	1018	0	0	2255	2246	1014	1956	2249	1173
Stage 1	-	-	-	-	-	-	1022	1022	-	1223	1223	-
Stage 2	-	-	-	-	-	-	1233	1224	-	733	1026	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	602	-	-	689	-	-	30	42	292	49	42	236
Stage 1	-	-	-	-	-	-	287	316	-	221	254	-
Stage 2	-	-	-	-	-	-	219	254	-	415	315	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	602	-	-	514	-	-	18	27	218	38	27	236
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	27	-	38	27	-
Stage 1	-	-	-	-	-	-	212	234	-	219	218	-
Stage 2	-	-	-	-	-	-	171	218	-	355	233	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			192.1			39.6		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	
Capacity (veh/h)		52	602	-	-	514	-	-	129
HCM Lane V/C Ratio		0.795	0.006	-	-	0.048	-	-	0.196
HCM Control Delay (s)		192.1	11	0	-	12.4	0	-	39.6
HCM Lane LOS		F	B	A	-	B	A	-	E
HCM 95th %tile Q(veh)		3.3	0	-	-	0.2	-	-	0.7

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations							
Traffic Volume (vph)	258	291	851	608	402	454	
Future Volume (vph)	258	291	851	608	402	454	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Fr _t	0.928			0.850			
Fl _t Protected	0.977				0.950		
Satd. Flow (prot)	1933	0	3421	1492	1728	1863	
Fl _t Permitted	0.977				0.133		
Satd. Flow (perm)	1933	0	3421	1492	242	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	49			211			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	
Adj. Flow (vph)	284	320	925	661	437	493	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	604	0	925	661	437	493	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020

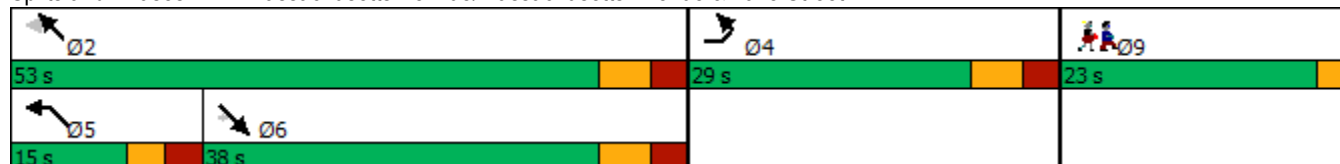


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.17		0.77	1.00	1.57	0.51	
Control Delay	126.4		33.0	58.6	292.8	18.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	126.4		33.0	58.6	292.8	18.3	
LOS	F		C	E	F	B	
Approach Delay	126.4		43.6			147.3	
Approach LOS	F		D			F	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.57
Intersection Signal Delay:	90.6
Intersection LOS:	F
Intersection Capacity Utilization:	94.6%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	604	925	661	437	493
v/c Ratio	1.17	0.77	1.00	1.57	0.51
Control Delay	126.4	33.0	58.6	292.8	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	126.4	33.0	58.6	292.8	18.3
Queue Length 50th (ft)	~335	208	237	~250	140
Queue Length 95th (ft)	#698	#409	#604	#559	332
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	516	1196	659	279	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.17	0.77	1.00	1.57	0.51

Intersection Summary

~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	311	493	210	419	271	221	520
Future Volume (vph)	311	493	210	419	271	221	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2132	1812	1685	3455	0	2037	1706
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2132	1812	1685	3455	0	2037	1706
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		333					402
Link Speed (mph)	30			30		30	
Link Distance (ft)	239			505		387	
Travel Time (s)	5.4			11.5		8.8	
Peak Hour Factor	0.91	0.91	0.84	0.84	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	1%	0%	1%	1%
Adj. Flow (vph)	342	542	250	499	298	243	571
Shared Lane Traffic (%)							
Lane Group Flow (vph)	342	542	250	499	0	541	571
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

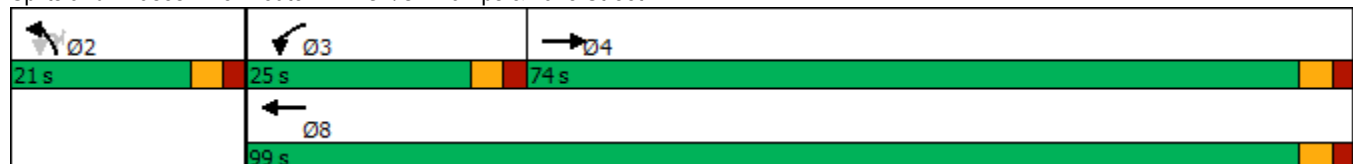


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	15.7	63.2	16.2	37.0		16.2	16.2
Actuated g/C Ratio	0.25	1.00	0.26	0.59		0.26	0.26
v/c Ratio	0.64	0.30	0.58	0.25		1.04	0.78
Control Delay	27.7	0.4	27.3	6.5		78.8	16.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	27.7	0.4	27.3	6.5		78.8	16.8
LOS	C	A	C	A		E	B
Approach Delay	11.0			13.4		47.0	
Approach LOS	B			B		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	63.2
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	26.2
Intersection LOS:	C
Intersection Capacity Utilization:	67.8%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	342	542	250	499	541	571
v/c Ratio	0.64	0.30	0.58	0.25	1.04	0.78
Control Delay	27.7	0.4	27.3	6.5	78.8	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	0.4	27.3	6.5	78.8	16.8
Queue Length 50th (ft)	118	0	83	42	~234	54
Queue Length 95th (ft)	204	0	151	57	#482	#243
Internal Link Dist (ft)	159			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2110	1812	538	3455	520	735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.30	0.46	0.14	1.04	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

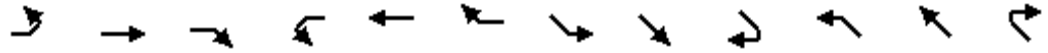
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

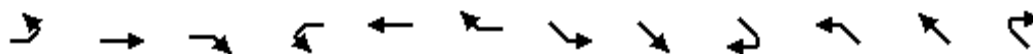
11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	224	607	0	0	478	716	0	0	0	151	6	10
Future Volume (vph)	224	607	0	0	478	716	0	0	0	151	6	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.956	
Satd. Flow (prot)	1805	1881	0	0	1837	1492	0	0	0	1579	1594	1830
Fl _t Permitted	0.950									0.950	0.956	
Satd. Flow (perm)	1805	1881	0	0	1837	1492	0	0	0	1579	1594	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						490						136
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		505			380			459			529	
Travel Time (s)		11.5			8.6			10.4			12.0	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	5%	50%	0%
Adj. Flow (vph)	255	690	0	0	520	778	0	0	0	186	7	12
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	255	690	0	0	520	778	0	0	0	97	96	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/10/2020

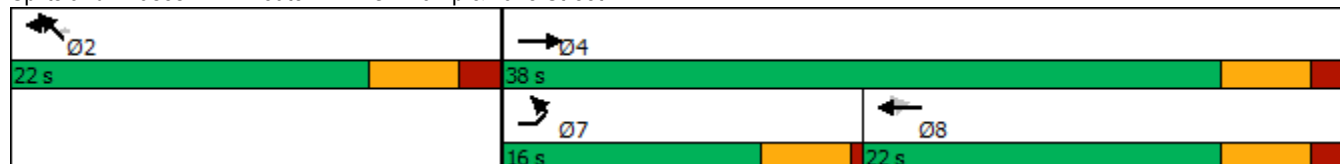


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases												2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	11.0	31.5			16.0	16.0				16.0	16.0	16.0
Actuated g/C Ratio	0.18	0.53			0.27	0.27				0.27	0.27	0.27
v/c Ratio	0.77	0.69			1.05	1.03				0.23	0.22	0.02
Control Delay	40.9	15.0			81.3	51.2				19.0	18.9	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	40.9	15.0			81.3	51.2				19.0	18.9	0.1
LOS	D	B			F	D				B	B	A
Approach Delay		22.0			63.2						17.8	
Approach LOS		C			E						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	59.5
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	43.5
Intersection LOS:	D
Intersection Capacity Utilization:	74.8%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	255	690	520	778	97	96	12
v/c Ratio	0.77	0.69	1.05	1.03	0.23	0.22	0.02
Control Delay	40.9	15.0	81.3	51.2	19.0	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	15.0	81.3	51.2	19.0	18.9	0.1
Queue Length 50th (ft)	88	167	~214	~135	28	28	0
Queue Length 95th (ft)	#179	265	#378	#357	56	55	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	348	1012	494	759	425	429	591
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	0.73	0.68	1.05	1.03	0.23	0.22	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

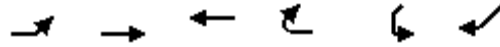
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

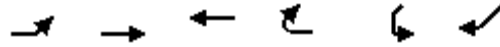


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	1596	0	0	1062		
Future Volume (vph)	0	0	1596	0	0	1062		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4729	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4729	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						7		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.90	0.92	0.92	0.85		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%		
Adj. Flow (vph)	0	0	1773	0	0	1249		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	1773	0	0	1249		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

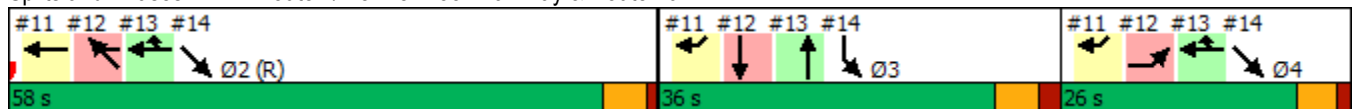


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			0.85			1.02		
Control Delay			5.6			62.8		
Queue Delay			4.5			0.0		
Total Delay			10.1			62.8		
LOS			B			E		
Approach Delay			10.1		62.8			
Approach LOS			B		E			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	31.9
Intersection LOS:	C
Intersection Capacity Utilization:	84.7%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020



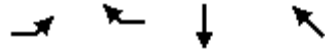
Lane Group	WBT	SWR
Lane Group Flow (vph)	1773	1249
v/c Ratio	0.85	1.02
Control Delay	5.6	62.8
Queue Delay	4.5	0.0
Total Delay	10.1	62.8
Queue Length 50th (ft)	43	~581
Queue Length 95th (ft)	m40	#659
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2088	1225
Starvation Cap Reductn	252	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.97	1.02

Intersection Summary

- ~ 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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

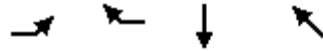
11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations	↖ ↗	↗	↕ ↕	↕ ↕
Traffic Volume (vph)	505	169	506	1427
Future Volume (vph)	505	169	506	1427
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Frt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3224	1581	3291	3291
Flt Permitted	0.950			
Satd. Flow (perm)	3224	1581	3291	3291
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.97	0.94	0.85	0.90
Heavy Vehicles (%)	1%	6%	2%	2%
Adj. Flow (vph)	521	180	595	1586
Shared Lane Traffic (%)				
Lane Group Flow (vph)	521	180	595	1586
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/10/2020

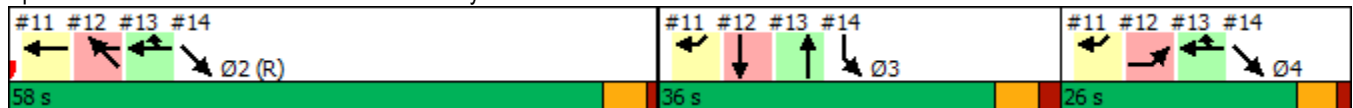


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)	5.0			
Flash Dont Walk (s)	8.0			
Pedestrian Calls (#/hr)	0			
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	0.92	0.26	0.72	1.09
Control Delay	72.2	14.3	47.1	85.5
Queue Delay	0.0	2.4	0.0	3.6
Total Delay	72.2	16.7	47.1	89.1
LOS	E	B	D	F
Approach Delay			47.1	89.1
Approach LOS			D	F

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 72.8
 Intersection LOS: E
 Intersection Capacity Utilization 103.7%
 ICU Level of Service G
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

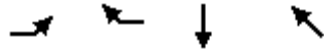
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	521	180	595	1586
v/c Ratio	0.92	0.26	0.72	1.09
Control Delay	72.2	14.3	47.1	85.5
Queue Delay	0.0	2.4	0.0	3.6
Total Delay	72.2	16.7	47.1	89.1
Queue Length 50th (ft)	206	86	223	~728
Queue Length 95th (ft)	#308	138	269	#868
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	564	698	822	1453
Starvation Cap Reductn	0	397	0	0
Spillback Cap Reductn	0	6	0	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	0.60	0.72	1.10

Intersection Summary

~ 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.

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	169	54	0	224	0	0	0	0
Future Volume (vph)	0	0	0	0	169	54	0	224	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)						2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	6%	9%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	184	59	0	249	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	184	59	0	249	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

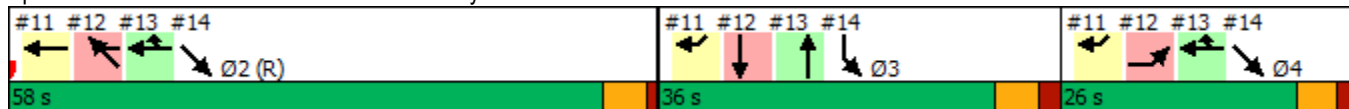


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.17	0.07		0.32				
Control Delay					8.4	7.6		38.0				
Queue Delay					0.1	0.0		0.0				
Total Delay					8.5	7.6		38.0				
LOS					A	A		D				
Approach Delay					8.3			38.0				
Approach LOS					A			D				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	23.3
Intersection LOS:	C
Intersection Capacity Utilization:	27.4%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

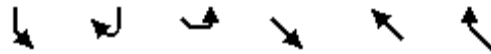
11/10/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	184	59	249
v/c Ratio	0.17	0.07	0.32
Control Delay	8.4	7.6	38.0
Queue Delay	0.1	0.0	0.0
Total Delay	8.5	7.6	38.0
Queue Length 50th (ft)	50	15	83
Queue Length 95th (ft)	81	31	121
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1061	877	788
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	223	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.07	0.32
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

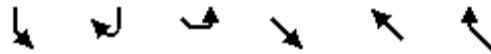
11/10/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations								
Traffic Volume (vph)	506	0	0	1102	0	0		
Future Volume (vph)	506	0	0	1102	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	216							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.85	0.92	0.92	0.97	0.92	0.92		
Heavy Vehicles (%)	2%	2%	2%	1%	2%	2%		
Adj. Flow (vph)	595	0	0	1136	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	595	0	0	1136	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15			9		
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

11/10/2020

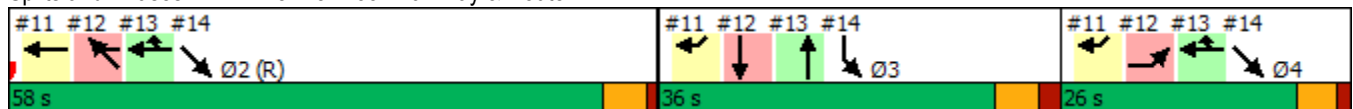


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.62			0.52				
Control Delay	2.8			11.7				
Queue Delay	1.0			0.0				
Total Delay	3.7			11.7				
LOS	A			B				
Approach Delay	3.7			11.7				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	9.0
Intersection LOS:	A
Intersection Capacity Utilization:	59.1%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	SBL	SET
Lane Group Flow (vph)	595	1136
v/c Ratio	0.62	0.52
Control Delay	2.8	11.7
Queue Delay	1.0	0.0
Total Delay	3.7	11.7
Queue Length 50th (ft)	5	220
Queue Length 95th (ft)	0	272
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	960	2188
Starvation Cap Reductn	156	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.74	0.52
Intersection Summary		

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑							
Traffic Volume (vph)	0	618	0	0	1163	0	0	0	0	0	0	0
Future Volume (vph)	0	618	0	0	1163	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	16	16	16	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	2049	0	0	2153	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	2049	0	0	2153	0	0	0	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		135			215			175				206
Travel Time (s)		3.1			4.9			4.0				4.7
Peak Hour Factor	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	736	0	0	1199	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	736	0	0	1199	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2							
Detector Template		Thru			Thru							
Leading Detector (ft)		100			100							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		6			6							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA			NA							
Protected Phases		4			8							
Permitted Phases												
Detector Phase		4			8							

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
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 (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Detector 2 Position(ft)				
Detector 2 Size(ft)				
Detector 2 Type				
Detector 2 Channel				
Detector 2 Extend (s)				
Turn Type				
Protected Phases	2	5	6	9
Permitted Phases				
Detector Phase				

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.5			20.5							
Total Split (s)		58.0			58.0							
Total Split (%)		58.0%			58.0%							
Maximum Green (s)		56.0			56.0							
Yellow Time (s)		2.0			2.0							
All-Red Time (s)		0.0			0.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		2.0			2.0							
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.1			56.1							
Actuated g/C Ratio		0.61			0.61							
v/c Ratio		0.59			0.92							
Control Delay		14.7			13.7							
Queue Delay		0.0			30.3							
Total Delay		14.7			44.0							
LOS		B			D							
Approach Delay		14.7			44.0							
Approach LOS		B			D							

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	92.7
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	32.9
Intersection LOS:	C
Intersection Capacity Utilization:	64.5%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 36: Minuteman Commuter Bikeway & Lake Street



Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	14.0	18.0
Total Split (s)	24.0	10.0	14.0	18.0
Total Split (%)	24%	10%	14%	18%
Maximum Green (s)	20.0	6.0	10.0	16.0
Yellow Time (s)	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Min	None	Min	None
Walk Time (s)				5.0
Flash Dont Walk (s)				11.0
Pedestrian Calls (#/hr)				304
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Queues

36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBT	WBT
Lane Group Flow (vph)	736	1199
v/c Ratio	0.59	0.92
Control Delay	14.7	13.7
Queue Delay	0.0	30.3
Total Delay	14.7	44.0
Queue Length 50th (ft)	245	121
Queue Length 95th (ft)	378	m#405
Internal Link Dist (ft)	55	135
Turn Bay Length (ft)		
Base Capacity (vph)	1240	1304
Starvation Cap Reductn	0	175
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.59	1.06

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	31	541	46	6	1004	0	38	4	5	3	7	121
Future Volume (vph)	31	541	46	6	1004	0	38	4	5	3	7	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990						0.985			0.875	
Flt Protected		0.998						0.961			0.999	
Satd. Flow (prot)	0	1978	0	0	1944	0	0	1799	0	0	1661	0
Flt Permitted		0.916			0.997			0.422			0.994	
Satd. Flow (perm)	0	1815	0	0	1938	0	0	790	0	0	1653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7						6			155	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.75	0.75	0.75	0.78	0.78	0.78
Heavy Vehicles (%)	0%	1%	5%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	595	51	7	1154	0	51	5	7	4	9	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	680	0	0	1161	0	0	63	0	0	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.5	20.5		20.5	20.5		9.0	21.0		14.0	14.0	
Total Split (s)	58.0	58.0		58.0	58.0		10.0	24.0		14.0	14.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		10.0%	24.0%		14.0%	14.0%	
Maximum Green (s)	56.0	56.0		56.0	56.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		2.0			2.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.1			56.1			12.5			12.5	
Actuated g/C Ratio		0.61			0.61			0.13			0.13	
v/c Ratio		0.62			0.99			0.57			0.47	
Control Delay		4.3			44.4			53.7			11.9	
Queue Delay		0.0			18.6			4.0			1.8	
Total Delay		4.3			62.9			57.7			13.7	
LOS		A			E			E			B	
Approach Delay		4.3			62.9			57.7			13.7	
Approach LOS		A			E			E			B	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	92.7
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	39.6
Intersection LOS:	D
Intersection Capacity Utilization:	76.1%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 39: Brooks Avenue & Lake Street

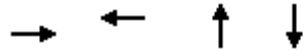


Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	18%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	304
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	680	1161	63	168
v/c Ratio	0.62	0.99	0.57	0.47
Control Delay	4.3	44.4	53.7	11.9
Queue Delay	0.0	18.6	4.0	1.8
Total Delay	4.3	62.9	57.7	13.7
Queue Length 50th (ft)	9	618	32	7
Queue Length 95th (ft)	3	#1013	59	41
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1102	1173	175	375
Starvation Cap Reductn	2	0	0	0
Spillback Cap Reductn	0	69	61	98
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	1.05	0.55	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2027 No-Build Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	829	3	1	599	9	4
Future Vol, veh/h	829	3	1	599	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	94	94	75	75
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	999	4	1	637	12	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1003	0	1640
Stage 1	-	-	-	-	1001
Stage 2	-	-	-	-	639
Critical Hdwy	-	-	4.1	-	6.69
Critical Hdwy Stg 1	-	-	-	-	5.69
Critical Hdwy Stg 2	-	-	-	-	5.69
Follow-up Hdwy	-	-	2.2	-	3.761
Pot Cap-1 Maneuver	-	-	698	-	95
Stage 1	-	-	-	-	317
Stage 2	-	-	-	-	478
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	698	-	95
Mov Cap-2 Maneuver	-	-	-	-	95
Stage 1	-	-	-	-	317
Stage 2	-	-	-	-	477

Approach	EB	WB	NB
HCM Control Delay, s	0	0	40
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	120	-	-	698	-
HCM Lane V/C Ratio	0.144	-	-	0.002	-
HCM Control Delay (s)	40	-	-	10.2	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	827	6	9	585	15	5
Future Vol, veh/h	827	6	9	585	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	951	7	10	657	20	7

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	958	0	1632
Stage 1	-	-	-	-	955
Stage 2	-	-	-	-	677
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	-	-	726	-	113
Stage 1	-	-	-	-	377
Stage 2	-	-	-	-	509
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	726	-	111
Mov Cap-2 Maneuver	-	-	-	-	111
Stage 1	-	-	-	-	377
Stage 2	-	-	-	-	498

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	39
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	132	-	-	726	-
HCM Lane V/C Ratio	0.202	-	-	0.014	-
HCM Control Delay (s)	39	-	-	10	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

HCM 6th TWSC
 26: Homestead Road & Lake Street

11/10/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	831	1	1	588	6	4
Future Vol, veh/h	831	1	1	588	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	955	1	1	661	8	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	956	0	1619
Stage 1	-	-	-	-	956
Stage 2	-	-	-	-	663
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	-	-	727	-	115
Stage 1	-	-	-	-	376
Stage 2	-	-	-	-	516
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	727	-	115
Mov Cap-2 Maneuver	-	-	-	-	115
Stage 1	-	-	-	-	376
Stage 2	-	-	-	-	515

Approach	EB	WB	NB
HCM Control Delay, s	0	0	30.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	154	-	-	727	-
HCM Lane V/C Ratio	0.087	-	-	0.002	-
HCM Control Delay (s)	30.6	-	-	10	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
 29: Burch Street /Alfred Road & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	812	19	11	575	8	13	1	6	3	0	1
Future Vol, veh/h	4	812	19	11	575	8	13	1	6	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	944	22	13	669	9	17	1	8	4	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	678	0	0	966	0	0	1665	1669	955	1670	1676	674
Stage 1	-	-	-	-	-	-	965	965	-	700	700	-
Stage 2	-	-	-	-	-	-	700	704	-	970	976	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	923	-	-	721	-	-	78	97	316	77	96	458
Stage 1	-	-	-	-	-	-	309	336	-	433	444	-
Stage 2	-	-	-	-	-	-	433	443	-	307	332	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	923	-	-	721	-	-	75	93	316	72	92	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	93	-	72	92	-
Stage 1	-	-	-	-	-	-	305	332	-	428	431	-
Stage 2	-	-	-	-	-	-	419	430	-	294	328	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			54.9			47		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	98	923	-	-	721	-	-	91
HCM Lane V/C Ratio	0.272	0.005	-	-	0.018	-	-	0.059
HCM Control Delay (s)	54.9	8.9	0	-	10.1	0	-	47
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	0.2

HCM 6th TWSC
 33: Margaret Street/Lakehill Avenue & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	799	3	42	577	16	6	0	27	9	0	11
Future Vol, veh/h	19	799	3	42	577	16	6	0	27	9	0	11
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	88	88	88	81	81	81	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	23	963	4	48	656	18	7	0	33	11	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	674	0	0	1271	0	0	2083	2085	1269	1789	2078	665
Stage 1	-	-	-	-	-	-	1315	1315	-	761	761	-
Stage 2	-	-	-	-	-	-	768	770	-	1028	1317	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	927	-	-	553	-	-	39	54	208	64	54	464
Stage 1	-	-	-	-	-	-	196	230	-	401	417	-
Stage 2	-	-	-	-	-	-	397	413	-	285	229	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	927	-	-	413	-	-	23	31	155	41	31	464
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	31	-	41	31	-
Stage 1	-	-	-	-	-	-	138	163	-	379	339	-
Stage 2	-	-	-	-	-	-	314	336	-	212	162	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	97.4	67.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	927	-	-	413	-	-	82
HCM Lane V/C Ratio	0.536	0.025	-	-	0.116	-	-	0.305
HCM Control Delay (s)	97.4	9	0	-	14.9	0	-	67.1
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0.4	-	-	1.1

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations							
Traffic Volume (vph)	419	271	658	183	336	739	
Future Volume (vph)	419	271	658	183	336	739	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Frt	0.947			0.850			
Flt Protected	0.971				0.950		
Satd. Flow (prot)	1980	0	3421	1507	1745	1863	
Flt Permitted	0.971				0.229		
Satd. Flow (perm)	1980	0	3421	1507	421	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	28			82			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%	
Adj. Flow (vph)	476	308	715	199	365	803	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	784	0	715	199	365	803	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020

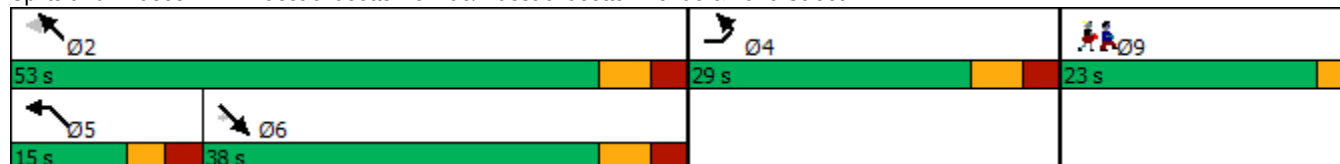


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.53		0.60	0.34	1.02	0.83	
Control Delay	276.0		27.9	16.0	74.7	29.9	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	276.0		27.9	16.0	74.7	29.9	
LOS	F		C	B	E	C	
Approach Delay	276.0		25.3			43.9	
Approach LOS	F		C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.53
Intersection Signal Delay:	101.5
Intersection LOS:	F
Intersection Capacity Utilization:	93.3%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020
















Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	784	715	199	365	803
v/c Ratio	1.53	0.60	0.34	1.02	0.83
Control Delay	276.0	27.9	16.0	74.7	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	276.0	27.9	16.0	74.7	29.9
Queue Length 50th (ft)	~546	148	40	93	294
Queue Length 95th (ft)	#949	277	119	#393	#740
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	512	1196	580	357	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.53	0.60	0.34	1.02	0.83

Intersection Summary

- ~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	543	181	171	299	14	531	632
Future Volume (vph)	543	181	171	299	14	531	632
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2153	1664	1652	3490	0	2046	1723
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2153	1664	1652	3490	0	2046	1723
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		70					441
Link Speed (mph)	30			30		30	
Link Distance (ft)	373			505		387	
Travel Time (s)	8.5			11.5		8.8	
Peak Hour Factor	0.94	0.94	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	0%	10%	2%	0%	0%	0%	0%
Adj. Flow (vph)	578	193	197	344	15	553	658
Shared Lane Traffic (%)							
Lane Group Flow (vph)	578	193	197	344	0	568	658
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

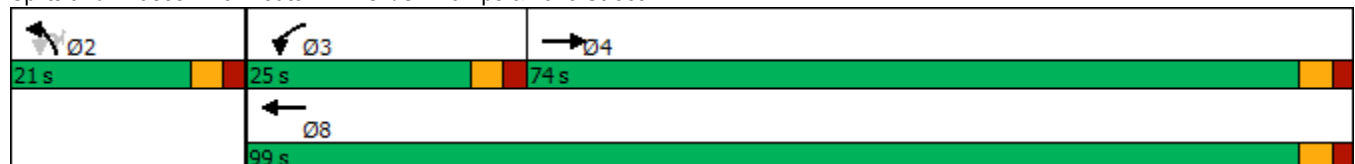


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	25.7	71.4	14.0	44.8		16.4	16.4
Actuated g/C Ratio	0.36	1.00	0.20	0.63		0.23	0.23
v/c Ratio	0.75	0.12	0.61	0.16		1.21	0.90
Control Delay	26.9	0.1	36.0	5.3		143.6	27.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.9	0.1	36.0	5.3		143.6	27.8
LOS	C	A	D	A		F	C
Approach Delay	20.2			16.5		81.4	
Approach LOS	C			B		F	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	71.4
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.21
Intersection Signal Delay:	49.0
Intersection LOS:	D
Intersection Capacity Utilization:	80.7%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	578	193	197	344	568	658
v/c Ratio	0.75	0.12	0.61	0.16	1.21	0.90
Control Delay	26.9	0.1	36.0	5.3	143.6	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	0.1	36.0	5.3	143.6	27.8
Queue Length 50th (ft)	214	0	79	27	~314	90
Queue Length 95th (ft)	360	0	156	40	#633	#362
Internal Link Dist (ft)	293			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2002	1664	473	3490	468	734
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.12	0.42	0.10	1.21	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

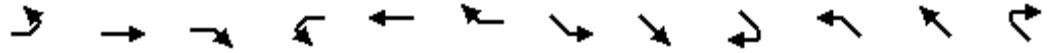
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

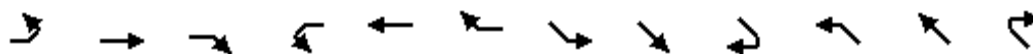
11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	368	807	0	0	262	346	0	0	0	208	22	25
Future Volume (vph)	368	807	0	0	262	346	0	0	0	208	22	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.961	
Satd. Flow (prot)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Fl _t Permitted	0.950									0.950	0.961	
Satd. Flow (perm)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						380						136
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		505			380			459			529	
Travel Time (s)		11.5			8.6			10.4			12.0	
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	418	917	0	0	288	380	0	0	0	219	23	26
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	418	917	0	0	288	380	0	0	0	120	122	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases												2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	11.5	30.6			14.6	14.6				16.0	16.0	16.0
Actuated g/C Ratio	0.20	0.52			0.25	0.25				0.27	0.27	0.27
v/c Ratio	1.18	0.93			0.64	0.59				0.27	0.26	0.04
Control Delay	134.3	32.2			27.1	6.6				19.4	19.3	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	134.3	32.2			27.1	6.6				19.4	19.3	0.1
LOS	F	C			C	A				B	B	A
Approach Delay		64.1			15.4						17.5	
Approach LOS		E			B						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	58.7
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.18
Intersection Signal Delay:	44.3
Intersection LOS:	D
Intersection Capacity Utilization:	61.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	418	917	288	380	120	122	26
v/c Ratio	1.18	0.93	0.64	0.59	0.27	0.26	0.04
Control Delay	134.3	32.2	27.1	6.6	19.4	19.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.3	32.2	27.1	6.6	19.4	19.3	0.1
Queue Length 50th (ft)	~191	274	90	0	35	36	0
Queue Length 95th (ft)	#331	#502	160	56	75	76	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	354	1028	492	675	448	465	598
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	1.18	0.89	0.59	0.56	0.27	0.26	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

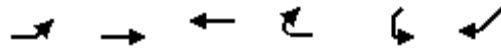
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

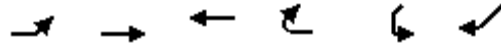
11/10/2020



Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	2209	0	0	1131		
Future Volume (vph)	0	0	2209	0	0	1131		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4776	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4776	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						1		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.97	0.97	0.98	0.98		
Heavy Vehicles (%)	2%	2%	1%	0%	0%	1%		
Adj. Flow (vph)	0	0	2277	0	0	1154		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	2277	0	0	1154		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings
 11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

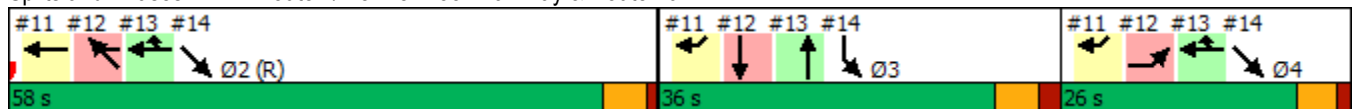


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			1.08			0.95		
Control Delay			46.7			46.7		
Queue Delay			1.5			0.0		
Total Delay			48.2			46.7		
LOS			D			D		
Approach Delay			48.2		46.7			
Approach LOS			D		D			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	47.7
Intersection LOS:	D
Intersection Capacity Utilization:	100.6%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020



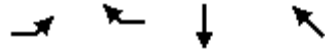
Lane Group	WBT	SWR
Lane Group Flow (vph)	2277	1154
v/c Ratio	1.08	0.95
Control Delay	46.7	46.7
Queue Delay	1.5	0.0
Total Delay	48.2	46.7
Queue Length 50th (ft)	~702	472
Queue Length 95th (ft)	m#57	#644
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2109	1221
Starvation Cap Reductn	7	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.08	0.95

Intersection Summary

- ~ 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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

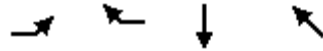
11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations				
Traffic Volume (vph)	610	591	250	1618
Future Volume (vph)	610	591	250	1618
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Frt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3257	1660	3291	3324
Flt Permitted	0.950			
Satd. Flow (perm)	3257	1660	3291	3324
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.90	0.95	0.98	0.97
Heavy Vehicles (%)	0%	1%	2%	1%
Adj. Flow (vph)	678	622	255	1668
Shared Lane Traffic (%)				
Lane Group Flow (vph)	678	622	255	1668
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/10/2020

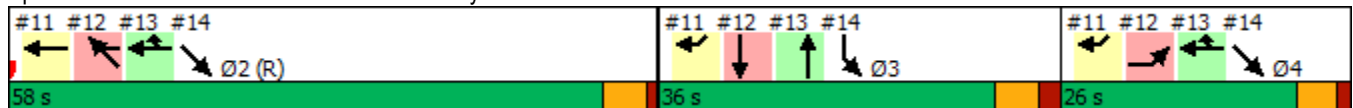


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)				5.0
Flash Dont Walk (s)				8.0
Pedestrian Calls (#/hr)				0
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	1.19	0.85	0.31	1.14
Control Delay	145.7	29.8	37.8	102.5
Queue Delay	0.0	3.3	0.0	0.3
Total Delay	145.7	33.1	37.8	102.8
LOS	F	C	D	F
Approach Delay			37.8	102.8
Approach LOS			D	F

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 93.2
 Intersection LOS: F
 Intersection Capacity Utilization 134.7%
 ICU Level of Service H
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

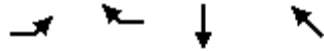
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	678	622	255	1668
v/c Ratio	1.19	0.85	0.31	1.14
Control Delay	145.7	29.8	37.8	102.5
Queue Delay	0.0	3.3	0.0	0.3
Total Delay	145.7	33.1	37.8	102.8
Queue Length 50th (ft)	~326	422	84	~792
Queue Length 95th (ft)	#446	#639	123	#931
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	569	733	822	1468
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	53	0	107
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.19	0.91	0.31	1.23

Intersection Summary

~ 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.

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	591	328	0	238	0	0	0	0
Future Volume (vph)	0	0	0	0	591	328	0	238	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)						2						
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	1%	1%	0%	1%	0%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	622	345	0	245	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	622	345	0	245	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

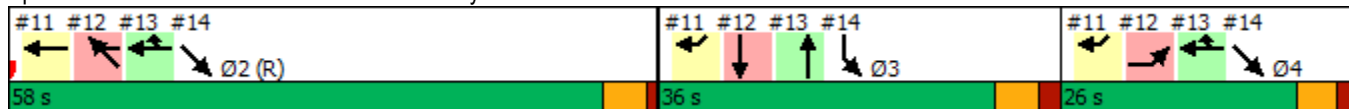


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.56	0.36		0.30				
Control Delay					13.5	10.5		37.8				
Queue Delay					2.1	0.0		0.0				
Total Delay					15.6	10.5		37.8				
LOS					B	B		D				
Approach Delay					13.8			37.8				
Approach LOS					B			D				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	18.6
Intersection LOS:	B
Intersection Capacity Utilization:	52.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

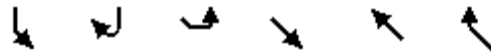
11/10/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	622	345	245
v/c Ratio	0.56	0.36	0.30
Control Delay	13.5	10.5	37.8
Queue Delay	2.1	0.0	0.0
Total Delay	15.6	10.5	37.8
Queue Length 50th (ft)	239	110	81
Queue Length 95th (ft)	337	165	119
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1114	947	804
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	337	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.36	0.30
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

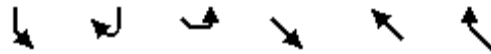
11/10/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations	↘↘			↗↗				
Traffic Volume (vph)	250	0	0	987	0	0		
Future Volume (vph)	250	0	0	987	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	234							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.98	0.98	0.90	0.90	0.92	0.92		
Heavy Vehicles (%)	2%	0%	0%	1%	2%	2%		
Adj. Flow (vph)	255	0	0	1097	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	255	0	0	1097	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15			9		
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

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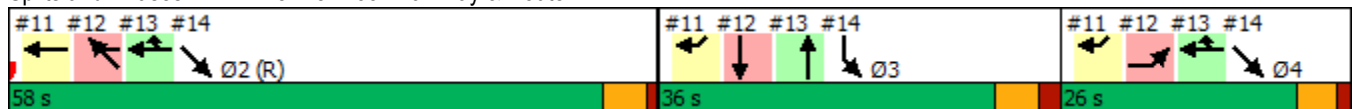


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.26			0.50				
Control Delay	0.8			11.4				
Queue Delay	0.5			0.0				
Total Delay	1.3			11.4				
LOS	A			B				
Approach Delay	1.3			11.4				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	9.5
Intersection LOS:	A
Intersection Capacity Utilization:	47.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2















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Lane Group	SBL	SET
Lane Group Flow (vph)	255	1097
v/c Ratio	0.26	0.50
Control Delay	0.8	11.4
Queue Delay	0.5	0.0
Total Delay	1.3	11.4
Queue Length 50th (ft)	0	209
Queue Length 95th (ft)	1	258
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	973	2188
Starvation Cap Reductn	391	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.50
Intersection Summary		

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	823	0	0	633	0	0	0	0	0	0	0
Future Volume (vph)	0	823	0	0	633	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	16	16	16	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	2049	0	0	2153	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	2049	0	0	2153	0	0	0	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			215			175			206	
Travel Time (s)		3.1			4.9			4.0			4.7	
Peak Hour Factor	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	980	0	0	653	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	980	0	0	653	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2							
Detector Template		Thru			Thru							
Leading Detector (ft)		100			100							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		6			6							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA			NA							
Protected Phases		4			8							
Permitted Phases												
Detector Phase		4			8							

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
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 (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Detector 2 Position(ft)				
Detector 2 Size(ft)				
Detector 2 Type				
Detector 2 Channel				
Detector 2 Extend (s)				
Turn Type				
Protected Phases	2	5	6	9
Permitted Phases				
Detector Phase				

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.5			20.5							
Total Split (s)		58.0			58.0							
Total Split (%)		58.0%			58.0%							
Maximum Green (s)		56.0			56.0							
Yellow Time (s)		2.0			2.0							
All-Red Time (s)		0.0			0.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		2.0			2.0							
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.0			56.0							
Actuated g/C Ratio		0.64			0.64							
v/c Ratio		0.75			0.47							
Control Delay		15.6			4.0							
Queue Delay		0.0			0.3							
Total Delay		15.6			4.3							
LOS		B			A							
Approach Delay		15.6			4.3							
Approach LOS		B			A							

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	87.3
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	11.1
Intersection LOS:	B
Intersection Capacity Utilization:	46.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 36: Minuteman Commuter Bikeway & Lake Street



Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	14.0	18.0
Total Split (s)	24.0	10.0	14.0	18.0
Total Split (%)	24%	10%	14%	18%
Maximum Green (s)	20.0	6.0	10.0	16.0
Yellow Time (s)	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Min	None	Min	None
Walk Time (s)				5.0
Flash Dont Walk (s)				11.0
Pedestrian Calls (#/hr)				211
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Queues

36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBT	WBT
Lane Group Flow (vph)	980	653
v/c Ratio	0.75	0.47
Control Delay	15.6	4.0
Queue Delay	0.0	0.3
Total Delay	15.6	4.3
Queue Length 50th (ft)	326	53
Queue Length 95th (ft)	460	98
Internal Link Dist (ft)	55	135
Turn Bay Length (ft)		
Base Capacity (vph)	1314	1381
Starvation Cap Reductn	0	236
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.75	0.57
Intersection Summary		

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	82	683	70	6	512	1	15	5	7	0	5	108
Future Volume (vph)	82	683	70	6	512	1	15	5	7	0	5	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989						0.966			0.871	
Flt Protected		0.995			0.999			0.973				
Satd. Flow (prot)	0	1994	0	0	1961	0	0	1786	0	0	1655	0
Flt Permitted		0.897			0.992			0.466				
Satd. Flow (perm)	0	1798	0	0	1948	0	0	855	0	0	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8						9			140	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.75	0.75	0.75	0.77	0.77	0.77
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	93	776	80	7	582	1	20	7	9	0	6	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	949	0	0	590	0	0	36	0	0	146	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
 39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.5	20.5		20.5	20.5		9.0	21.0		14.0	14.0	
Total Split (s)	58.0	58.0		58.0	58.0		10.0	24.0		14.0	14.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		10.0%	24.0%		14.0%	14.0%	
Maximum Green (s)	56.0	56.0		56.0	56.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		2.0			2.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.0		56.0			7.3			7.3		
Actuated g/C Ratio		0.64		0.64			0.08			0.08		
v/c Ratio		0.82		0.47			0.46			0.55		
Control Delay		8.3		9.8			49.2			16.2		
Queue Delay		0.0		0.0			0.0			0.0		
Total Delay		8.3		9.8			49.3			16.2		
LOS		A		A			D			B		
Approach Delay		8.3		9.8			49.3			16.2		
Approach LOS		A		A			D			B		

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	87.3
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	10.3
Intersection LOS:	B
Intersection Capacity Utilization:	90.3%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 39: Brooks Avenue & Lake Street

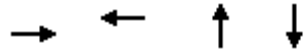


Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	18%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	211
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	949	590	36	146
v/c Ratio	0.82	0.47	0.46	0.55
Control Delay	8.3	9.8	49.2	16.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.3	9.8	49.3	16.2
Queue Length 50th (ft)	33	147	14	3
Queue Length 95th (ft)	38	234	36	37
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1156	1250	202	313
Starvation Cap Reductn	2	0	0	0
Spillback Cap Reductn	0	13	6	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	0.48	0.18	0.47
Intersection Summary				

2027 Build Weekday Morning Peak Hour

HCM 6th TWSC
10: Wilson Avenue & Lake Street

11/10/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	619	3	1	1202	5	1
Future Vol, veh/h	619	3	1	1202	5	1
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	75	75	87	87	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	825	4	1	1382	7	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	829	0	2211
Stage 1	-	-	-	-	827
Stage 2	-	-	-	-	1384
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	-	-	811	-	49
Stage 1	-	-	-	-	433
Stage 2	-	-	-	-	235
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	811	-	49
Mov Cap-2 Maneuver	-	-	-	-	49
Stage 1	-	-	-	-	433
Stage 2	-	-	-	-	234

Approach	EB	WB	NB
HCM Control Delay, s	0	0	78.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	57	-	-	811	-
HCM Lane V/C Ratio	0.14	-	-	0.001	-
HCM Control Delay (s)	78.2	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	19	5	1166	37	6
Future Vol, veh/h	601	19	5	1166	37	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	801	25	5	1254	49	8

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	826	0	2078 814
Stage 1	-	-	-	-	814 -
Stage 2	-	-	-	-	1264 -
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	-	-	813	-	60 381
Stage 1	-	-	-	-	439 -
Stage 2	-	-	-	-	268 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	813	-	59 381
Mov Cap-2 Maneuver	-	-	-	-	59 -
Stage 1	-	-	-	-	439 -
Stage 2	-	-	-	-	263 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	173.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	67	-	-	813	-
HCM Lane V/C Ratio	0.856	-	-	0.007	-
HCM Control Delay (s)	173.7	-	-	9.5	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	4.1	-	-	0	-

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	7	2	30	19	5
Future Vol, veh/h	13	7	2	30	19	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	8	2	33	21	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	61	24	26	0	0
Stage 1	24	-	-	-	-
Stage 2	37	-	-	-	-
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	950	1058	1601	-	-
Stage 1	1004	-	-	-	-
Stage 2	991	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	949	1058	1601	-	-
Mov Cap-2 Maneuver	949	-	-	-	-
Stage 1	1003	-	-	-	-
Stage 2	991	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1601	-	984	-	-
HCM Lane V/C Ratio	0.001	-	0.022	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
 26: Homestead Road & Lake Street

11/10/2020

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	602	5	3	1164	7	1
Future Vol, veh/h	602	5	3	1164	7	1
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	75	75	93	93	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	803	7	3	1252	9	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	810	0	2065
Stage 1	-	-	-	-	807
Stage 2	-	-	-	-	1258
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	-	-	825	-	61
Stage 1	-	-	-	-	442
Stage 2	-	-	-	-	270
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	825	-	60
Mov Cap-2 Maneuver	-	-	-	-	60
Stage 1	-	-	-	-	442
Stage 2	-	-	-	-	267

Approach	EB	WB	NB
HCM Control Delay, s	0	0	68.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	67	-	-	825	-
HCM Lane V/C Ratio	0.159	-	-	0.004	-
HCM Control Delay (s)	68.6	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

HCM 6th TWSC
 29: Burch Street /Alfred Road & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	585	18	10	1148	5	8	0	21	4	0	11
Future Vol, veh/h	0	585	18	10	1148	5	8	0	21	4	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	96	96	96	80	80	80	92	92	92
Heavy Vehicles, %	0	1	0	0	0	0	0	0	10	0	0	0
Mvmt Flow	0	741	23	10	1196	5	10	0	26	4	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1201	0	0	764	0	0	1978	1974	753	1985	1983	1199
Stage 1	-	-	-	-	-	-	753	753	-	1219	1219	-
Stage 2	-	-	-	-	-	-	1225	1221	-	766	764	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.3	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.39	3.5	4	3.3
Pot Cap-1 Maneuver	588	-	-	858	-	-	47	63	397	46	62	228
Stage 1	-	-	-	-	-	-	405	420	-	223	255	-
Stage 2	-	-	-	-	-	-	221	255	-	398	416	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	588	-	-	858	-	-	43	61	397	42	60	228
Mov Cap-2 Maneuver	-	-	-	-	-	-	43	61	-	42	60	-
Stage 1	-	-	-	-	-	-	405	420	-	223	246	-
Stage 2	-	-	-	-	-	-	202	246	-	372	416	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			47			45.5		
HCM LOS							E			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	121	588	-	-	858	-	-	105
HCM Lane V/C Ratio	0.3	-	-	-	0.012	-	-	0.155
HCM Control Delay (s)	47	0	-	-	9.2	0	-	45.5
HCM Lane LOS	E	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.5

HCM 6th TWSC
 33: Margaret Street/Lakehill Avenue & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	600	7	24	1138	3	9	0	22	3	0	16
Future Vol, veh/h	3	600	7	24	1138	3	9	0	22	3	0	16
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	97	97	97	75	75	75	75	75	75
Heavy Vehicles, %	0	2	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	714	8	25	1173	3	12	0	29	4	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1176	0	0	1026	0	0	2265	2256	1022	1966	2259	1175
Stage 1	-	-	-	-	-	-	1030	1030	-	1225	1225	-
Stage 2	-	-	-	-	-	-	1235	1226	-	741	1034	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	601	-	-	685	-	-	29	42	289	48	42	236
Stage 1	-	-	-	-	-	-	284	313	-	221	254	-
Stage 2	-	-	-	-	-	-	218	253	-	411	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	601	-	-	511	-	-	17	27	216	37	27	236
Mov Cap-2 Maneuver	-	-	-	-	-	-	17	27	-	37	27	-
Stage 1	-	-	-	-	-	-	210	231	-	219	218	-
Stage 2	-	-	-	-	-	-	170	217	-	351	231	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			213.9			39.9		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	49	601	-	-	511	-	-	128
HCM Lane V/C Ratio	0.844	0.006	-	-	0.048	-	-	0.198
HCM Control Delay (s)	213.9	11	0	-	12.4	0	-	39.9
HCM Lane LOS	F	B	A	-	B	A	-	E
HCM 95th %tile Q(veh)	3.5	0	-	-	0.2	-	-	0.7

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations							
Traffic Volume (vph)	261	295	851	609	403	454	
Future Volume (vph)	261	295	851	609	403	454	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Fr _t	0.928			0.850			
Fl _t Protected	0.977				0.950		
Satd. Flow (prot)	1933	0	3421	1492	1728	1863	
Fl _t Permitted	0.977				0.133		
Satd. Flow (perm)	1933	0	3421	1492	242	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	49			212			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	1%	2%	1%	1%	2%	
Adj. Flow (vph)	287	324	925	662	438	493	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	611	0	925	662	438	493	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020

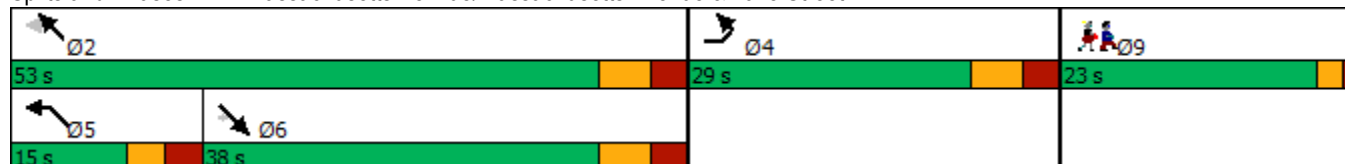


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.18		0.77	1.00	1.57	0.51	
Control Delay	131.5		33.0	58.9	294.4	18.3	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	131.5		33.0	58.9	294.4	18.3	
LOS	F		C	E	F	B	
Approach Delay	131.5		43.8			148.2	
Approach LOS	F		D			F	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.57
Intersection Signal Delay:	92.0
Intersection LOS:	F
Intersection Capacity Utilization:	95.1%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	611	925	662	438	493
v/c Ratio	1.18	0.77	1.00	1.57	0.51
Control Delay	131.5	33.0	58.9	294.4	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	131.5	33.0	58.9	294.4	18.3
Queue Length 50th (ft)	~343	208	237	~251	140
Queue Length 95th (ft)	#709	#409	#606	#562	332
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	516	1196	659	279	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.18	0.77	1.00	1.57	0.51

Intersection Summary

~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	312	493	212	421	271	221	523
Future Volume (vph)	312	493	212	421	271	221	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2132	1812	1685	3455	0	2037	1706
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2132	1812	1685	3455	0	2037	1706
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		332					405
Link Speed (mph)	30			30		30	
Link Distance (ft)	239			505		387	
Travel Time (s)	5.4			11.5		8.8	
Peak Hour Factor	0.91	0.91	0.84	0.84	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	1%	0%	1%	1%
Adj. Flow (vph)	343	542	252	501	298	243	575
Shared Lane Traffic (%)							
Lane Group Flow (vph)	343	542	252	501	0	541	575
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

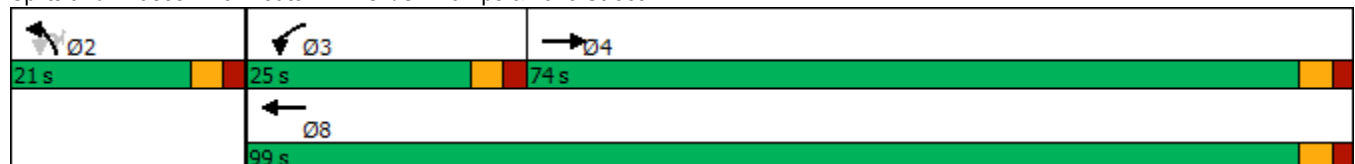


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	15.8	63.5	16.4	37.3		16.1	16.1
Actuated g/C Ratio	0.25	1.00	0.26	0.59		0.25	0.25
v/c Ratio	0.65	0.30	0.58	0.25		1.04	0.78
Control Delay	27.8	0.4	27.3	6.4		80.3	17.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	27.8	0.4	27.3	6.4		80.3	17.0
LOS	C	A	C	A		F	B
Approach Delay	11.0			13.4		47.7	
Approach LOS	B			B		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	63.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	26.5
Intersection LOS:	C
Intersection Capacity Utilization:	67.9%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	343	542	252	501	541	575
v/c Ratio	0.65	0.30	0.58	0.25	1.04	0.78
Control Delay	27.8	0.4	27.3	6.4	80.3	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	0.4	27.3	6.4	80.3	17.0
Queue Length 50th (ft)	119	0	84	43	~236	55
Queue Length 95th (ft)	205	0	152	57	#482	#246
Internal Link Dist (ft)	159			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2110	1812	535	3455	518	735
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.30	0.47	0.15	1.04	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

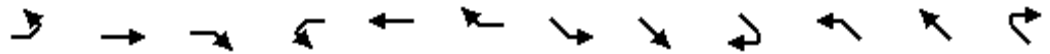
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

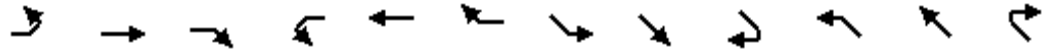
11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	224	611	0	0	482	725	0	0	0	151	6	11
Future Volume (vph)	224	611	0	0	482	725	0	0	0	151	6	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.956	
Satd. Flow (prot)	1805	1881	0	0	1837	1492	0	0	0	1579	1594	1830
Fl _t Permitted	0.950									0.950	0.956	
Satd. Flow (perm)	1805	1881	0	0	1837	1492	0	0	0	1579	1594	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						492						136
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		505			380			459			529	
Travel Time (s)		11.5			8.6			10.4			12.0	
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	5%	50%	0%
Adj. Flow (vph)	255	694	0	0	524	788	0	0	0	186	7	14
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	255	694	0	0	524	788	0	0	0	97	96	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/10/2020

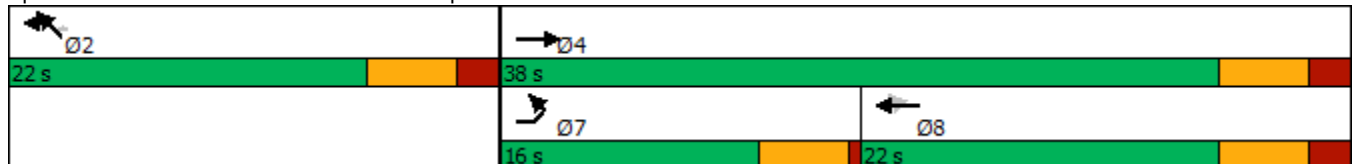


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases						8						2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	11.0	31.5			16.0	16.0				16.0	16.0	16.0
Actuated g/C Ratio	0.18	0.53			0.27	0.27				0.27	0.27	0.27
v/c Ratio	0.77	0.70			1.06	1.04				0.23	0.22	0.02
Control Delay	40.9	15.1			83.8	54.7				19.0	18.9	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	40.9	15.1			83.8	54.7				19.0	18.9	0.1
LOS	D	B			F	D				B	B	A
Approach Delay		22.0			66.3						17.7	
Approach LOS		C			E						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	59.5
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.06
Intersection Signal Delay:	45.2
Intersection LOS:	D
Intersection Capacity Utilization:	75.4%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	255	694	524	788	97	96	14
v/c Ratio	0.77	0.70	1.06	1.04	0.23	0.22	0.02
Control Delay	40.9	15.1	83.8	54.7	19.0	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	15.1	83.8	54.7	19.0	18.9	0.1
Queue Length 50th (ft)	88	168	~217	~169	28	28	0
Queue Length 95th (ft)	#179	268	#381	#364	56	55	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	348	1012	494	760	425	429	591
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	0.73	0.69	1.06	1.04	0.23	0.22	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

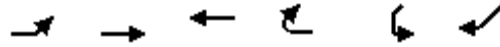
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

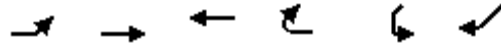


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	1597	0	0	1062		
Future Volume (vph)	0	0	1597	0	0	1062		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4729	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4729	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						7		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.90	0.92	0.92	0.85		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%		
Adj. Flow (vph)	0	0	1774	0	0	1249		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	1774	0	0	1249		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

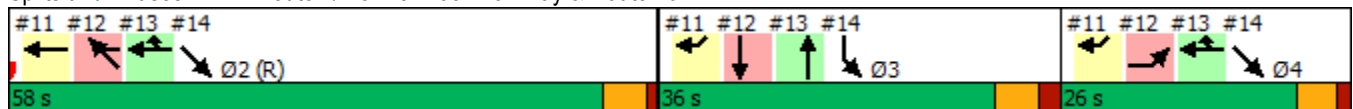


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			0.85			1.02		
Control Delay			5.6			62.8		
Queue Delay			4.6			0.0		
Total Delay			10.1			62.8		
LOS			B			E		
Approach Delay			10.1		62.8			
Approach LOS			B		E			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	31.9
Intersection LOS:	C
Intersection Capacity Utilization:	84.7%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020



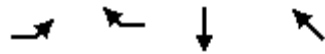
Lane Group	WBT	SWR
Lane Group Flow (vph)	1774	1249
v/c Ratio	0.85	1.02
Control Delay	5.6	62.8
Queue Delay	4.6	0.0
Total Delay	10.1	62.8
Queue Length 50th (ft)	43	~581
Queue Length 95th (ft)	m40	#659
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2088	1225
Starvation Cap Reductn	252	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.97	1.02

Intersection Summary

- ~ 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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

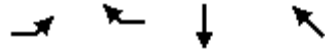
11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations	↖↗	↖	↕↕	↕↕
Traffic Volume (vph)	505	169	506	1428
Future Volume (vph)	505	169	506	1428
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Flt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3224	1581	3291	3291
Flt Permitted	0.950			
Satd. Flow (perm)	3224	1581	3291	3291
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.97	0.94	0.85	0.90
Heavy Vehicles (%)	1%	6%	2%	2%
Adj. Flow (vph)	521	180	595	1587
Shared Lane Traffic (%)				
Lane Group Flow (vph)	521	180	595	1587
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/10/2020

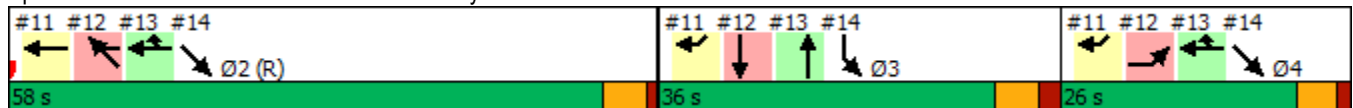


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)				5.0
Flash Dont Walk (s)				8.0
Pedestrian Calls (#/hr)				0
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	0.92	0.26	0.72	1.09
Control Delay	72.2	14.3	47.1	85.8
Queue Delay	0.0	2.4	0.0	3.3
Total Delay	72.2	16.7	47.1	89.1
LOS	E	B	D	F
Approach Delay			47.1	89.1
Approach LOS			D	F

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 72.8
 Intersection LOS: E
 Intersection Capacity Utilization 103.7%
 ICU Level of Service G
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

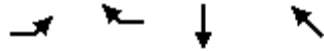
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	521	180	595	1587
v/c Ratio	0.92	0.26	0.72	1.09
Control Delay	72.2	14.3	47.1	85.8
Queue Delay	0.0	2.4	0.0	3.3
Total Delay	72.2	16.7	47.1	89.1
Queue Length 50th (ft)	206	86	223	~730
Queue Length 95th (ft)	#308	138	269	#868
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	564	698	822	1453
Starvation Cap Reductn	0	397	0	0
Spillback Cap Reductn	0	6	0	13
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	0.60	0.72	1.10

Intersection Summary

~ 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.

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	169	54	0	224	0	0	0	0
Future Volume (vph)	0	0	0	0	169	54	0	224	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1613	1333	0	3154	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)						2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	6%	9%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	184	59	0	249	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	184	59	0	249	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

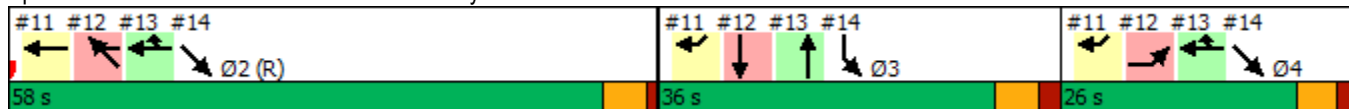


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.17	0.07		0.32				
Control Delay					8.4	7.6		38.0				
Queue Delay					0.1	0.0		0.0				
Total Delay					8.5	7.6		38.0				
LOS					A	A		D				
Approach Delay					8.3			38.0				
Approach LOS					A			D				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	23.3
Intersection LOS:	C
Intersection Capacity Utilization:	27.4%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

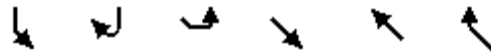
11/10/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	184	59	249
v/c Ratio	0.17	0.07	0.32
Control Delay	8.4	7.6	38.0
Queue Delay	0.1	0.0	0.0
Total Delay	8.5	7.6	38.0
Queue Length 50th (ft)	50	15	83
Queue Length 95th (ft)	81	31	121
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1061	877	788
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	223	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.07	0.32
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

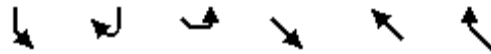
11/10/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations	↙↘			↖↗				
Traffic Volume (vph)	506	0	0	1104	0	0		
Future Volume (vph)	506	0	0	1104	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	215							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.85	0.92	0.92	0.97	0.92	0.92		
Heavy Vehicles (%)	2%	2%	2%	1%	2%	2%		
Adj. Flow (vph)	595	0	0	1138	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	595	0	0	1138	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15					9
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

11/10/2020

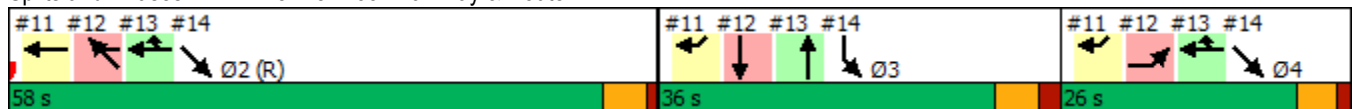


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.62			0.52				
Control Delay	2.8			11.7				
Queue Delay	1.0			0.0				
Total Delay	3.7			11.7				
LOS	A			B				
Approach Delay	3.7			11.7				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.09
Intersection Signal Delay:	9.0
Intersection LOS:	A
Intersection Capacity Utilization:	59.1%
ICU Level of Service:	B
Analysis Period (min):	15

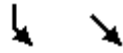
Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	SBL	SET
Lane Group Flow (vph)	595	1138
v/c Ratio	0.62	0.52
Control Delay	2.8	11.7
Queue Delay	1.0	0.0
Total Delay	3.7	11.7
Queue Length 50th (ft)	5	221
Queue Length 95th (ft)	0	272
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	959	2188
Starvation Cap Reductn	155	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.74	0.52
Intersection Summary		

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑							
Traffic Volume (vph)	0	625	0	0	1165	0	0	0	0	0	0	0
Future Volume (vph)	0	625	0	0	1165	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	16	16	16	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	2049	0	0	2153	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	2049	0	0	2153	0	0	0	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		135			215			175				206
Travel Time (s)		3.1			4.9			4.0				4.7
Peak Hour Factor	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	744	0	0	1201	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	744	0	0	1201	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2							
Detector Template		Thru			Thru							
Leading Detector (ft)		100			100							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		6			6							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA			NA							
Protected Phases		4			8							
Permitted Phases												
Detector Phase		4			8							

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
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 (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Detector 2 Position(ft)				
Detector 2 Size(ft)				
Detector 2 Type				
Detector 2 Channel				
Detector 2 Extend (s)				
Turn Type				
Protected Phases	2	5	6	9
Permitted Phases				
Detector Phase				

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.5			20.5							
Total Split (s)		58.0			58.0							
Total Split (%)		58.0%			58.0%							
Maximum Green (s)		56.0			56.0							
Yellow Time (s)		2.0			2.0							
All-Red Time (s)		0.0			0.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		2.0			2.0							
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.1			56.1							
Actuated g/C Ratio		0.61			0.61							
v/c Ratio		0.60			0.92							
Control Delay		14.8			13.8							
Queue Delay		0.0			30.5							
Total Delay		14.8			44.4							
LOS		B			D							
Approach Delay		14.8			44.4							
Approach LOS		B			D							

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	92.7
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	33.1
Intersection LOS:	C
Intersection Capacity Utilization:	64.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 36: Minuteman Commuter Bikeway & Lake Street



Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	14.0	18.0
Total Split (s)	24.0	10.0	14.0	18.0
Total Split (%)	24%	10%	14%	18%
Maximum Green (s)	20.0	6.0	10.0	16.0
Yellow Time (s)	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Min	None	Min	None
Walk Time (s)				5.0
Flash Dont Walk (s)				11.0
Pedestrian Calls (#/hr)				311
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Queues

36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBT	WBT
Lane Group Flow (vph)	744	1201
v/c Ratio	0.60	0.92
Control Delay	14.8	13.8
Queue Delay	0.0	30.5
Total Delay	14.8	44.4
Queue Length 50th (ft)	249	122
Queue Length 95th (ft)	384	m#427
Internal Link Dist (ft)	55	135
Turn Bay Length (ft)		
Base Capacity (vph)	1240	1304
Starvation Cap Reductn	0	174
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.60	1.06

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	31	548	46	6	1006	0	38	4	5	3	7	121
Future Volume (vph)	31	548	46	6	1006	0	38	4	5	3	7	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990						0.985			0.875	
Flt Protected		0.998						0.961			0.999	
Satd. Flow (prot)	0	1978	0	0	1944	0	0	1799	0	0	1661	0
Flt Permitted		0.917			0.997			0.422			0.994	
Satd. Flow (perm)	0	1817	0	0	1938	0	0	790	0	0	1653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7						6			155	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.75	0.75	0.75	0.78	0.78	0.78
Heavy Vehicles (%)	0%	1%	5%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	602	51	7	1156	0	51	5	7	4	9	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	687	0	0	1163	0	0	63	0	0	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.5	20.5		20.5	20.5		9.0	21.0		14.0	14.0	
Total Split (s)	58.0	58.0		58.0	58.0		10.0	24.0		14.0	14.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		10.0%	24.0%		14.0%	14.0%	
Maximum Green (s)	56.0	56.0		56.0	56.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		2.0			2.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.1			56.1			12.5			12.5	
Actuated g/C Ratio		0.61			0.61			0.13			0.13	
v/c Ratio		0.62			0.99			0.57			0.47	
Control Delay		4.4			44.8			53.7			11.9	
Queue Delay		0.0			18.9			4.0			1.8	
Total Delay		4.4			63.7			57.7			13.7	
LOS		A			E			E			B	
Approach Delay		4.4			63.7			57.7			13.7	
Approach LOS		A			E			E			B	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	92.7
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	39.9
Intersection LOS:	D
Intersection Capacity Utilization:	76.2%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 39: Brooks Avenue & Lake Street

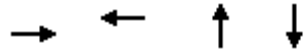
#39 ↑ Ø2 24 s	#36 #39 → → Ø4 58 s	Ø9 18 s
#39 ↙ Ø5 10 s	#39 ↓ Ø6 14 s	#36 #39 ← ← Ø8 58 s

Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	18%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	311
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	687	1163	63	168
v/c Ratio	0.62	0.99	0.57	0.47
Control Delay	4.4	44.8	53.7	11.9
Queue Delay	0.0	18.9	4.0	1.8
Total Delay	4.4	63.7	57.7	13.7
Queue Length 50th (ft)	8	621	32	7
Queue Length 95th (ft)	3	#1017	59	41
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1103	1173	175	375
Starvation Cap Reductn	3	0	0	0
Spillback Cap Reductn	0	69	61	98
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	1.05	0.55	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2027 Build Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	842	3	1	607	9	4
Future Vol, veh/h	842	3	1	607	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	94	94	75	75
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	1014	4	1	646	12	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1018	0	1664
Stage 1	-	-	-	-	1016
Stage 2	-	-	-	-	648
Critical Hdwy	-	-	4.1	-	6.69
Critical Hdwy Stg 1	-	-	-	-	5.69
Critical Hdwy Stg 2	-	-	-	-	5.69
Follow-up Hdwy	-	-	2.2	-	3.761
Pot Cap-1 Maneuver	-	-	689	-	92
Stage 1	-	-	-	-	312
Stage 2	-	-	-	-	473
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	689	-	92
Mov Cap-2 Maneuver	-	-	-	-	92
Stage 1	-	-	-	-	312
Stage 2	-	-	-	-	472

Approach	EB	WB	NB
HCM Control Delay, s	0	0	41
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	117	-	-	689	-
HCM Lane V/C Ratio	0.148	-	-	0.002	-
HCM Control Delay (s)	41	-	-	10.2	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	827	19	9	585	23	5
Future Vol, veh/h	827	19	9	585	23	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	951	22	10	657	31	7

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	973	0	1639
Stage 1	-	-	-	-	962
Stage 2	-	-	-	-	677
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	-	-	717	-	112
Stage 1	-	-	-	-	374
Stage 2	-	-	-	-	509
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	717	-	110
Mov Cap-2 Maneuver	-	-	-	-	110
Stage 1	-	-	-	-	374
Stage 2	-	-	-	-	498

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	46.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	124	-	-	717	-
HCM Lane V/C Ratio	0.301	-	-	0.014	-
HCM Control Delay (s)	46.1	-	-	10.1	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	1.2	-	-	0	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	5	7	20	15	13
Future Vol, veh/h	8	5	7	20	15	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	5	8	22	16	14

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	61	23	30	0	0
Stage 1	23	-	-	-	-
Stage 2	38	-	-	-	-
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	950	1060	1596	-	-
Stage 1	1005	-	-	-	-
Stage 2	990	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	945	1060	1596	-	-
Mov Cap-2 Maneuver	945	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	990	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1596	-	986	-	-
HCM Lane V/C Ratio	0.005	-	0.014	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC
26: Homestead Road & Lake Street

11/10/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	831	1	1	588	6	4
Future Vol, veh/h	831	1	1	588	6	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	89	89	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	955	1	1	661	8	5

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	956	0	1619
Stage 1	-	-	-	-	956
Stage 2	-	-	-	-	663
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	-	-	727	-	115
Stage 1	-	-	-	-	376
Stage 2	-	-	-	-	516
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	727	-	115
Mov Cap-2 Maneuver	-	-	-	-	115
Stage 1	-	-	-	-	376
Stage 2	-	-	-	-	515

Approach	EB	WB	NB
HCM Control Delay, s	0	0	30.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	154	-	-	727	-
HCM Lane V/C Ratio	0.087	-	-	0.002	-
HCM Control Delay (s)	30.6	-	-	10	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
29: Burch Street /Alfred Road & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	812	19	18	575	8	13	1	11	3	0	1
Future Vol, veh/h	4	812	19	18	575	8	13	1	11	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	944	22	21	669	9	17	1	15	4	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	678	0	0	966	0	0	1681	1685	955	1689	1692	674
Stage 1	-	-	-	-	-	-	965	965	-	716	716	-
Stage 2	-	-	-	-	-	-	716	720	-	973	976	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	923	-	-	721	-	-	76	95	316	75	94	458
Stage 1	-	-	-	-	-	-	309	336	-	424	437	-
Stage 2	-	-	-	-	-	-	424	435	-	306	332	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	923	-	-	721	-	-	72	89	316	68	89	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	89	-	68	89	-
Stage 1	-	-	-	-	-	-	305	332	-	419	416	-
Stage 2	-	-	-	-	-	-	403	415	-	287	328	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			51.4			49.6		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	110	923	-	-	721	-	-	86
HCM Lane V/C Ratio	0.303	0.005	-	-	0.029	-	-	0.062
HCM Control Delay (s)	51.4	8.9	0	-	10.1	0	-	49.6
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0.2

HCM 6th TWSC
 33: Margaret Street/Lakehill Avenue & Lake Street

11/10/2020

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	804	3	42	584	16	6	0	27	9	0	11
Future Vol, veh/h	19	804	3	42	584	16	6	0	27	9	0	11
Conflicting Peds, #/hr	0	0	0	304	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	88	88	88	81	81	81	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	23	969	4	48	664	18	7	0	33	11	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	682	0	0	1277	0	0	2097	2099	1275	1803	2092	673
Stage 1	-	-	-	-	-	-	1321	1321	-	769	769	-
Stage 2	-	-	-	-	-	-	776	778	-	1034	1323	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	920	-	-	550	-	-	39	53	206	62	53	459
Stage 1	-	-	-	-	-	-	195	228	-	397	413	-
Stage 2	-	-	-	-	-	-	393	410	-	283	228	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	920	-	-	411	-	-	23	30	154	40	30	459
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	30	-	40	30	-
Stage 1	-	-	-	-	-	-	138	161	-	376	335	-
Stage 2	-	-	-	-	-	-	309	333	-	210	161	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	97.4	69.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	920	-	-	411	-	-	80
HCM Lane V/C Ratio	0.536	0.025	-	-	0.116	-	-	0.313
HCM Control Delay (s)	97.4	9	0	-	14.9	0	-	69.3
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0.4	-	-	1.2

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Lane Configurations							
Traffic Volume (vph)	421	274	658	186	340	739	
Future Volume (vph)	421	274	658	186	340	739	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	16	16	11	10	11	12	
Storage Length (ft)	0	0		55	150		
Storage Lanes	1	0		1	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	
Frt	0.947			0.850			
Flt Protected	0.971				0.950		
Satd. Flow (prot)	1980	0	3421	1507	1745	1863	
Flt Permitted	0.971				0.229		
Satd. Flow (perm)	1980	0	3421	1507	421	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)	28			84			
Link Speed (mph)	30		30			30	
Link Distance (ft)	1126		640			645	
Travel Time (s)	25.6		14.5			14.7	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%	
Adj. Flow (vph)	478	311	715	202	370	803	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	789	0	715	202	370	803	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	16		11			11	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.04	1.09	1.04	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1		2	1	1	2	
Detector Template	Left		Thru	Right	Left	Thru	
Leading Detector (ft)	20		100	20	20	100	
Trailing Detector (ft)	0		0	0	0	0	
Detector 1 Position(ft)	0		0	0	0	0	
Detector 1 Size(ft)	20		6	20	20	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot		NA	Perm	pm+pt	NA	

Lanes, Volumes, Timings

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020

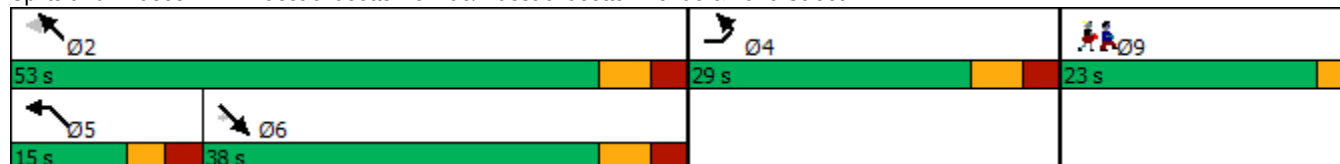


Lane Group	EBL	EBR	SET	SER	NWL	NWT	Ø9
Protected Phases	4		6		5	2	9
Permitted Phases				6	2		
Detector Phase	4		6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	23.0		23.0	23.0	10.0	23.0	19.0
Total Split (s)	29.0		38.0	38.0	15.0	53.0	23.0
Total Split (%)	27.6%		36.2%	36.2%	14.3%	50.5%	22%
Maximum Green (s)	22.0		31.0	31.0	9.0	46.0	20.0
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	2.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0		7.0	7.0	6.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	None	Max	None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	22.2		31.3	31.3	47.5	46.5	
Actuated g/C Ratio	0.25		0.35	0.35	0.53	0.52	
v/c Ratio	1.54		0.60	0.35	1.04	0.83	
Control Delay	280.2		27.9	15.9	78.5	29.9	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	280.2		27.9	15.9	78.5	29.9	
LOS	F		C	B	E	C	
Approach Delay	280.2		25.3			45.2	
Approach LOS	F		C			D	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	89.6
Natural Cycle:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.54
Intersection Signal Delay:	103.3
Intersection LOS:	F
Intersection Capacity Utilization:	93.8%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Massachusetts Avenue/Massachusetts Avenue & Lake Street



Queues

2: Massachusetts Avenue/Massachusetts Avenue & Lake Street

11/10/2020



Lane Group	EBL	SET	SER	NWL	NWT
Lane Group Flow (vph)	789	715	202	370	803
v/c Ratio	1.54	0.60	0.35	1.04	0.83
Control Delay	280.2	27.9	15.9	78.5	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	280.2	27.9	15.9	78.5	29.9
Queue Length 50th (ft)	~551	148	40	95	294
Queue Length 95th (ft)	#955	277	121	#402	#740
Internal Link Dist (ft)	1046	560			565
Turn Bay Length (ft)			55	150	
Base Capacity (vph)	512	1196	581	357	966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.54	0.60	0.35	1.04	0.83

Intersection Summary

~ 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.

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

							
Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	545	181	172	300	14	531	641
Future Volume (vph)	545	181	172	300	14	531	641
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	10	11	12	16	14
Storage Length (ft)		150	110			0	0
Storage Lanes		1	1			1	1
Taper Length (ft)			25			25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Flt		0.850					0.850
Flt Protected			0.950			0.950	
Satd. Flow (prot)	2153	1664	1652	3490	0	2046	1723
Flt Permitted			0.950			0.950	
Satd. Flow (perm)	2153	1664	1652	3490	0	2046	1723
Right Turn on Red		Yes					Yes
Satd. Flow (RTOR)		70					448
Link Speed (mph)	30			30		30	
Link Distance (ft)	239			505		387	
Travel Time (s)	5.4			11.5		8.8	
Peak Hour Factor	0.94	0.94	0.87	0.87	0.96	0.96	0.96
Heavy Vehicles (%)	0%	10%	2%	0%	0%	0%	0%
Adj. Flow (vph)	580	193	198	345	15	553	668
Shared Lane Traffic (%)							
Lane Group Flow (vph)	580	193	198	345	0	568	668
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	12			12		16	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	0.85	0.85	1.09	1.04	1.00	0.85	0.92
Turning Speed (mph)		9	15		9	15	9
Number of Detectors	2	1	1	2	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Left	Right
Leading Detector (ft)	100	20	20	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94			
Detector 2 Size(ft)	6			6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Free	Prot	NA	Perm	Prot	Perm

Lanes, Volumes, Timings
5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020

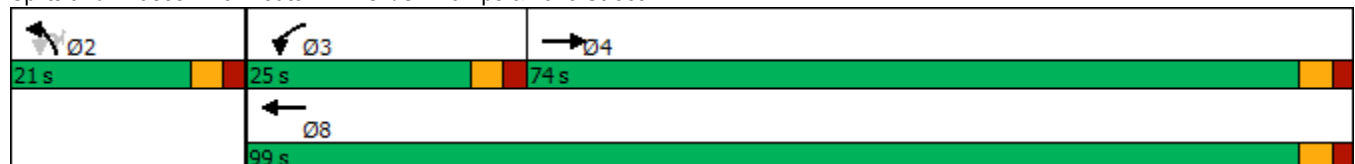


Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Protected Phases	4		3	8		2	
Permitted Phases		Free			2		2
Detector Phase	4		3	8	2	2	2
Switch Phase							
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0	21.0
Total Split (s)	74.0		25.0	99.0	21.0	21.0	21.0
Total Split (%)	61.7%		20.8%	82.5%	17.5%	17.5%	17.5%
Maximum Green (s)	69.0		20.0	94.0	16.0	16.0	16.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0	0
Act Effct Green (s)	25.8	71.6	14.1	45.0		16.4	16.4
Actuated g/C Ratio	0.36	1.00	0.20	0.63		0.23	0.23
v/c Ratio	0.75	0.12	0.61	0.16		1.22	0.90
Control Delay	27.0	0.1	36.1	5.3		144.9	28.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	27.0	0.1	36.1	5.3		144.9	28.6
LOS	C	A	D	A		F	C
Approach Delay	20.3			16.5		82.1	
Approach LOS	C			B		F	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	71.6
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.22
Intersection Signal Delay:	49.4
Intersection LOS:	D
Intersection Capacity Utilization:	80.9%
ICU Level of Service:	D
Analysis Period (min):	15

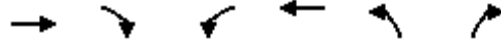
Splits and Phases: 5: Route 2 EB On/Off Ramps & Lake Street



Queues

5: Route 2 EB On/Off Ramps & Lake Street

11/10/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	580	193	198	345	568	668
v/c Ratio	0.75	0.12	0.61	0.16	1.22	0.90
Control Delay	27.0	0.1	36.1	5.3	144.9	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	0.1	36.1	5.3	144.9	28.6
Queue Length 50th (ft)	215	0	80	27	~315	92
Queue Length 95th (ft)	361	0	157	40	#634	#367
Internal Link Dist (ft)	159			425	307	
Turn Bay Length (ft)		150	110			
Base Capacity (vph)	2000	1664	471	3490	467	739
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.12	0.42	0.10	1.22	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

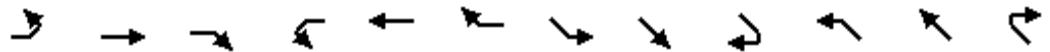
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

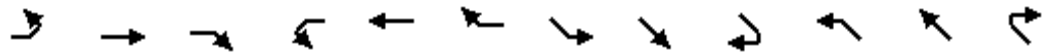
11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	368	818	0	0	264	352	0	0	0	208	22	27
Future Volume (vph)	368	818	0	0	264	352	0	0	0	208	22	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	10	12	12	12	11	12	16
Storage Length (ft)	250		0	0		75	0		0	100		0
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t						0.850						0.850
Fl _t Protected	0.950									0.950	0.961	
Satd. Flow (prot)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Fl _t Permitted	0.950									0.950	0.961	
Satd. Flow (perm)	1805	1881	0	0	1801	1463	0	0	0	1641	1705	1830
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						387						136
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		505			380			459			529	
Travel Time (s)		11.5			8.6			10.4			12.0	
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	418	930	0	0	290	387	0	0	0	219	23	28
Shared Lane Traffic (%)										45%		
Lane Group Flow (vph)	418	930	0	0	290	387	0	0	0	120	122	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.04	1.09	1.00	1.00	1.00	1.04	1.00	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1				1	2	1
Detector Template	Left	Thru			Thru	Right				Left	Thru	Right
Leading Detector (ft)	20	100			100	20				20	100	20
Trailing Detector (ft)	0	0			0	0				0	0	0
Detector 1 Position(ft)	0	0			0	0				0	0	0
Detector 1 Size(ft)	20	6			6	20				20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA			NA	Perm				Split	NA	Perm

Lanes, Volumes, Timings
7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Protected Phases	7	4			8					2	2	
Permitted Phases						8						2
Detector Phase	7	4			8	8				2	2	2
Switch Phase												
Minimum Initial (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	8.5	22.0			22.0	22.0				22.0	22.0	22.0
Total Split (s)	16.0	38.0			22.0	22.0				22.0	22.0	22.0
Total Split (%)	26.7%	63.3%			36.7%	36.7%				36.7%	36.7%	36.7%
Maximum Green (s)	11.5	32.0			16.0	16.0				16.0	16.0	16.0
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	4.0
All-Red Time (s)	0.5	2.0			2.0	2.0				2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0			6.0	6.0				6.0	6.0	6.0
Lead/Lag	Lead				Lag				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None			None	None				Max	Max	Max
Walk Time (s)		5.0			5.0	5.0				5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0				11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0				0	0	0
Act Effct Green (s)	11.5	30.9			14.9	14.9				16.0	16.0	16.0
Actuated g/C Ratio	0.20	0.52			0.25	0.25				0.27	0.27	0.27
v/c Ratio	1.19	0.94			0.64	0.59				0.27	0.26	0.05
Control Delay	136.9	33.5			26.8	6.6				19.4	19.3	0.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	136.9	33.5			26.8	6.6				19.4	19.3	0.1
LOS	F	C			C	A				B	B	A
Approach Delay		65.6			15.2						17.4	
Approach LOS		E			B						B	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	58.9
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	45.0
Intersection LOS:	D
Intersection Capacity Utilization:	62.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Route 2 WB Off Ramp & Lake Street



Queues

7: Route 2 WB Off Ramp & Lake Street

11/10/2020



Lane Group	EBL	EBT	WBT	WBR	NWL	NWT	NWR
Lane Group Flow (vph)	418	930	290	387	120	122	28
v/c Ratio	1.19	0.94	0.64	0.59	0.27	0.26	0.05
Control Delay	136.9	33.5	26.8	6.6	19.4	19.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.9	33.5	26.8	6.6	19.4	19.3	0.1
Queue Length 50th (ft)	~191	281	91	0	35	36	0
Queue Length 95th (ft)	#331	#513	161	57	75	76	0
Internal Link Dist (ft)		425	300			449	
Turn Bay Length (ft)	250			75	100		
Base Capacity (vph)	352	1022	489	679	446	463	596
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	1.19	0.91	0.59	0.57	0.27	0.26	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

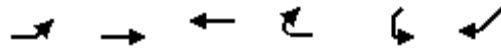
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

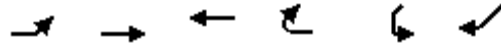


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Lane Configurations			↑↑↑			↑↑		
Traffic Volume (vph)	0	0	2211	0	0	1131		
Future Volume (vph)	0	0	2211	0	0	1131		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.88		
Frt						0.850		
Flt Protected								
Satd. Flow (prot)	0	0	4776	0	0	2617		
Flt Permitted								
Satd. Flow (perm)	0	0	4776	0	0	2617		
Right Turn on Red				Yes		Yes		
Satd. Flow (RTOR)						1		
Link Speed (mph)		30	30		30			
Link Distance (ft)		201	192		296			
Travel Time (s)		4.6	4.4		6.7			
Peak Hour Factor	0.92	0.92	0.97	0.97	0.98	0.98		
Heavy Vehicles (%)	2%	2%	1%	0%	0%	1%		
Adj. Flow (vph)	0	0	2279	0	0	1154		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	2279	0	0	1154		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Left	Left	Right	Left	Right		
Median Width(ft)		0	0		0			
Link Offset(ft)		0	0		0			
Crosswalk Width(ft)		16	16		16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	15			9	15	30		
Number of Detectors			2			1		
Detector Template			Thru			Right		
Leading Detector (ft)			100			20		
Trailing Detector (ft)			0			0		
Detector 1 Position(ft)			0			0		
Detector 1 Size(ft)			6			20		
Detector 1 Type			Cl+Ex			Cl+Ex		
Detector 1 Channel								
Detector 1 Extend (s)			0.0			0.0		
Detector 1 Queue (s)			0.0			0.0		
Detector 1 Delay (s)			0.0			0.0		
Detector 2 Position(ft)			94					
Detector 2 Size(ft)			6					
Detector 2 Type			Cl+Ex					
Detector 2 Channel								
Detector 2 Extend (s)			0.0					
Turn Type			NA			custom		
Protected Phases			2			3 4	3	4
Permitted Phases								
Detector Phase			2			3 4		

Lanes, Volumes, Timings

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020

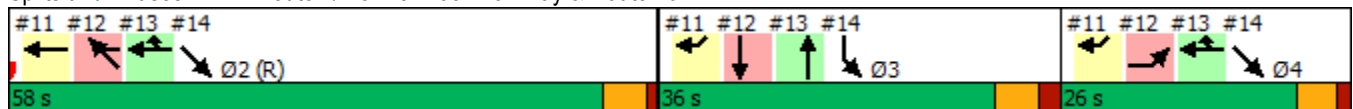


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø3	Ø4
Switch Phase								
Minimum Initial (s)			10.0				10.0	10.0
Minimum Split (s)			15.0				19.0	15.0
Total Split (s)			58.0				36.0	26.0
Total Split (%)			48.3%				30%	22%
Maximum Green (s)			53.0				30.0	21.0
Yellow Time (s)			4.0				4.0	3.5
All-Red Time (s)			1.0				2.0	1.5
Lost Time Adjust (s)			0.0					
Total Lost Time (s)			5.0					
Lead/Lag							Lead	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)			3.0				3.0	3.0
Recall Mode			C-Max				Max	Max
Walk Time (s)							5.0	
Flash Dont Walk (s)							8.0	
Pedestrian Calls (#/hr)							0	
Act Effct Green (s)			53.0			56.0		
Actuated g/C Ratio			0.44			0.47		
v/c Ratio			1.08			0.95		
Control Delay			47.1			46.7		
Queue Delay			1.5			0.0		
Total Delay			48.7			46.7		
LOS			D			D		
Approach Delay			48.7		46.7			
Approach LOS			D		D			

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	48.0
Intersection LOS:	D
Intersection Capacity Utilization:	100.6%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 11: Route 2/Alewife Brook Parkway & Route 16



Queues

11: Route 2/Alewife Brook Parkway & Route 16

11/10/2020



Lane Group	WBT	SWR
Lane Group Flow (vph)	2279	1154
v/c Ratio	1.08	0.95
Control Delay	47.1	46.7
Queue Delay	1.5	0.0
Total Delay	48.7	46.7
Queue Length 50th (ft)	~704	472
Queue Length 95th (ft)	m#56	#644
Internal Link Dist (ft)	112	
Turn Bay Length (ft)		
Base Capacity (vph)	2109	1221
Starvation Cap Reductn	7	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.08	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

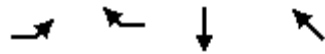
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

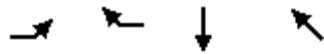
11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Configurations				
Traffic Volume (vph)	610	591	250	1620
Future Volume (vph)	610	591	250	1620
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	13	16	13	13
Lane Util. Factor	0.97	1.00	0.95	0.95
Frt		0.865		
Flt Protected	0.950			
Satd. Flow (prot)	3257	1660	3291	3324
Flt Permitted	0.950			
Satd. Flow (perm)	3257	1660	3291	3324
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)			30	30
Link Distance (ft)			202	278
Travel Time (s)			4.6	6.3
Peak Hour Factor	0.90	0.95	0.98	0.97
Heavy Vehicles (%)	0%	1%	2%	1%
Adj. Flow (vph)	678	622	255	1670
Shared Lane Traffic (%)				
Lane Group Flow (vph)	678	622	255	1670
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Left	R NA	Left	L NA
Median Width(ft)			0	0
Link Offset(ft)			0	0
Crosswalk Width(ft)			16	16
Two way Left Turn Lane				
Headway Factor	1.10	0.97	1.10	1.10
Turning Speed (mph)	15	30		
Number of Detectors	1	1	2	2
Detector Template	Left	Right	Thru	Thru
Leading Detector (ft)	20	20	100	100
Trailing Detector (ft)	0	0	0	0
Detector 1 Position(ft)	0	0	0	0
Detector 1 Size(ft)	20	20	6	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel				
Detector 1 Extend (s)	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94	94
Detector 2 Size(ft)			6	6
Detector 2 Type			Cl+Ex	Cl+Ex
Detector 2 Channel				
Detector 2 Extend (s)			0.0	0.0
Turn Type	Prot	Prot	NA	NA
Protected Phases	4	2!	3	2!
Permitted Phases				
Detector Phase	4	2	3	2

Lanes, Volumes, Timings
 12: Alewife Brook Parkway & Route 2

11/10/2020

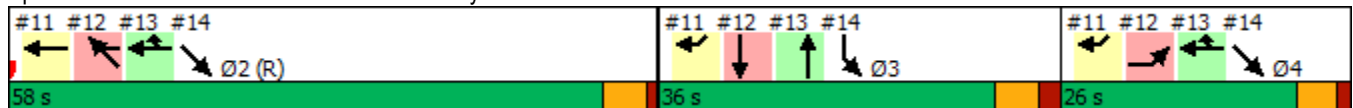


Lane Group	EBL	WBR	SBT	NWT
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.0	15.0	19.0	15.0
Total Split (s)	26.0	58.0	36.0	58.0
Total Split (%)	21.7%	48.3%	30.0%	48.3%
Maximum Green (s)	21.0	53.0	30.0	53.0
Yellow Time (s)	3.5	4.0	4.0	4.0
All-Red Time (s)	1.5	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	6.0	5.0
Lead/Lag	Lag		Lead	
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max	C-Max
Walk Time (s)	5.0			
Flash Dont Walk (s)	8.0			
Pedestrian Calls (#/hr)	0			
Act Effect Green (s)	21.0	53.0	30.0	53.0
Actuated g/C Ratio	0.18	0.44	0.25	0.44
v/c Ratio	1.19	0.85	0.31	1.14
Control Delay	145.7	29.8	37.8	103.1
Queue Delay	0.0	3.3	0.0	0.3
Total Delay	145.7	33.1	37.8	103.3
LOS	F	C	D	F
Approach Delay			37.8	103.3
Approach LOS			D	F

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 16 (13%), Referenced to phase 2:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 93.5
 Intersection LOS: F
 Intersection Capacity Utilization 134.8%
 ICU Level of Service H
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

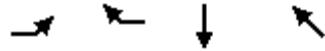
Splits and Phases: 12: Alewife Brook Parkway & Route 2



Queues

12: Alewife Brook Parkway & Route 2

11/10/2020



Lane Group	EBL	WBR	SBT	NWT
Lane Group Flow (vph)	678	622	255	1670
v/c Ratio	1.19	0.85	0.31	1.14
Control Delay	145.7	29.8	37.8	103.1
Queue Delay	0.0	3.3	0.0	0.3
Total Delay	145.7	33.1	37.8	103.3
Queue Length 50th (ft)	~326	422	84	~794
Queue Length 95th (ft)	#446	#639	123	#933
Internal Link Dist (ft)			122	198
Turn Bay Length (ft)				
Base Capacity (vph)	569	733	822	1468
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	53	0	107
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.19	0.91	0.31	1.23

Intersection Summary

~ 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.

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑	↗		↑↑				
Traffic Volume (vph)	0	0	0	0	591	328	0	238	0	0	0	0
Future Volume (vph)	0	0	0	0	591	328	0	238	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		200	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt						0.850						
Flt Protected												
Satd. Flow (prot)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	1693	1439	0	3217	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		161			1225			227				185
Travel Time (s)		3.7			27.8			5.2				4.2
Confl. Peds. (#/hr)						2						
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	1%	1%	0%	1%	0%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	622	345	0	245	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	622	345	0	245	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors					2	1		2				
Detector Template					Thru	Right		Thru				
Leading Detector (ft)					100	20		100				
Trailing Detector (ft)					0	0		0				
Detector 1 Position(ft)					0	0		0				
Detector 1 Size(ft)					6	20		6				
Detector 1 Type					Cl+Ex	Cl+Ex		Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0		0.0				
Detector 1 Queue (s)					0.0	0.0		0.0				
Detector 1 Delay (s)					0.0	0.0		0.0				
Detector 2 Position(ft)					94			94				
Detector 2 Size(ft)					6			6				
Detector 2 Type					Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		

Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

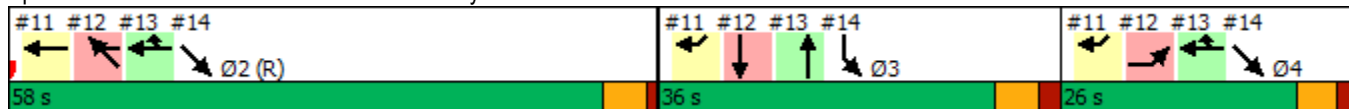


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type					NA	Prot		NA				
Protected Phases					2 4	2 4		3				
Permitted Phases												
Detector Phase					2 4	2 4		3				
Switch Phase												
Minimum Initial (s)								10.0				
Minimum Split (s)								19.0				
Total Split (s)								36.0				
Total Split (%)								30.0%				
Maximum Green (s)								30.0				
Yellow Time (s)								4.0				
All-Red Time (s)								2.0				
Lost Time Adjust (s)								0.0				
Total Lost Time (s)								6.0				
Lead/Lag								Lead				
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0				
Recall Mode								Max				
Walk Time (s)								5.0				
Flash Dont Walk (s)								8.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)					79.0	79.0		30.0				
Actuated g/C Ratio					0.66	0.66		0.25				
v/c Ratio					0.56	0.36		0.30				
Control Delay					13.5	10.5		37.8				
Queue Delay					2.1	0.0		0.0				
Total Delay					15.6	10.5		37.8				
LOS					B	B		D				
Approach Delay					13.8			37.8				
Approach LOS					B			D				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	18.6
Intersection LOS:	B
Intersection Capacity Utilization:	52.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access



Lanes, Volumes, Timings
 13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

11/10/2020

Lane Group	Ø2	Ø4
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	15.0	15.0
Total Split (s)	58.0	26.0
Total Split (%)	48%	22%
Maximum Green (s)	53.0	21.0
Yellow Time (s)	4.0	3.5
All-Red Time (s)	1.0	1.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		Lag
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Queues

13: Alewife Brook Parkway & Route 2/Rt 2 WB Access

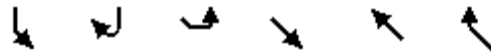
11/10/2020



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	622	345	245
v/c Ratio	0.56	0.36	0.30
Control Delay	13.5	10.5	37.8
Queue Delay	2.1	0.0	0.0
Total Delay	15.6	10.5	37.8
Queue Length 50th (ft)	239	110	81
Queue Length 95th (ft)	337	165	119
Internal Link Dist (ft)	1145		147
Turn Bay Length (ft)		200	
Base Capacity (vph)	1114	947	804
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	337	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.36	0.30
Intersection Summary			

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

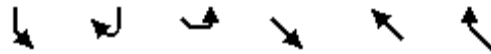
11/10/2020



Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Lane Configurations	↔↔			↔↔				
Traffic Volume (vph)	250	0	0	988	0	0		
Future Volume (vph)	250	0	0	988	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	13	13	13	13	13	13		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950							
Satd. Flow (prot)	3193	0	0	3324	0	0		
Flt Permitted	0.950							
Satd. Flow (perm)	3193	0	0	3324	0	0		
Right Turn on Red	Yes	Yes				Yes		
Satd. Flow (RTOR)	234							
Link Speed (mph)	30			30	30			
Link Distance (ft)	155			297	139			
Travel Time (s)	3.5			6.8	3.2			
Peak Hour Factor	0.98	0.98	0.90	0.90	0.92	0.92		
Heavy Vehicles (%)	2%	0%	0%	1%	2%	2%		
Adj. Flow (vph)	255	0	0	1098	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	255	0	0	1098	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	26			0	0			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.10	1.10	1.10	1.10	1.10	1.10		
Turning Speed (mph)	30	9	15			9		
Number of Detectors	1			2				
Detector Template	Left			Thru				
Leading Detector (ft)	20			100				
Trailing Detector (ft)	0			0				
Detector 1 Position(ft)	0			0				
Detector 1 Size(ft)	20			6				
Detector 1 Type	Cl+Ex			Cl+Ex				
Detector 1 Channel								
Detector 1 Extend (s)	0.0			0.0				
Detector 1 Queue (s)	0.0			0.0				
Detector 1 Delay (s)	0.0			0.0				
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type	Prot			NA				
Protected Phases	3			2 4			2	4
Permitted Phases								
Detector Phase	3			2 4				

Lanes, Volumes, Timings
 14: Alewife Brook Parkway & Route 2

11/10/2020

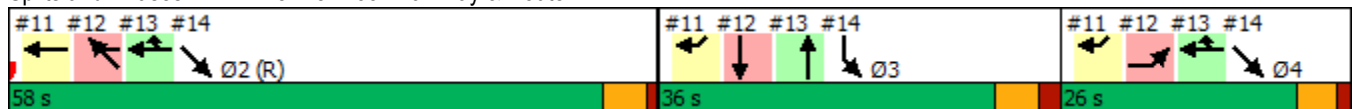


Lane Group	SBL	SBR	SEL	SET	NWT	NWR	Ø2	Ø4
Switch Phase								
Minimum Initial (s)	10.0						10.0	10.0
Minimum Split (s)	19.0						15.0	15.0
Total Split (s)	36.0						58.0	26.0
Total Split (%)	30.0%						48%	22%
Maximum Green (s)	30.0						53.0	21.0
Yellow Time (s)	4.0						4.0	3.5
All-Red Time (s)	2.0						1.0	1.5
Lost Time Adjust (s)	0.0							
Total Lost Time (s)	6.0							
Lead/Lag	Lead							Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0						3.0	3.0
Recall Mode	Max						C-Max	Max
Walk Time (s)	5.0							
Flash Dont Walk (s)	8.0							
Pedestrian Calls (#/hr)	0							
Act Effct Green (s)	30.0			79.0				
Actuated g/C Ratio	0.25			0.66				
v/c Ratio	0.26			0.50				
Control Delay	0.8			11.4				
Queue Delay	0.5			0.0				
Total Delay	1.3			11.4				
LOS	A			B				
Approach Delay	1.3			11.4				
Approach LOS	A			B				

Intersection Summary

Area Type:	CBD
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	16 (13%), Referenced to phase 2:WBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	9.5
Intersection LOS:	A
Intersection Capacity Utilization:	47.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 14: Alewife Brook Parkway & Route 2



Queues

14: Alewife Brook Parkway & Route 2













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Lane Group	SBL	SET
Lane Group Flow (vph)	255	1098
v/c Ratio	0.26	0.50
Control Delay	0.8	11.4
Queue Delay	0.5	0.0
Total Delay	1.3	11.4
Queue Length 50th (ft)	0	210
Queue Length 95th (ft)	1	258
Internal Link Dist (ft)	75	217
Turn Bay Length (ft)		
Base Capacity (vph)	973	2188
Starvation Cap Reductn	391	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.50
Intersection Summary		

Lanes, Volumes, Timings
36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑							
Traffic Volume (vph)	0	840	0	0	642	0	0	0	0	0	0	0
Future Volume (vph)	0	840	0	0	642	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	16	16	16	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	2049	0	0	2153	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	2049	0	0	2153	0	0	0	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		135			215			175			206	
Travel Time (s)		3.1			4.9			4.0			4.7	
Peak Hour Factor	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1000	0	0	662	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1000	0	0	662	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.88	0.88	0.88	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2							
Detector Template		Thru			Thru							
Leading Detector (ft)		100			100							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		6			6							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA			NA							
Protected Phases		4			8							
Permitted Phases												
Detector Phase		4			8							

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Lane Width (ft)				
Lane Util. Factor				
Frt				
Flt Protected				
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 (%)				
Adj. Flow (vph)				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Enter Blocked Intersection				
Lane Alignment				
Median Width(ft)				
Link Offset(ft)				
Crosswalk Width(ft)				
Two way Left Turn Lane				
Headway Factor				
Turning Speed (mph)				
Number of Detectors				
Detector Template				
Leading Detector (ft)				
Trailing Detector (ft)				
Detector 1 Position(ft)				
Detector 1 Size(ft)				
Detector 1 Type				
Detector 1 Channel				
Detector 1 Extend (s)				
Detector 1 Queue (s)				
Detector 1 Delay (s)				
Detector 2 Position(ft)				
Detector 2 Size(ft)				
Detector 2 Type				
Detector 2 Channel				
Detector 2 Extend (s)				
Turn Type				
Protected Phases	2	5	6	9
Permitted Phases				
Detector Phase				

Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.5			20.5							
Total Split (s)		58.0			58.0							
Total Split (%)		58.0%			58.0%							
Maximum Green (s)		56.0			56.0							
Yellow Time (s)		2.0			2.0							
All-Red Time (s)		0.0			0.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		2.0			2.0							
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.0			56.0							
Actuated g/C Ratio		0.64			0.64							
v/c Ratio		0.76			0.48							
Control Delay		16.1			4.0							
Queue Delay		0.0			0.3							
Total Delay		16.1			4.3							
LOS		B			A							
Approach Delay		16.1			4.3							
Approach LOS		B			A							

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 87.3
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 11.4 Intersection LOS: B
 Intersection Capacity Utilization 47.5% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 36: Minuteman Commuter Bikeway & Lake Street



Lanes, Volumes, Timings
 36: Minuteman Commuter Bikeway & Lake Street

11/10/2020

Lane Group	Ø2	Ø5	Ø6	Ø9
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	14.0	18.0
Total Split (s)	24.0	10.0	14.0	18.0
Total Split (%)	24%	10%	14%	18%
Maximum Green (s)	20.0	6.0	10.0	16.0
Yellow Time (s)	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	0.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Min	None	Min	None
Walk Time (s)				5.0
Flash Dont Walk (s)				11.0
Pedestrian Calls (#/hr)				220
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Queues

36: Minuteman Commuter Bikeway & Lake Street

11/10/2020



Lane Group	EBT	WBT
Lane Group Flow (vph)	1000	662
v/c Ratio	0.76	0.48
Control Delay	16.1	4.0
Queue Delay	0.0	0.3
Total Delay	16.1	4.3
Queue Length 50th (ft)	339	53
Queue Length 95th (ft)	477	98
Internal Link Dist (ft)	55	135
Turn Bay Length (ft)		
Base Capacity (vph)	1314	1381
Starvation Cap Reductn	0	221
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.57
Intersection Summary		

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	82	688	70	6	519	1	15	5	7	0	5	108
Future Volume (vph)	82	688	70	6	519	1	15	5	7	0	5	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	14	13	13	13	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989						0.966			0.871	
Flt Protected		0.995			0.999			0.973				
Satd. Flow (prot)	0	1994	0	0	1961	0	0	1786	0	0	1655	0
Flt Permitted		0.896			0.992			0.466				
Satd. Flow (perm)	0	1796	0	0	1948	0	0	855	0	0	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7						9			140	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		215			1126			206			208	
Travel Time (s)		4.9			25.6			4.7			4.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.75	0.75	0.75	0.77	0.77	0.77
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	93	782	80	7	590	1	20	7	9	0	6	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	955	0	0	598	0	0	36	0	0	146	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.92	0.92	0.92	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
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 (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

Lanes, Volumes, Timings
39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.5	20.5		20.5	20.5		9.0	21.0		14.0	14.0	
Total Split (s)	58.0	58.0		58.0	58.0		10.0	24.0		14.0	14.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		10.0%	24.0%		14.0%	14.0%	
Maximum Green (s)	56.0	56.0		56.0	56.0		6.0	20.0		10.0	10.0	
Yellow Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		2.0			2.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		56.0		56.0				7.3			7.3	
Actuated g/C Ratio		0.64		0.64				0.08			0.08	
v/c Ratio		0.83		0.48				0.46			0.55	
Control Delay		8.3		9.9				49.2			16.2	
Queue Delay		0.0		0.0				0.0			0.0	
Total Delay		8.3		9.9				49.3			16.2	
LOS		A		A				D			B	
Approach Delay		8.3		9.9				49.3			16.2	
Approach LOS		A		A				D			B	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	87.3
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	10.4
Intersection LOS:	B
Intersection Capacity Utilization:	90.9%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 39: Brooks Avenue & Lake Street

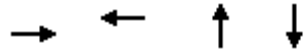
#39 ↑ Ø2 24 s	#36 #39 → → Ø4 58 s	Ø9 18 s
#39 ↙ Ø5 10 s	#39 ↓ Ø6 14 s	#36 #39 ← ← Ø8 58 s

Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	18%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	220
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Queues

39: Brooks Avenue & Lake Street

11/10/2020



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	955	598	36	146
v/c Ratio	0.83	0.48	0.46	0.55
Control Delay	8.3	9.9	49.2	16.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.3	9.9	49.3	16.2
Queue Length 50th (ft)	29	150	14	3
Queue Length 95th (ft)	#57	237	36	37
Internal Link Dist (ft)	135	1046	126	128
Turn Bay Length (ft)				
Base Capacity (vph)	1155	1250	202	313
Starvation Cap Reductn	2	0	0	0
Spillback Cap Reductn	0	13	6	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.48	0.18	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.