Transportation Impact Assessment

Proposed Daycare Center
665 & 711 Blue Hill Avenue (Route 138)
Milton, Massachusetts

Prepared for:

THE GARDNER SCHOOL

Franklin, Tennessee

August 2024

Prepared by:

Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

CONTENTS

FIGURES

TABLES

EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) to identify traffic impacts associated with a proposed daycare center to be located at 665 & 771 Blue Hill Avenue (Route 138) in Milton, Massachusetts (the "Project"). This assessment was prepared in consultation with the Town of Milton and the Massachusetts Department of Transportation (MassDOT) and was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports.

PROPOSED PROJECT

The Project entails the construction of a 16,200 square foot (sf) daycare center with an anticipated enrollment of 195 students. As part of this Project, a total of 57 parking spaces will be provided on-site for employees and visitors (or a parking ratio of 0.29 parking spaces per student). The Project site encompasses approximately 6.85± acres of undeveloped land that is bounded Route 138 to the east and residential properties and areas of open and wooded space to the west, north, and south. Access to the Project site will be provided by way of a new driveway that will intersect the west side of Route 138 approximately 0.13 miles south of Barbara Lane.

EXISTING CONDITIONS

A comprehensive field inventory of traffic conditions on the study area roadways and intersections was conducted in June 2024. In order to assess the existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts and turning movement counts (TMCs) with vehicle classification were conducted in June 2024.

The ATR machine placed on Route 138 at the proposed site driveway location, captured traffic data from June 26 to June 27, 2024 (Wednesday through Thursday, inclusive). The TMCs were collected on June 26, 2024, during the weekday morning and evening peak periods. Based on the MassDOT database, traffic volumes collected in June are 9 percent higher than the average-month conditions. As such, the traffic volumes were not adjusted downward, maintaining a conservative (higher than average) traffic-volume condition. The TMCs were performed when weather conditions were generally clear.

Regarding safety, all study intersections were found to have a motor vehicle crash rate ***below*** the MassDOT average for District 6, where the Project is located. Additionally, no fatalities or accidents involving pedestrians and bicycles were reported at any of the study area intersections over the five-year period reviewed.

FUTURE CONDITIONS

Traffic volumes within the study area were projected to 2031, which reflects a seven-year planning horizon consistent with State traffic study guidelines. A 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area. Based on discussions with the Town of Milton, one proposed residential development was identified. MassDOT was contacted to identify any planned roadway improvements within the study area. One project was noted at the intersection of Route 138 and Bradlee Road (Project Number 612616). However, this project is still in the planning phase, with design and programming not expected within the analysis horizon for this Project.

PROJECT-GENERATED TRAFFIC

The Project is expected to generate 137 vehicle trips (73 entering and 64 exiting) during the weekday morning peak-hour and 131 vehicle trips (62 entering and 69 exiting) during the weekday evening peak-hour. On an average weekday, approximately 399 entering vehicle trips with a similar amount of exiting trips expected over the 24-hour period.

TRAFFIC OPERATIONS ANALYSIS

In order to assess the impact of the proposed Project on the roadway network, traffic operation analyses were conducted at the study intersections under 2024 Existing, 2031 No-Build, and 2031 Build conditions. Based on this assessment, we have concluded the following with respect to the Project:

- The analysis indicates that the proposed daycare center is not expected to significantly impact overall traffic operations at the study area intersections.

- Overall, Project-related impacts are defined as a predicted increase in overall average motorist delay of less than 2.0 seconds with an increase in vehicle queuing of up to 3 vehicles, compared to the future No-Build condition.

RECOMMENDATIONS

The following improvements have been recommended as a part of this evaluation:

Project Access

Access to the Project site will be provided via a full-access driveway onto the west side of Route 138. The following recommendations are offered with respect to the design and operation of this access:

- The Project site driveway is consistent with local zoning requirements[1] that indicate the site driveway should be a minimum of 24 feet in width and be designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.

- The maneuvering aisles within parking areas are consistent with local zoning requirements[2] that indicate the aisles should be a minimum width of 20 feet for two-way traffic.

- The Project site driveway should be placed under STOP-sign (*Manual on Uniform Traffic Control Devices* (MUTCD)[3] R1-1) control, with a painted STOP-bar included.

- All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD.

- Existing trees and vegetation located within the sight triangle areas of the Project site driveway should be selectively trimmed or removed and maintained in order to provide the necessary sightlines for safe operation of the driveway.

- Snow windrows within sight triangle areas of the Project site driveway should be promptly removed where such accumulations would impede sightlines.

Transportation Demand Management

Public transportation services are provided within the study area by the Massachusetts Bay Transit Authority (MBTA). The MBTA provides a fixed-route bus service with a flag stop bus stop on Route 138 between Valentine Road and Barbara Lane, which is located approximately 0.1 mile (a 4-minute walk) north of the Project site.

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

- A transportation coordinator should be designated for the Project to coordinate the elements of the TDM Program.

- Information about public transportation services, including maps, schedules, and fare details, should be posted in a central location and/or made available to employees.

- A "welcome packet" should be provided to employees detailing available public transportation services, bicycling opportunities, and commuter options.

- The designated transportation coordinator should facilitate carpool matching for employees.

- Access to the Bay State Commute program (formerly called NuRide) service should be made available to all employees. Bay State Commute is a free online database service to find carpool companions.

[1]Zoning By-law of the Town of Milton § 275-11.6.E.

[2]Zoning By-law of the Town of Milton § 275-11.8.D.

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

- Specific amenities should be offered to discourage off-site trips, including providing a breakroom equipped with a microwave and refrigerator; offering direct deposit of paychecks; and other such measures to reduce overall traffic volumes and travel during peak-traffic-volume periods.

With implementation of the aforementioned recommendations, including the TDM measures (which are advised but not mandatory), safe and efficient access will be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

CONCLUSIONS

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

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to identify the traffic impacts associated with the proposed daycare center to be located at 665 & 771 Blue Hill Avenue (Route 138) in Milton, Massachusetts (hereafter referred to as the "Project"). This study evaluates the following specific areas as they relate to the Project: i) site access and on-site circulation; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing and future traffic conditions, both with and without the Project.

STUDY METHODOLOGY

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

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian facilities; observations of traffic flow; review of safety characteristics along area roadways; and collection of daily and peak-period traffic counts.

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

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

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in June 2024. The field investigation consisted of an inventory of existing roadway geometrics, pedestrian facilities, traffic volumes, and operating characteristics, as well as posted speed limits and land use information for the roadways that provide access to the Project including Blue Hill Avenue (Route 138) as well as the intersections which are expected to accommodate the majority of Project-related traffic. The study area for the Project is listed below and graphically depicted in Figure 1 (collectively, the "*study area*").

1. Blue Hill Avenue (Route 138) at Bradlee Road and Atherton Street
2. Blue Hill Avenue (Route 138) at Robbins Street

The following describes the study area roadway and intersections:

GEOMETRY

Roadway

Blue Hill Avenue (Route 138)

Route 138 is classified as an urban principal arterial roadway under MassDOT jurisdiction. Within the study area, Route 138 runs in a general north-to-south alignment, providing one general-purpose travel lane in each direction separated by a double-yellow centerline. Within the Project site vicinity, Route 138 cross-sections range from 12 to 13 feet in width. Paved shoulders of variable width (6 to 11 feet) are present along both sides of the roadway marked with bicycle arrows. Within the study area, a sidewalk is not provided. The speed limit is posted at 35 miles per hour (mph). Land use along the corridor is a mix of commercial, residential uses, and areas of open and wooded space.

Intersections

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

Figure 1

Site Location and Study Area Map

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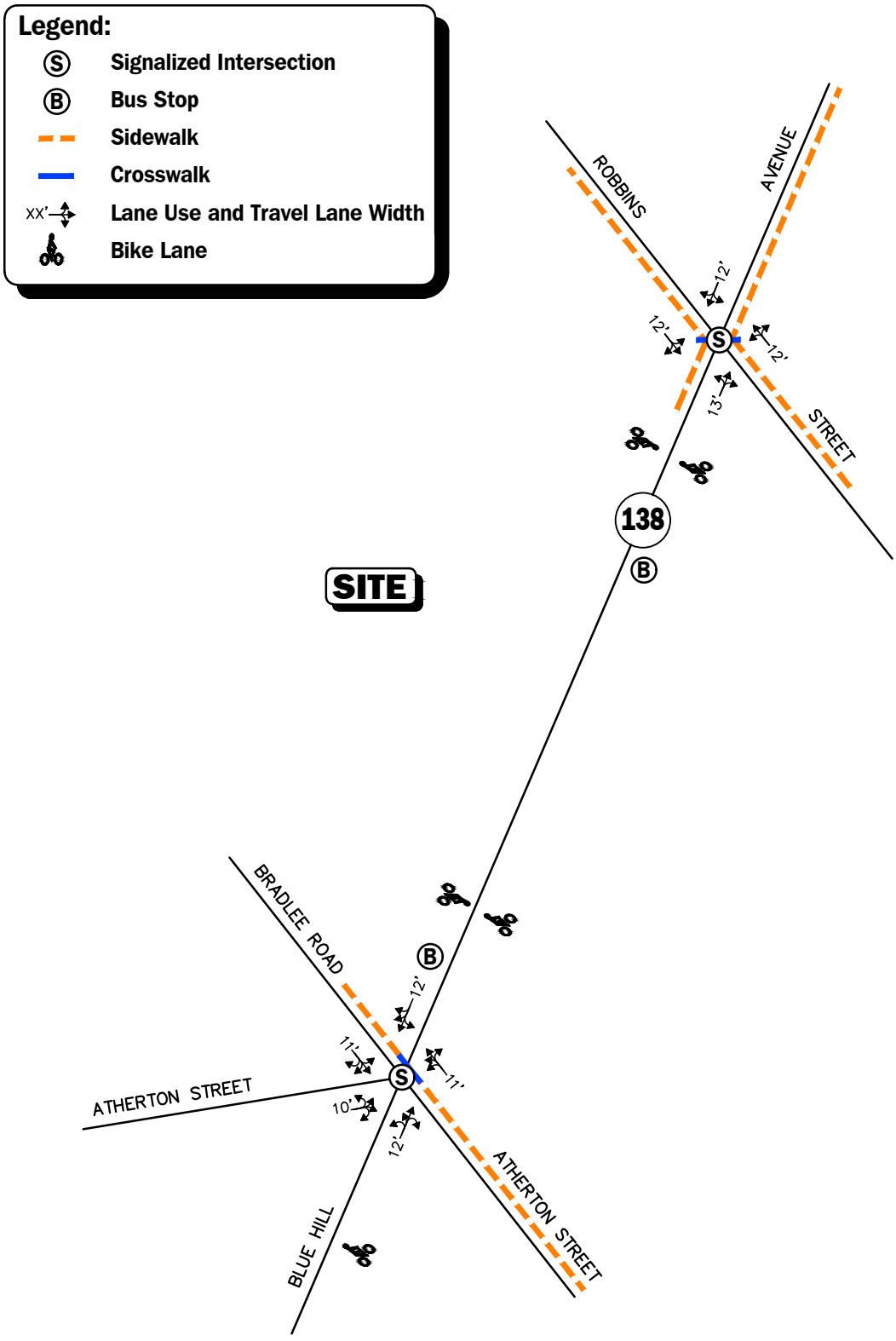

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Figure 2

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

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EXISTING TRAFFIC VOLUMES

In order to establish base traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts and turning movement counts (TMCs) were completed in June 2024. The ATR counts were conducted on Route 138, at the proposed site driveway location, from June 26 through June 27, 2024 (Wednesday through Thursday, inclusive). The TMCs, including the collection of pedestrian and bicycle volumes, were conducted during the weekday morning (7:00 to 9:00 AM) and weekday evening (4:00 to 6:00 PM) peak periods. These times were chosen to represent the peak-traffic-volume hours for both the Project and the adjacent roadway network. The TMCs were performed when weather conditions were generally clear.

Traffic-Volume Adjustments

In order to develop 2024 Existing traffic-volume conditions, MassDOT weekday seasonal factors for Urban Groups 3 (other principal arterials) were reviewed.[4] Based on a review of this data, it was determined that traffic volumes for the month of June are 9 percent higher than the average-month conditions. As such, the traffic volumes were not adjusted downward, maintaining a conservative (higher than average) traffic-volume condition.

MassDOT no longer requires pandemic-related adjustment of traffic counts performed after March 2022 except in locations where the predominant land use consists of offices or similar uses.[5] Given that the predominant land use within the study area is residential, no further adjustment is necessary.

The 2024 Existing traffic volumes are summarized in Table 1, with the weekday morning and evening peak-hour traffic volumes graphically depicted in Figure 3 and Figure 4, respectively. It is important to note that the peak-hour traffic volumes presented in Table 1 were obtained from the TMCs and are reflected in the aforementioned figures.

Table 1
2024 EXISTING ROADWAY TRAFFIC-VOLUME SUMMARY

	Weekday	Weekday Morning Peak-Hour			Weekday Evening Peak-Hour		
Location	Daily Volume (vpd)[a]	Volume (vph)[b]	Percent of Daily Traffic[c]	Predominant Flow	Volume (vph)	Percent of Daily Traffic	Predominant Flow
Route 138, at the proposed site driveway	13,585	1,016	7.5	54% NB	948	7.0	61% NB

[a]Average weekday traffic in vehicles per day, based on ATR data collected in June 2024.
[b]Two-way peak-hour volume expressed in vehicles per hour.
[c]The percent of daily traffic that occurs during the peak-hour.
NB = northbound.

As can be seen in Table 1, Route 138 was found to accommodate approximately 13,585 vehicles per day (vpd) on an average weekday with 1,016 vehicles per hour (vph) during the weekday

[4]MassDOT statewide Traffic Data Collection; 2019 Weekday Seasonal Factors, Groups U3.
[5]*25% Design Submission Guidelines*; MassDOT Highway Division, Traffic and Safety Engineering; Revised May 31, 2022.

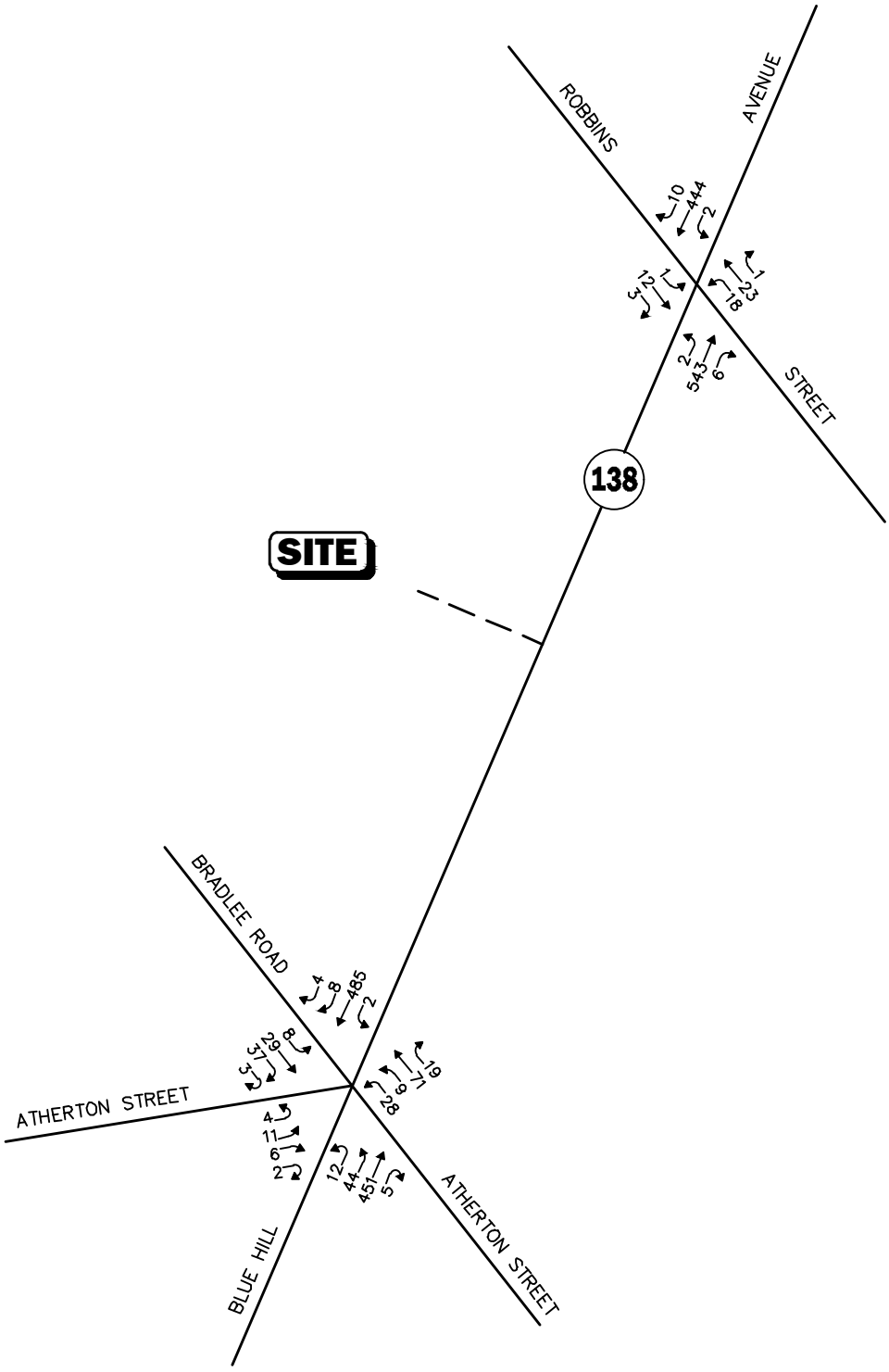

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Figure 3

2024 Existing
Weekday Morning
Peak-Hour Traffic Volumes

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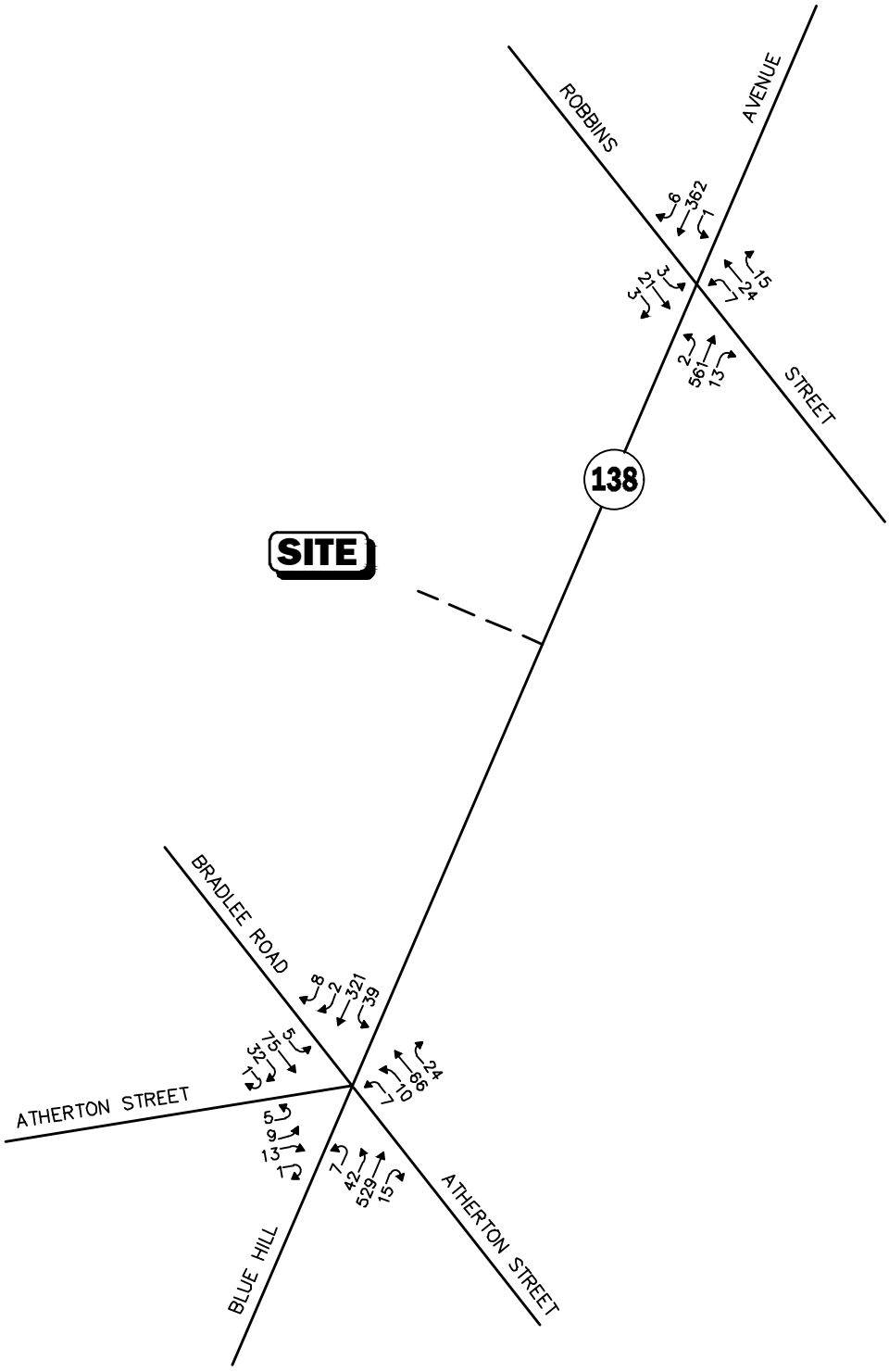

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Figure 4

2024 Existing
Weekday Evening
Peak-Hour Traffic Volumes

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morning peak-hour and 948 vph during the weekday evening peak-hour. The predominant flow on Route 138 during both peak hours is in the northbound direction.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in June 2024. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study area intersections. As detailed on Figure 2, sidewalks are provided along the east side of Route 138 north of Robbins Street and along the west side of Route 138 for about 600 feet south of Robbins Street, with marked crosswalks provided for crossing one or more legs of the study area intersections. Sidewalks are provided along the north side of Robbins Street for about 300 feet west of Route 138 and about 750 feet east of Route 138. Sidewalks are provided along the north side of Bradlee Road for about 250 feet west of Route 138 and along the north side of Atherton Street east of Route 138. Pedestrian traffic signal equipment and phasing are provided as a part of the traffic signal systems at both signalized intersections.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Massachusetts Bay Transit Authority (MBTA). The MBTA provides a fixed-route bus service with a flag stop bus stop on Route 138 between Valentine Road and Barbara Lane, which is located approximately 0.1 mile (a 4-minute walk) to the north of the Project site. Table 2 summarizes the characteristics of these services. Schedule and fare information for the fixed-route service are provided in the Appendix.

Table 2
PUBLIC TRANSPORTATION SERVICES

	Weekday		Saturday	
Service	Hours of Operation	Headway (minutes)	Hours of Operation	Headway (minutes)
Route 716	5:45 AM – 7:16 PM	90 – 95	8:00 AM – 5:57 PM	65

[a]Based on latest schedule and route information available from MBTA.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed in conjunction with the ATR counts. The speed data was collected at Route 138, along the proposed Project site frontage. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 138	
	Northbound	Southbound
Mean Travel Speed (mph)	35	36
85th Percentile Speed (mph)	39	39
Speed Limit (mph)	35	35

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Route 138 in the vicinity of the Project site was found to be 35 and 36 miles per hour (mph) in the northbound and southbound directions, respectively. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 39 mph in both directions. Overall, the speed study indicates the speed of travel for vehicles traveling in each direction slightly above the 35 mph posted speed limit. The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances and is often used in establishing posted speed limits.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Safety Management/Traffic Operations Unit for the most recent five-year period available (2017 through 2021) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized in Table 4 by intersection, type, weather condition, lighting condition, pavement condition, and severity.

As can be seen in Table 4, the intersection of Route 138 at Bradlee Road and Atherton Street experienced 21 accidents over the five-year review period, averaging 4.2 accidents per year. The majority of these accidents were rear-end collisions, occurred on dry pavement, during daylight, in clear weather, and resulted in property damage only. The intersection of Route 138 at Ribbons Street experienced 16 accidents over the five-year review period, averaging 3.2 accidents per year. Similarly, the majority of these accidents were rear-end collisions, occurred on dry pavement, during the night (lighted road), in clear weather, and resulting in property damage.

The calculated motor vehicle crash rate for these locations was found to be ***below*** both the MassDOT statewide and District averages for the MassDOT Highway Division District where these intersections are located (District 6). The intersection of Route 138 at Bradlee Road and Atherton Street is scheduled to be reconstructed in the future.

A review of the MassDOT statewide High Crash Location List indicates that there are no locations within the study area that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as a high crash cluster location. No fatalities were reported at any of the study area intersections over the five-year period reviewed. The detailed MassDOT Crash Rate Worksheets are provided in the Appendix.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY

Scenario	Route 138 at Bradlee Road and Atherton Street	Route 138 at Robbins Street
Year:		
2017	5	1
2018	1	6
2019	4	2
2020	2	3
2021	9	4
Total	21	16
Average[a]	4.20	3.20
Crash Rate[b]	0.70	0.62
Significant[c]	No	No
Type:		
Angle	5	1
Rear-End	9	10
Head-On	3	0
Sideswipe	2	2
Fixed Object	0	3
Pedestrian	0	0
Bicyclist	0	0
Unknown/Other	2	0
Total	21	16
Weather Conditions:		
Clear	16	11
Cloudy/Rain	5	5
Snow/Ice	0	0
Fog	0	0
Unknown/Other	0	0
Total	21	16
Lighting Conditions:		
Daylight	14	7
Dawn/Dusk	0	0
Dark (lit)	7	9
Dark (unlit)	0	0
Unknown/Other	0	0
Total	21	16
Pavement Conditions :		
Dry	17	10
Wet	2	5
Snow/Ice	0	1
Unknown/Other	2	0
Total	21	16
Severity:		
Property Damage Only	11	10
Personal Injury	8	5
Fatality	0	0
Unknown/Other	2	1
Total	21	16

Source: MassDOT Crash Data, 2017 through 2021.
[a]Average number of crashes over a five-year period.
[b]Crash rate per million entering vehicles (mev).
[c]Significant if crash rate > 0.71 for signalized intersections (MassDOT District 6 rates) or if rate >0.78 crashes per million vehicles (Statewide).

FUTURE CONDITIONS

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

FUTURE TRAFFIC GROWTH

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

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

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

General Background Growth

Traffic-volume data compiled by MassDOT from permanent count stations located in Milton were reviewed in order to determine general traffic growth trends in the area. This data indicates that traffic volumes have fluctuated over the past several years, with the average traffic growth rate found to be approximately 0.49 percent. In order to provide a prudent planning condition for the Project and to maintain consistency with traffic studies prepared for other developments in this area, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Specific Development by Others

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

- ***Proposed Multifamily Residential Development – 582 Blue Hill Avenue.*** This project entails construction of a 118-unit multifamily residential building to be located at 582 Blue Hill Avenue in Milton, Massachusetts. Traffic volumes from the *Traffic Impact and Access Study*[6] submitted by MDM Engineering Company Inc. dated June 2020 were added to the future condition networks.

No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate of 1.0 percent.

Planned Roadway Improvements

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

- ***Intersection Improvements at Route 138 at Bradlee Road (Project # 612616).*** This project entails reconfiguration of the five-legged intersection into a roundabout. This project is planned to be funded through the 2027 Transportation Improvement Program for the Boston Metropolitan Planning Organization with construction scheduled to begin by spring 2028. At present, the project is in the planning stage, and the 25% Design plans are not yet available. As such, no improvements were assumed to be complete under the 2031 future year conditions.

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

No-Build Traffic Volumes

The 2031 No-Build peak-hour traffic-volume networks were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2024 Existing peak-hour traffic volumes plus traffic volumes associated with the identified specific development project by others. The resulting 2031 No-Build weekday morning and evening peak-hour traffic-volume networks are shown on Figure 5 and Figure 6, respectively.

PROJECT-GENERATED TRAFFIC

As proposed, the Project will entail the construction of a 16,200± square foot (sf) childcare facility with an anticipated enrollment of 195 students. In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published by the Institute of Transportation Engineers

[6] *Traffic Impact and Access Study*, 582 Blue Hill Avenue, Milton, Massachusetts; MDM Engineering Company Inc.; June 2020.

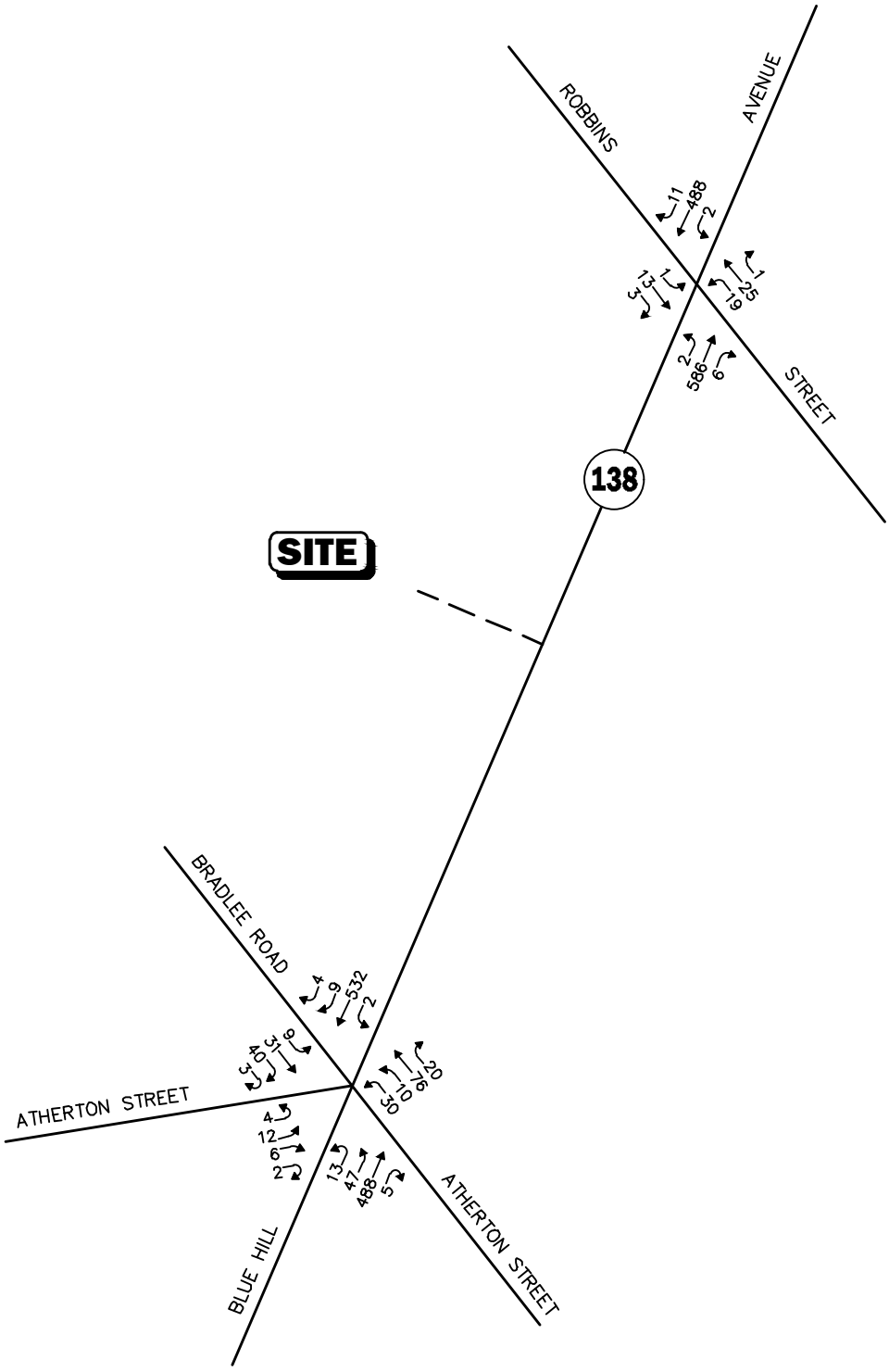

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Figure 5

2031 No-Build
Weekday Morning
Peak-Hour Traffic Volumes

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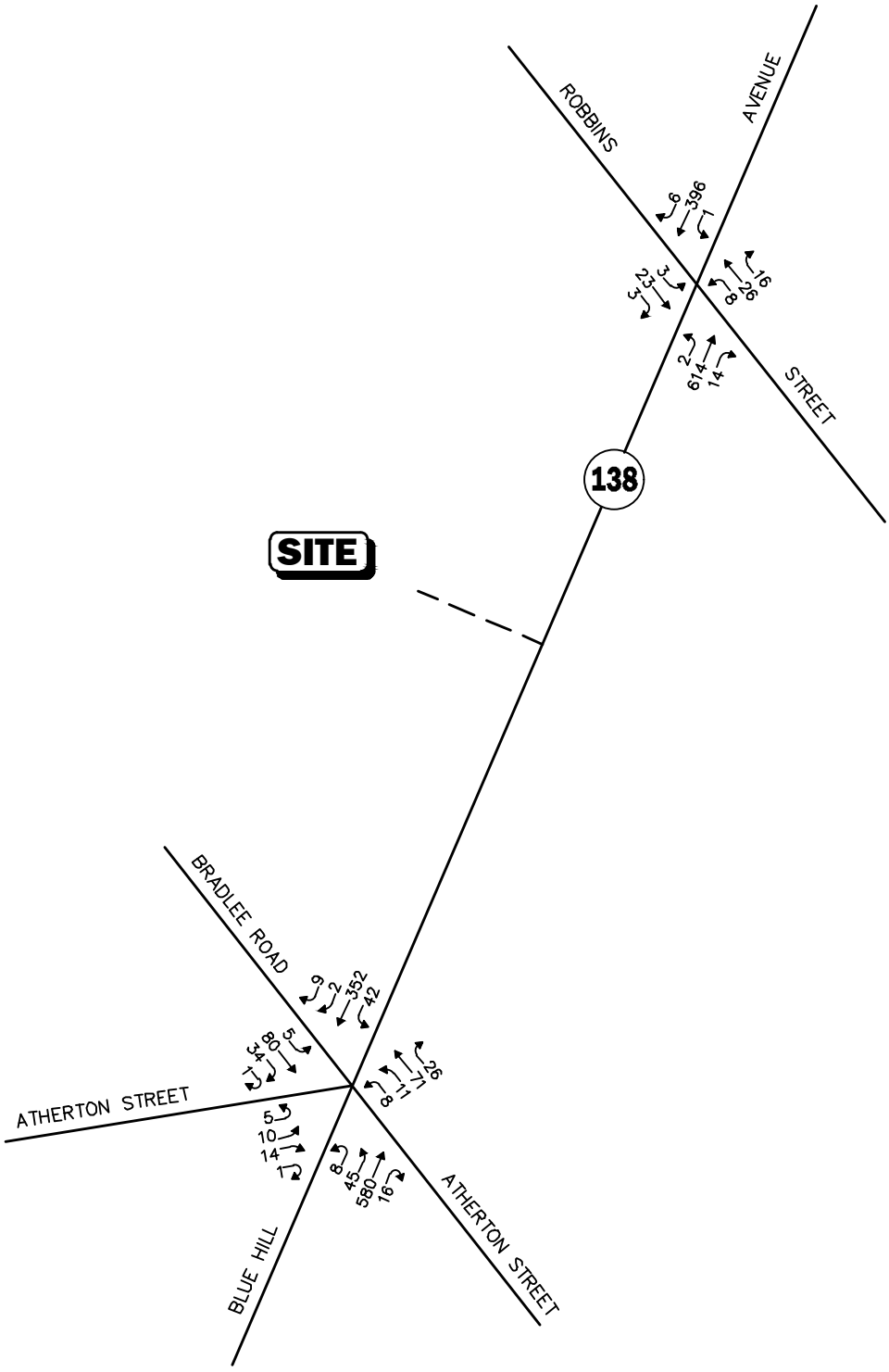

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Figure 6

2031 No-Build
Weekday Evening
Peak-Hour Traffic Volumes

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(ITE)[7] for similar land uses as that proposed were used. The ITE Land Use Code (LUC) 565, *Day Care Center* was used. Trip-generation calculations were performed for a typical weekday, as well as the weekday morning and weekday evening peak hours, the critical time periods for Project-related traffic activity. The vehicle trips are summarized in Table 5.

Table 5
PROPOSED SITE TRIP-GENERATION SUMMARY

Time Period/Direction	Total Vehicle Trips (195 Students)[a]
Weekday Daily	
Entering	399
Exiting	399
Total	798
Weekday Morning Peak-Hour:	
Entering	73
Exiting	64
Total	137
Weekday Evening Peak-Hour:	
Entering	62
Exiting	69
Total	131

[a]Based on ITE LUC 565, *Day Care Center*.

As shown in Table 5, the Project is expected to generate approximately 137 vehicle trips (73 entering and 64 exiting) during the weekday morning peak-hour and 131 vehicle trips (62 entering and 69 exiting) during the weekday evening peak-hour. On an average weekday, approximately 399 entering vehicle trips with a similar amount of exiting trips expected over the 24-hour period.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of generated trips to and from the Project site was developed based on a review of existing traffic patterns along the study area roadways and at the study intersections. The general trip distribution for the Project is summarized in Table 6 and graphically depicted in Figure 7 and Figure 8 for the weekday morning and evening peak-hours, respectively.

The additional traffic expected to be generated by the Project was assigned to the study area roadway network as shown on Figures 9 and 10.

[7]*Trip Generation Manual,* 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

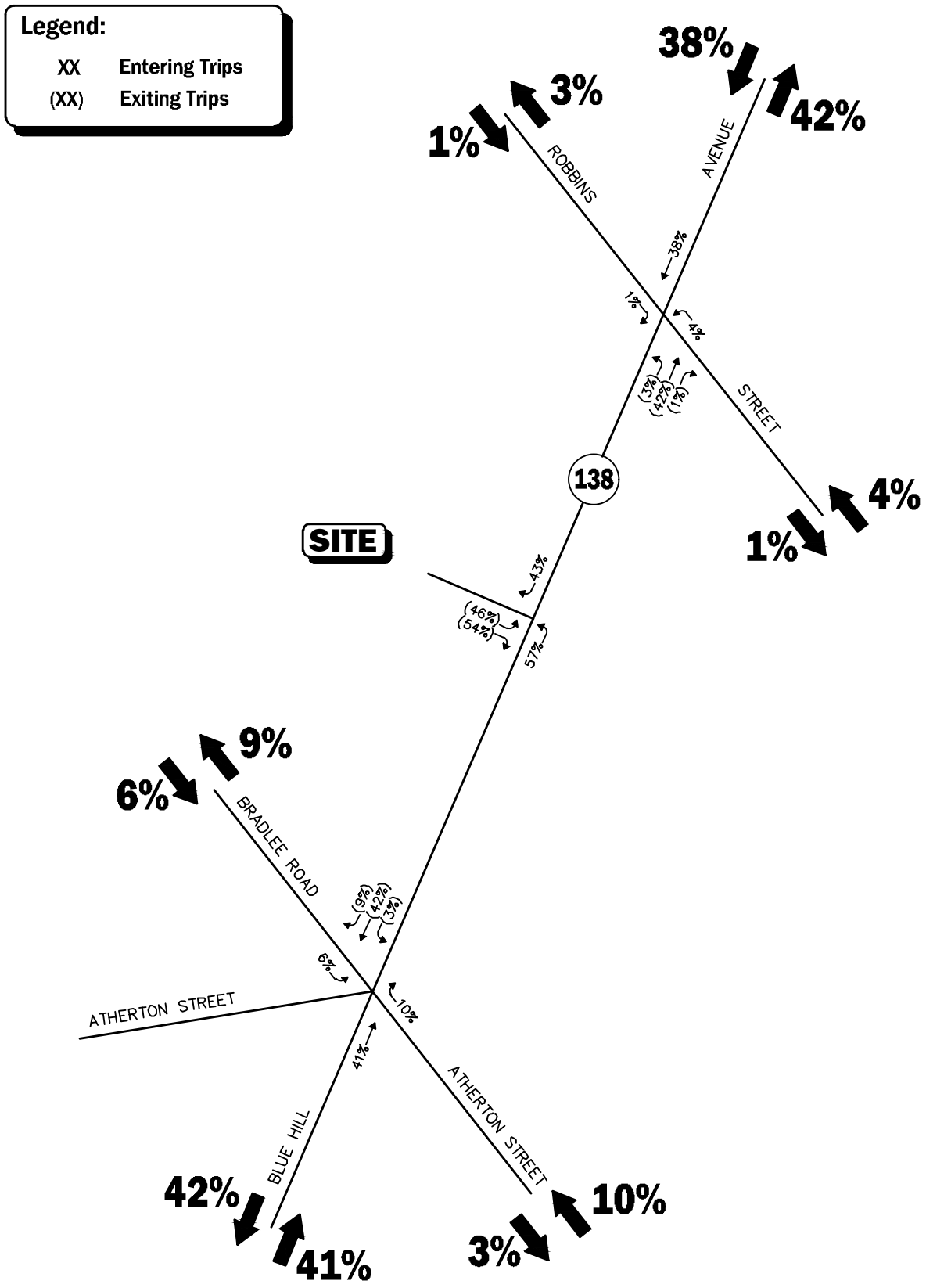

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Figure 7

Trip Distribution Map
Weekday Morning
Peak-Hour Traffic Volumes

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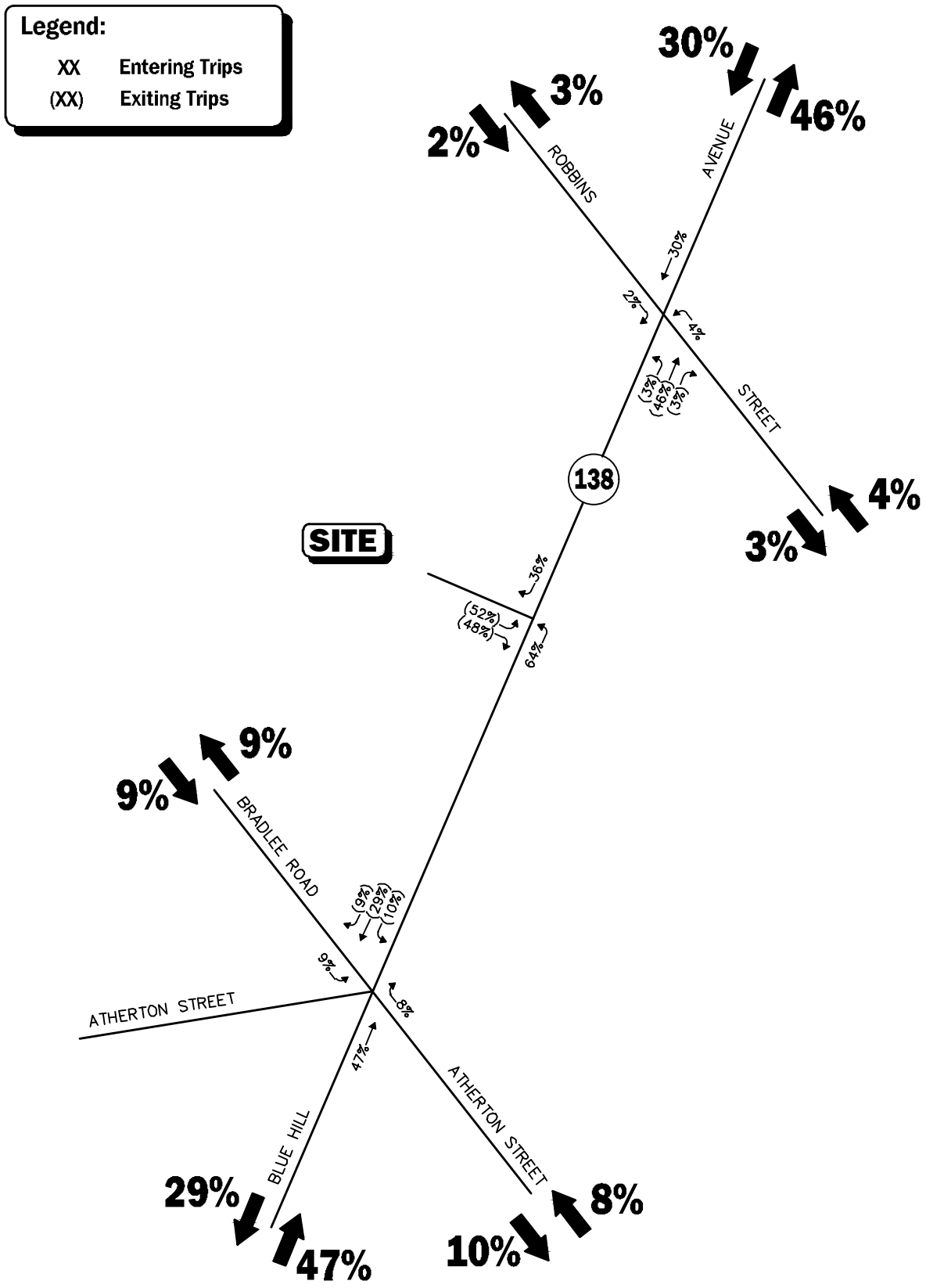

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Figure 8

Trip Distribution Map
Weekday Evening
Peak-Hour Traffic Volumes

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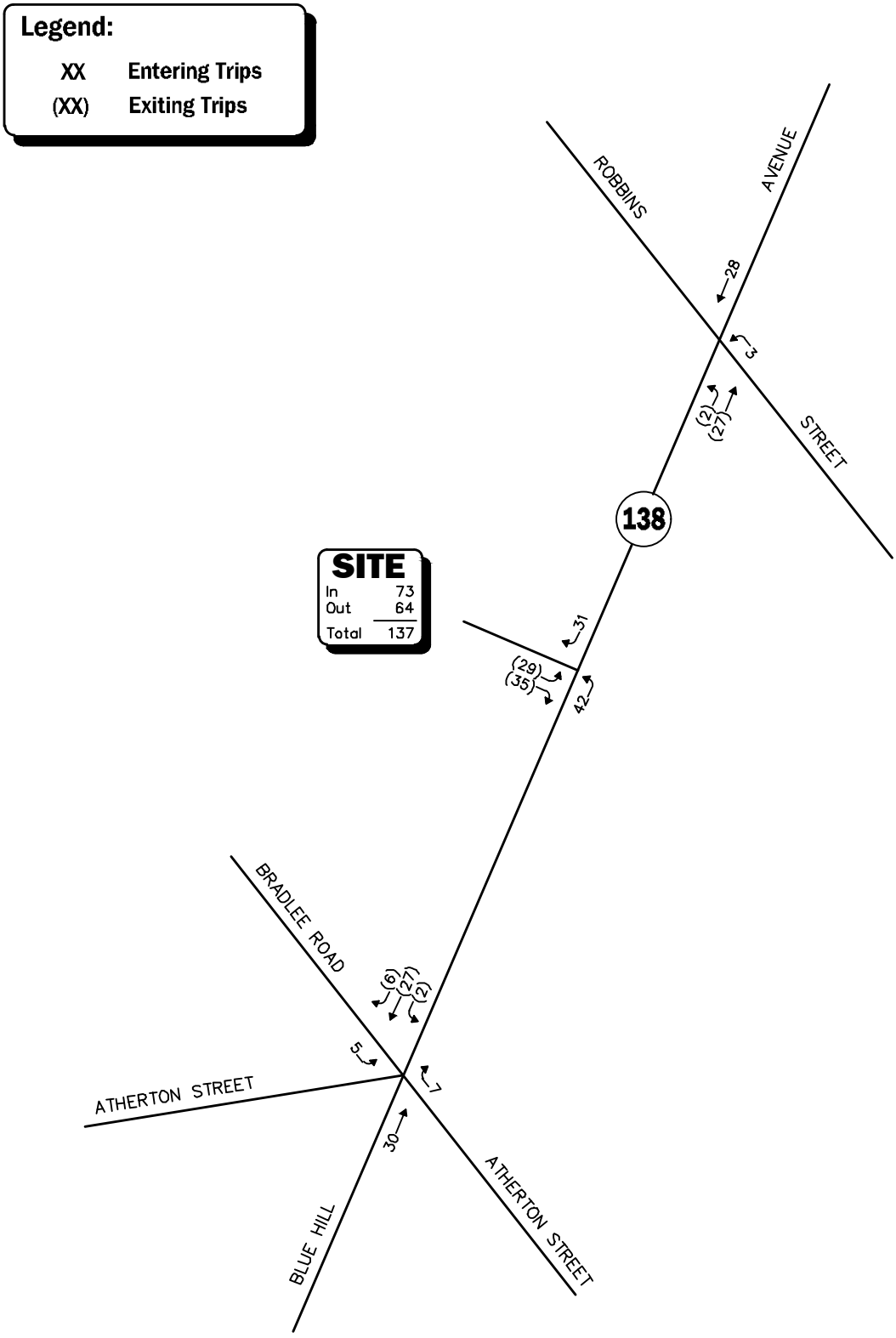

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Figure 9

Site-Generated Weekday Morning Peak-Hour Traffic Volumes

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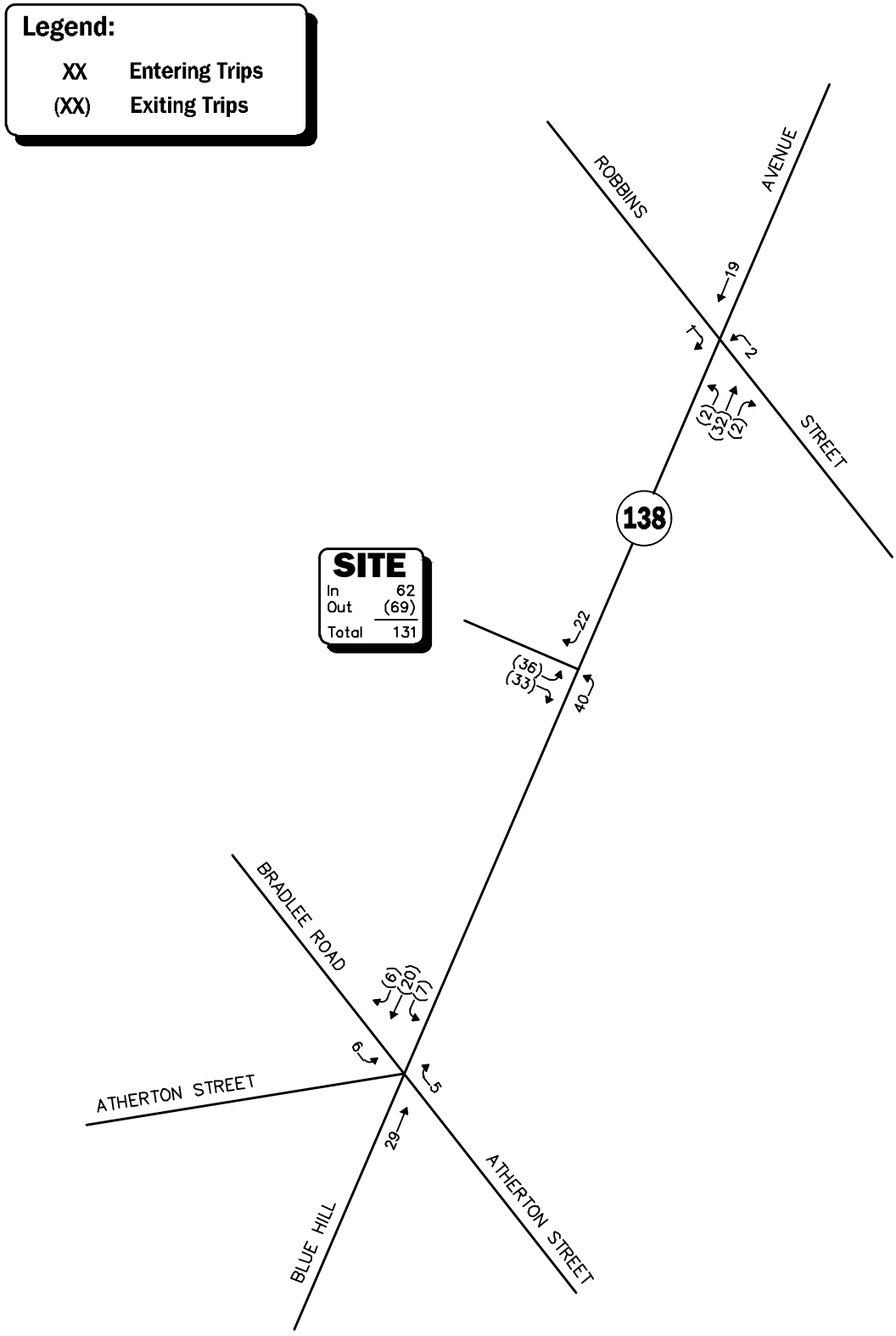

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Figure 10

Site-Generated Weekday Evening Peak-Hour Traffic Volumes

Vanasse & Associates inc

Table 6
TRIP-DISTRIBUTION SUMMARY

Roadway	Direction (To/From)	Weekday Morning Percentage		Weekday Evening Percentage	
		To	From	To	From
Route 138	North	42	38	46	30
Route 138	South	42	41	29	47
Robbins Street	East	1	4	3	4
Robbins Street	West	3	1	3	2
Atherton Street	East	3	10	10	8
Bradlee Road	West	9	6	9	9
TOTAL		**100**		**100**	

FUTURE TRAFFIC VOLUMES – BUILD CONDITION

The 2031 Build condition networks consist of the 2031 No-Build traffic volumes with the anticipated Project-generated traffic added to them. The 2031 Build weekday morning and evening peak-hour traffic-volume networks are graphically depicted on Figure 11 and Figure 12, 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 changes are a result of the construction of the project.

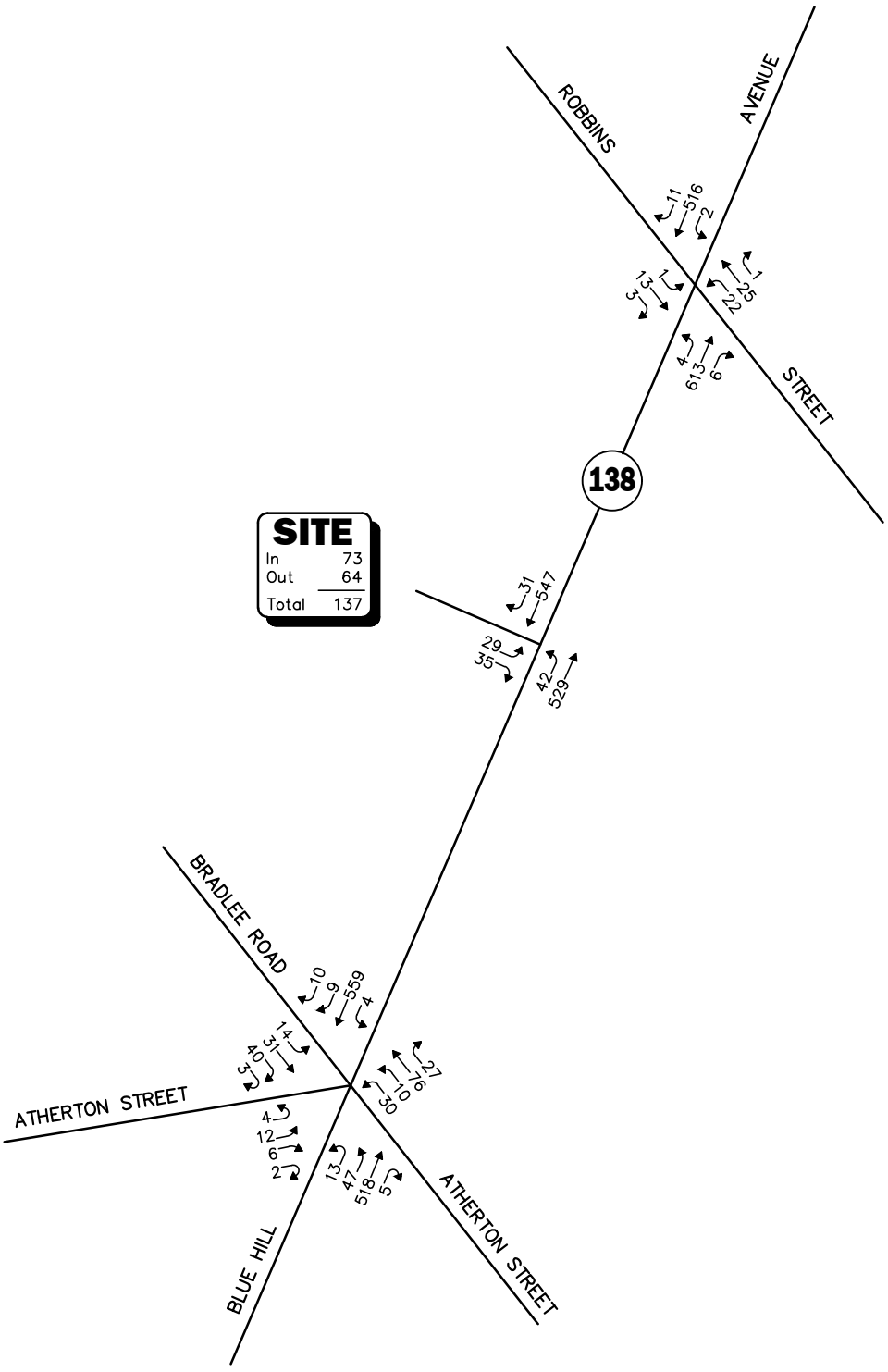

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Figure 11

2031 Build
Weekday Morning
Peak-Hour Traffic Volumes

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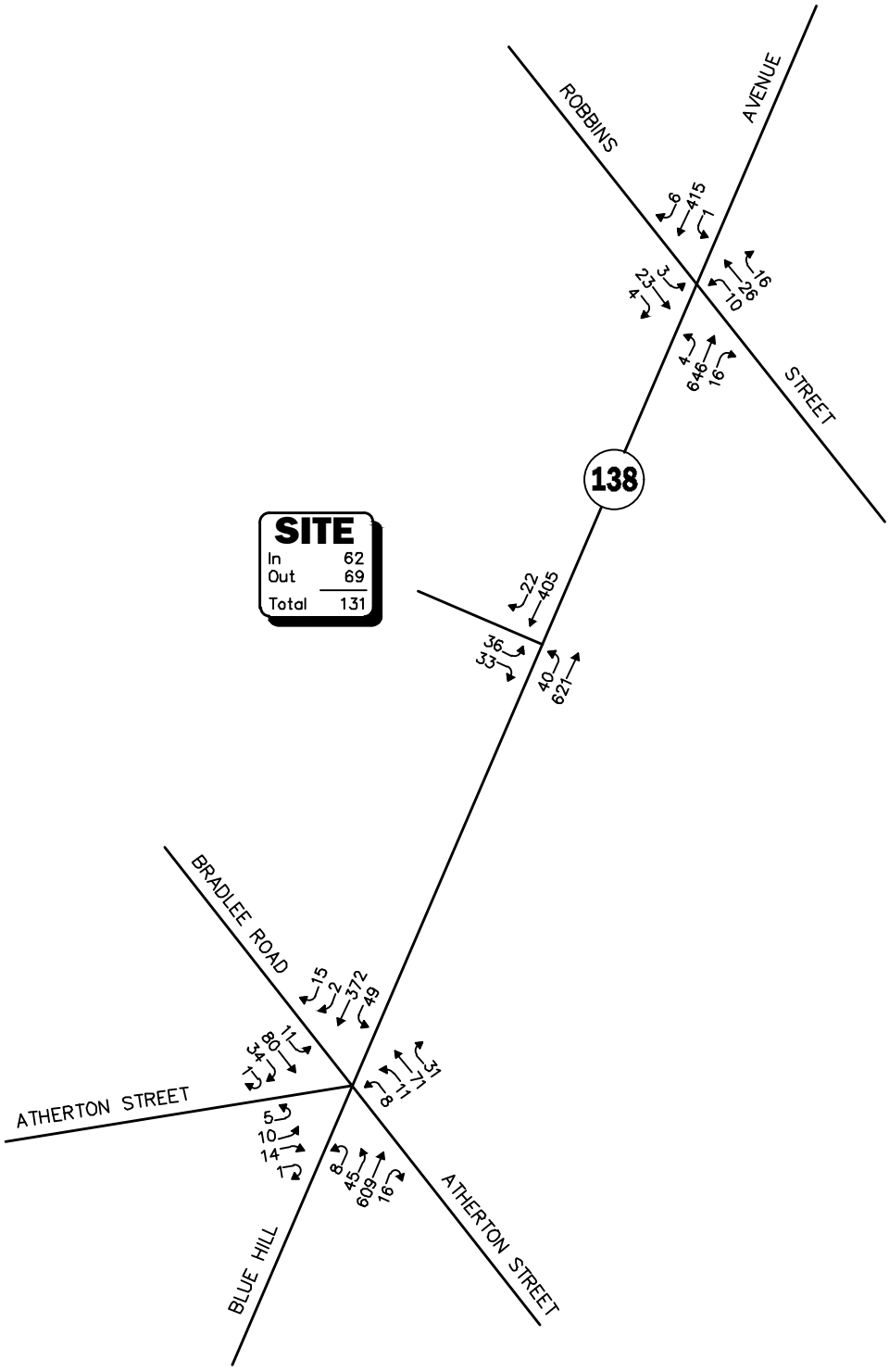

Not To Scale

Figure 12

2031 Build
Weekday Evening
Peak-Hour Traffic Volumes

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Table 7
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak-Hour	2031 No-Build	2031 Build	Traffic-Volume Change Over No-Build	Percent Change Over No-Build
Route 138, north of Robbins Street:				
Weekday Morning	1,089	1,144	55	5.1
Weekday Evening	1,036	1,087	51	4.9
Route 138, south of Atherton Street:				
Weekday Morning	1,157	1,214	57	4.9
Weekday Evening	1,044	1,093	49	4.7
Robbins Street, east of Route 138:				
Weekday Morning	66	69	3	4.5
Weekday Evening	88	92	4	4.5
Robbins Street, west of Route 138:				
Weekday Morning	55	57	2	3.6
Weekday Evening	63	66	3	4.8
Atherton Street, east of Route 138:				
Weekday Morning	180	189	9	5.0
Weekday Evening	268	280	12	4.5
Bradlee Road, west of Route 138:				
Weekday Morning	214	225	11	5.1
Weekday Evening	250	262	12	4.8

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersection with Route 138 in accordance with MassDOT and the American Association of State Highway and Transportation Officials (AASHTO)[8] recommendations. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance recommended to be provided by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD is the sight distance recommended to be provided by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. ***In accordance with AASHTO standards, if the measured ISD is at least equal to the recommended SSD value for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions.*** Table 8 presents the measured SSD and ISD at the subject intersection.

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

Table 8
SIGHT DISTANCE MEASUREMENTS[a]

Intersection/Sight Distance Measurement	Recommended Minimum Distances (Feet)[d] 85th Percentile Speed (39 mph)	Measured
Route 138 at the Project site driveway		
Stopping Sight Distance[b]:		
Route 138 approaching from the north (southbound)	319	650+
Route 138 approaching from the south (northbound)	268	550+
Intersection Sight Distance[c]:		
Looking to the north from the Project site driveway (right turn)	375	650+
Looking to the south from the Project site driveway (left turn)	430	650+

[a]Recommended values obtained from *A Policy on Geometric Design of Highways and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018.
[b]The proposed site driveway will intersect Route 138 on a graded section. Vehicles traveling along site frontage will experience a downward and upward slope of approximately 6%. Minimum distances were adjusted to account for the existing road grading.
[c]Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.
[d]Based on the 85th percentile speed found for each direction.

As can be seen in Table 8, the sight distance at the intersection of the Project site driveway with Route 138 was found to exceed the minimum for both ISD and SSD in both directions, based on the 85th percentile vehicle travel speed of 39 mph.

TRAFFIC OPERATIONS ANALYSIS

Measuring existing and future traffic volumes quantify traffic flow within the study area. To assess quality of flow, roadway capacity, and vehicle queue analyses were conducted under Existing, No-Build, and Build traffic-volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.[9] The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

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

Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

[9]The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual 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 2000 *Highway Capacity Manual*[10] and implemented as a part of the Synchro™ 12 software as required by MassDOT. 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 9 summarizes the relationship between level-of-service and percentile delay. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 9
LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS[a]

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

[a]Source: *Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2000; page 16-2.

[10]*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000.

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 control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the *Highway Capacity Manual 7th Edition.* Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the *Highway Capacity Manual 7th Edition.* Table 10 summarizes the relationship between level of service and average control delay.

Table 10
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[a]

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

[a]Source: *Highway Capacity Manual 7th Edition*; Transportation Research Board; Washington, DC; 2022; page 20-6.

Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection's ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro® intersection capacity analysis software. The Synchro® vehicle queue analysis methodology is a simulation-based model which reports the number of vehicles that experience a delay of 6 seconds or more at an intersection. For signalized intersections, Synchro® reports both the average (50^{th} percentile) and the 95^{th} percentile vehicle queue. For unsignalized intersections, Synchro® reports the 95^{th} percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95^{th} percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately 3 minutes out of 60 minutes during the peak one hour of the day (during the remaining 57 minutes, the vehicle queue length will be less than the 95^{th} percentile queue length).

ANALYSIS RESULTS

Level-of-service analyses were conducted for 2024 Existing, 2031 No-Build, and 2031 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 Tables 11 and 12.

Signalized Intersection Analysis Results

Route 138 at Bradlee Road and Atherton Street

Under 2024 Existing and 2031 No-Build conditions, this intersection operates at an overall LOS C during the weekday morning and evening peak hours. No changes to the overall level of service under 2031 Build conditions due to the addition of Project traffic. The vehicle queues are expected to increase by less than 3 vehicles on any of the approaches due to the addition of Project traffic.

Route 138 at Robbins Street

Under 2024 Existing conditions, this intersection operates at an overall LOS B during the weekday morning and evening peak hours. Under 2031 No-Build conditions, this intersection operates at an overall LOS C during the weekday morning peak hour and LOS B during the weekday evening peak hour. Under 2031 Build conditions, the Project results in an increase of 0.8 seconds to the intersection, causing a change in operation from LOS B to LOS C during the weekday evening peak hour. During the weekday morning peak hour, there is no change to the overall level of service due to the addition of Project traffic. The vehicle queues are expected to increase by less than 2 vehicles on any of the approaches due to the addition of Project traffic.

Unsignalized Intersections

Route 128 at the Project site driveway

Under 2031 Build conditions, the critical movements at this intersection operate at LOS C or better during the weekday morning and evening peak hours. Under 2031 Build conditions, the average vehicle queue is 1 vehicle during the weekday morning and evening peak hours.

Table 11
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

	2024 Existing				2031 No-Build				2031 Build			
Signalized Intersection/Peak-Hour/Movement	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg/95th	V/C	Delay	LOS	Queue Avg/95th
Route 138 at Bradlee Road and Atherton Street												
Weekday Morning:												
Bradlee Road EB LT/TH/RT/HRT	0.35	31.3	C	1/4	0.36	31.2	C	2/4	0.39	31.4	C	2/4
Atherton Street WB HLT/LT/TH/RT	0.62	36.7	D	3/6	0.64	37.4	D	3/6	0.66	38.2	D	3/7
Route 138 NB HLT/LT/TH/RT	0.63	17.3	B	7/18	0.69	19.4	B	8/21	0.74	21.3	C	9/23
Route 138 SB LT/TH/RT/HRT	0.57	15.5	B	7/16	0.63	17.2	B	8/19	0.69	18.7	B	9/22
Atherton Street NEB HLT/LT/RT/HRT	0.38	38.9	D	1/1	0.40	39.3	D	1/1	0.40	39.4	D	1/1
Overall	--	**20.2**	**C**	--	--	**21.7**	**C**	--	--	**23.1**	**C**	--
Weekday Afternoon:												
Bradlee Road EB LT/TH/RT/HRT	0.57	35.0	D	3/5	0.58	35.1	D	3/5	0.61	35.8	D	3/6
Atherton Street WB HLT/LT/TH/RT	0.58	35.4	D	2/5	0.61	36.6	D	3/5	0.63	36.8	D	3/5
Route 138 NB HLT/LT/TH/RT	0.69	18.1	B	8/23	0.76	21.4	C	10/26	0.81	23.8	C	11/28
Route 138 SB LT/TH/RT/HRT	0.51	14.2	B	5/12	0.56	15.6	B	6/13	0.63	17.5	B	7/15
Atherton Street NEB HLT/LT/RT/HRT	0.39	38.5	D	1/2	0.40	39.0	D	1/2	0.41	39.3	D	1/2
Overall	--	**20.8**	**C**	--	--	**22.9**	**C**	--	--	**24.5**	**C**	--
Route 138 at Robbins Street												
Weekday Morning:												
Robbins Street EB LT/TH/RT	0.13	47.2	D	1/1	0.14	47.2	D	1/1	0.14	47.2	D	1/1
Robbins Street WB LT/TH/RT	0.51	52.1	D	1/3	0.53	52.9	D	2/3	0.57	54.8	D	2/3
Route 138 NB LT/TH/RT	0.57	17.1	B	11/15	0.62	18.1	B	12/17	0.65	19.1	B	13/18
Route 138 SB LT/TH/RT	0.47	15.2	B	8/12	0.52	16.1	B	9/13	0.55	16.8	B	10/14
Overall	--	**18.5**	**B**	--	--	**19.4**	**B**	--	--	**20.2**	**C**	--
Weekday Afternoon:												
Robbins Street EB LT/TH/RT	0.28	48.8	D	1/2	0.30	48.8	D	1/2	0.30	48.7	D	1/2
Robbins Street WB LT/TH/RT	0.40	50.2	D	1/2	0.44	50.6	D	1/3	0.48	51.2	D	1/3
Route 138 NB LT/TH/RT	0.53	16.1	B	10/14	0.59	17.3	B	11/16	0.63	18.2	B	12/18
Route 138 SB LT/TH/RT	0.42	14.1	B	7/9	0.46	14.9	B	8/10	0.48	15.3	B	8/10
Overall	--	**18.2**	**B**	--	--	**19.1**	**B**	--	--	**19.7**	**B**	--

[a]Volume-to-capacity ratio.
[b]Control (signal) delay per vehicle in seconds.
[c]Level of service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; NEB = northeastbound; HLT = hard-left-turning movements; LT = left-turning movements; TH = through movements; RT = right-turning movements; HRT = hard-right-turning movements.

Table 12
UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Unsignalized Intersection/	2024 Existing				2031 No-Build				2031 Build			
Critical Movement/Peak-Hour	Demand[a]	Delay[b]	LOS[c]	Queue[d]	Demand	Delay	LOS	Queue	Demand	Delay	LOS	Queue
Route 138 at the Project Site Driveway												
Weekday Morning:												
Project site driveway EB LT/RT									64	22.8	C	1
Route 138 NB LT	Intersection only exists under Build conditions.								42	8.9	A	1
Weekday Evening:												
Project site driveway EB LT/RT									69	23.5	C	1
Route 138 NB LT									40	8.5	A	1

[a]Demand in vehicles per hour.
[b]Delay in seconds per vehicle.
[c]Level of service.
[d]95th percentile queue length (veh).
NB = northbound; EB = eastbound; LT = left-turning movements; RT = right-turning movements.

RECOMMENDATIONS AND CONCLUSIONS

VAI has prepared this TIA to identify traffic impacts associated with a proposed daycare center to be located at 665 & 711 Route 138 in Milton, Massachusetts. This study was prepared in accordance with MassDOT Guidelines for TIAs and was conducted pursuant to the standards of the traffic engineering and transportation planning professions for the preparation of such reports. Based on the results of this study, the following can be concluded:

- No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study area intersections.

- Using trip-generation statistics published by the ITE, the Project is expected to generate 137 vehicle trips during the weekday morning peak-hour and 131 vehicle trips during the weekday evening peak-hour. On an average weekday, approximately 399 entering vehicle trips with a similar amount of exiting trips expected over the 24-hour period.

- The sight distances at the intersection of the Project site driveway with Route 138 were found to exceed the recommended values for SSD and ISD.

- The analysis has indicated that the Project will result in minimal impact on motorist delays at the study intersections, as compared to future No-Build conditions. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with all movements at the study area intersections shown to continue to operate at LOS D or better with the addition of Project-related traffic, where an LOS of "D" or better is defined as "acceptable" traffic operations.

RECOMMENDATIONS

Access to the Project site will be provided via a driveway onto the west side of Route 138. The following recommendations are offered with respect to the design and operation of this access:

- The Project site driveway is consistent with local zoning requirements that indicate the site driveway should be a minimum of 24 feet in width and be designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.

- The maneuvering aisles within parking areas are consistent with local zoning requirements that indicate the aisles should be a minimum width of 20 feet for two-way traffic.

- The Project site driveway should be placed under STOP-sign (*Manual on Uniform Traffic Control Devices* (MUTCD) R1-1) control, with a painted STOP-bar included.

- All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD.

- Existing trees and vegetation located within the sight triangle areas of the Project site driveway should be selectively trimmed or removed and maintained in order to provide the necessary sight lines for safe operation of the driveway.

- Snow windrows within sight triangle areas of the Project site driveway should be promptly removed where such accumulations would impede sightlines.

Transportation Demand Management

Public transportation services are provided within the study area by the MBTA. The MBTA provides a fixed-route bus service with a flag stop bus stop at the intersection of Route 138 at Barbara Lane, which is located approximately 0.1 mile (a 4-minute walk) to the north of the Project site.

In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following TDM measures are recommended as a part of the Project:

- A transportation coordinator should be designated for the Project to coordinate the elements of the TDM Program.

- Information about public transportation services, including maps, schedules, and fare details should be posted in a central location and/or made available to employees.

- A "welcome packet" should be provided to employees detailing available public transportation services, bicycling opportunities, and commuter options.

- The designated transportation coordinator should facilitate carpool matching for employees.

- Access to the Bay State Commute program (formerly called NuRide) service should be made available to all employees. Bay State Commute is a free online database service to find carpool companions.

- Specific amenities should be offered to discourage off-site trips, including providing a breakroom equipped with a microwave and refrigerator; offering direct deposit of paychecks; and other such measures to reduce overall traffic volumes and travel during peak traffic-volume periods.

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

CONCLUSIONS

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

APPENDIX

TRAFFIC COUNT DATA
SEASONAL ADJUSTMENT DATA
PUBLIC TRANSPORTATION
VEHICLE SPEED DATA
MOTOR VEHICLE CRASH DATA
GROWTH RATE CALCULATIONS
TRIP GENERATION
CAPACITY ANALYSIS

TRAFFIC COUNT DATA

Accurate Counts

978-664-2565

Location : Route 138 Site Code: 10000001
Location : Just North of 665 Rt 138
City/State: Milton, MA

6/26/2024	SB,		Hour Totals		NB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	37	72			31	68				
12:15	21	90			16	96				
12:30	14	60			26	82				
12:45	16	67	88	289	10	83	83	329	171	618
1:00	13	80			12	87				
1:15	12	73			11	90				
1:30	6	85			12	72				
1:45	5	85	36	323	7	102	42	351	78	674
2:00	2	88			4	79				
2:15	3	79			7	101				
2:30	6	86			9	113				
2:45	2	68	13	321	10	117	30	410	43	731
3:00	2	86			7	99				
3:15	3	94			2	137				
3:30	5	73			10	113				
3:45	6	50	16	303	6	113	25	462	41	765
4:00	4	59			10	119				
4:15	12	59			20	127				
4:30	19	78			25	136				
4:45	18	58	53	254	20	124	75	506	128	760
5:00	22	71			36	152				
5:15	28	96			64	148				
5:30	46	61			77	128				
5:45	39	69	135	297	101	140	278	568	413	865
6:00	60	51			118	147				
6:15	64	78			122	134				
6:30	81	83			108	118				
6:45	76	87	281	299	100	122	448	521	729	820
7:00	91	71			111	90				
7:15	119	52			143	99				
7:30	105	75			134	85				
7:45	112	90	427	288	120	90	508	364	935	652
8:00	75	69			126	86				
8:15	84	75			116	85				
8:30	95	74			121	83				
8:45	73	52	327	270	96	72	459	326	786	596
9:00	69	54			113	65				
9:15	60	70			97	68				
9:30	71	56			112	60				
9:45	67	68	267	248	114	56	436	249	703	497
10:00	68	61			89	50				
10:15	63	66			96	57				
10:30	60	56			99	40				
10:45	54	52	245	235	104	55	388	202	633	437
11:00	55	59			106	40				
11:15	72	51			85	38				
11:30	86	28			96	34				
11:45	66	35	279	173	81	31	368	143	647	316
Total	2167	3300			3140	4431			5307	7731
Percent	39.6%	60.4%			41.5%	58.5%			40.7%	59.3%

Accurate Counts
978-664-2565

Location : Route 138
Location : Just North of 665 Rt 138
City/State: Milton, MA

Site Code: 10000001

6/27/2024	SB,		Hour Totals		NB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	46	63			30	94				
12:15	39	96			22	110				
12:30	37	92			31	100				
12:45	26	86	148	337	12	91	95	395	243	732
1:00	22	67			19	95				
1:15	18	111			16	115				
1:30	14	96			20	97				
1:45	10	105	64	379	13	110	68	417	132	796
2:00	16	84			10	119				
2:15	9	77			8	122				
2:30	7	78			9	115				
2:45	7	87	39	326	7	104	34	460	73	786
3:00	10	80			8	109				
3:15	12	81			5	123				
3:30	9	59			10	125				
3:45	12	61	43	281	17	126	40	483	83	764
4:00	11	76			8	135				
4:15	17	63			15	126				
4:30	28	72			13	128				
4:45	37	64	93	275	33	89	69	478	162	753
5:00	28	78			33	126				
5:15	42	62			54	134				
5:30	53	82			75	147				
5:45	57	87	180	309	85	122	247	529	427	838
6:00	55	72			122	132				
6:15	73	81			105	127				
6:30	108	88			98	138				
6:45	79	82	315	323	108	99	433	496	748	819
7:00	80	96			103	96				
7:15	93	91			131	93				
7:30	120	82			131	101				
7:45	108	82	401	351	119	80	484	370	885	721
8:00	105	88			105	83				
8:15	129	62			116	91				
8:30	114	84			101	96				
8:45	70	60	418	294	112	80	434	350	852	644
9:00	78	81			110	73				
9:15	89	63			98	64				
9:30	124	69			107	68				
9:45	91	58	382	271	108	64	423	269	805	540
10:00	86	76			92	59				
10:15	88	63			95	72				
10:30	82	74			93	58				
10:45	86	59	342	272	104	53	384	242	726	514
11:00	84	50			77	54				
11:15	104	56			98	44				
11:30	85	49			94	37				
11:45	73	51	346	206	104	30	373	165	719	371
Total	2771	3624			3084	4654			5855	8278
Percent	43.3%	56.7%			39.9%	60.1%			41.4%	58.6%
Grand Total	4938	6924			6224	9085			11162	16009
Percent	41.6%	58.4%			40.7%	59.3%			41.1%	58.9%
ADT		ADT: 13,586		AADT: 13,586						

Accurate Counts

978-664-2565

Location : Route 138
Location : Just North of 665 Rt 138
City/State: Milton, MA

Site Code: 10000001

6/24/2024	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,
0:00	*	*	*	*	88	83	148	95	*	*	*	*	*	*	118	89
1:00	*	*	*	*	36	42	64	68	*	*	*	*	*	*	50	55
2:00	*	*	*	*	13	30	39	34	*	*	*	*	*	*	26	32
3:00	*	*	*	*	16	25	43	40	*	*	*	*	*	*	30	32
4:00	*	*	*	*	53	75	93	69	*	*	*	*	*	*	73	72
5:00	*	*	*	*	135	278	180	247	*	*	*	*	*	*	158	262
6:00	*	*	*	*	281	448	315	433	*	*	*	*	*	*	298	440
7:00	*	*	*	*	427	508	401	484	*	*	*	*	*	*	414	496
8:00	*	*	*	*	327	459	418	434	*	*	*	*	*	*	372	446
9:00	*	*	*	*	267	436	382	423	*	*	*	*	*	*	324	430
10:00	*	*	*	*	245	388	342	384	*	*	*	*	*	*	294	386
11:00	*	*	*	*	279	368	346	373	*	*	*	*	*	*	312	370
12:00	*	*	*	*	289	329	337	395	*	*	*	*	*	*	313	362
13:00	*	*	*	*	323	351	379	417	*	*	*	*	*	*	351	384
14:00	*	*	*	*	321	410	326	460	*	*	*	*	*	*	324	435
15:00	*	*	*	*	303	462	281	483	*	*	*	*	*	*	292	472
16:00	*	*	*	*	254	506	275	478	*	*	*	*	*	*	264	492
17:00	*	*	*	*	297	568	309	529	*	*	*	*	*	*	303	548
18:00	*	*	*	*	299	521	323	496	*	*	*	*	*	*	311	508
19:00	*	*	*	*	288	364	351	370	*	*	*	*	*	*	320	367
20:00	*	*	*	*	270	326	294	350	*	*	*	*	*	*	282	338
21:00	*	*	*	*	248	249	271	269	*	*	*	*	*	*	260	259
22:00	*	*	*	*	235	202	272	242	*	*	*	*	*	*	254	222
23:00	*	*	*	*	173	143	206	165	*	*	*	*	*	*	190	154
Total	0	0	0	0	5467	7571	6395	7738	0	0	0	0	0	0	5933	7651
Day	0		0		13038		14133		0		0		0		13584	
AM Peak					7:00	7:00	8:00	7:00							7:00	7:00
Volume					427	508	418	484							414	496
PM Peak					13:00	17:00	13:00	17:00							13:00	17:00
Volume					323	568	379	529							351	548
Comb Total	0		0		13038		14133		0		0		0		13584	

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 1

Groups Printed- Cars - Trucks

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
07:00 AM	0	86	0	1	2	0	8	0	1	11	112	2	0	0	0	0	0	2	5	0	230
07:15 AM	1	125	2	3	0	1	12	7	4	10	129	7	0	0	2	1	3	5	7	1	320
07:30 AM	0	112	2	1	3	6	10	3	2	15	135	1	1	3	2	0	1	5	3	0	305
07:45 AM	0	119	3	2	4	2	25	3	2	13	109	2	1	2	4	2	2	5	10	1	311
Total	1	442	7	7	9	9	55	13	9	49	485	12	2	5	8	3	6	17	25	2	1166
08:00 AM	0	112	0	1	5	2	11	6	4	8	120	1	1	3	0	0	2	6	11	0	293
08:15 AM	2	120	3	0	8	2	18	4	4	7	113	0	1	2	2	0	2	10	6	1	305
08:30 AM	0	134	2	1	11	3	17	6	2	16	109	2	1	4	0	0	2	8	10	1	329
08:45 AM	1	102	1	2	4	1	13	2	1	11	100	2	0	3	2	1	1	5	9	2	263
Total	3	468	6	4	28	8	59	18	11	42	442	5	3	12	4	1	7	29	36	4	1190
Grand Total	4	910	13	11	37	17	114	31	20	91	927	17	5	17	12	4	13	46	61	6	2356
Apprch %	0.4	97	1.4	1.2	18.6	8.5	57.3	15.6	1.9	8.6	87.9	1.6	13.2	44.7	31.6	10.5	10.3	36.5	48.4	4.8	
Total %	0.2	38.6	0.6	0.5	1.6	0.7	4.8	1.3	0.8	3.9	39.3	0.7	0.2	0.7	0.5	0.2	0.6	2	2.6	0.3	
Cars	3	878	13	11	36	17	114	31	20	90	867	16	5	17	12	4	11	46	61	6	2258
% Cars	75	96.5	100	100	97.3	100	100	100	100	98.9	93.5	94.1	100	100	100	100	84.6	100	100	100	95.8
Trucks	1	32	0	0	1	0	0	0	0	1	60	1	0	0	0	0	2	0	0	0	98
% Trucks	25	3.5	0	0	2.7	0	0	0	0	1.1	6.5	5.9	0	0	0	0	15.4	0	0	0	4.2

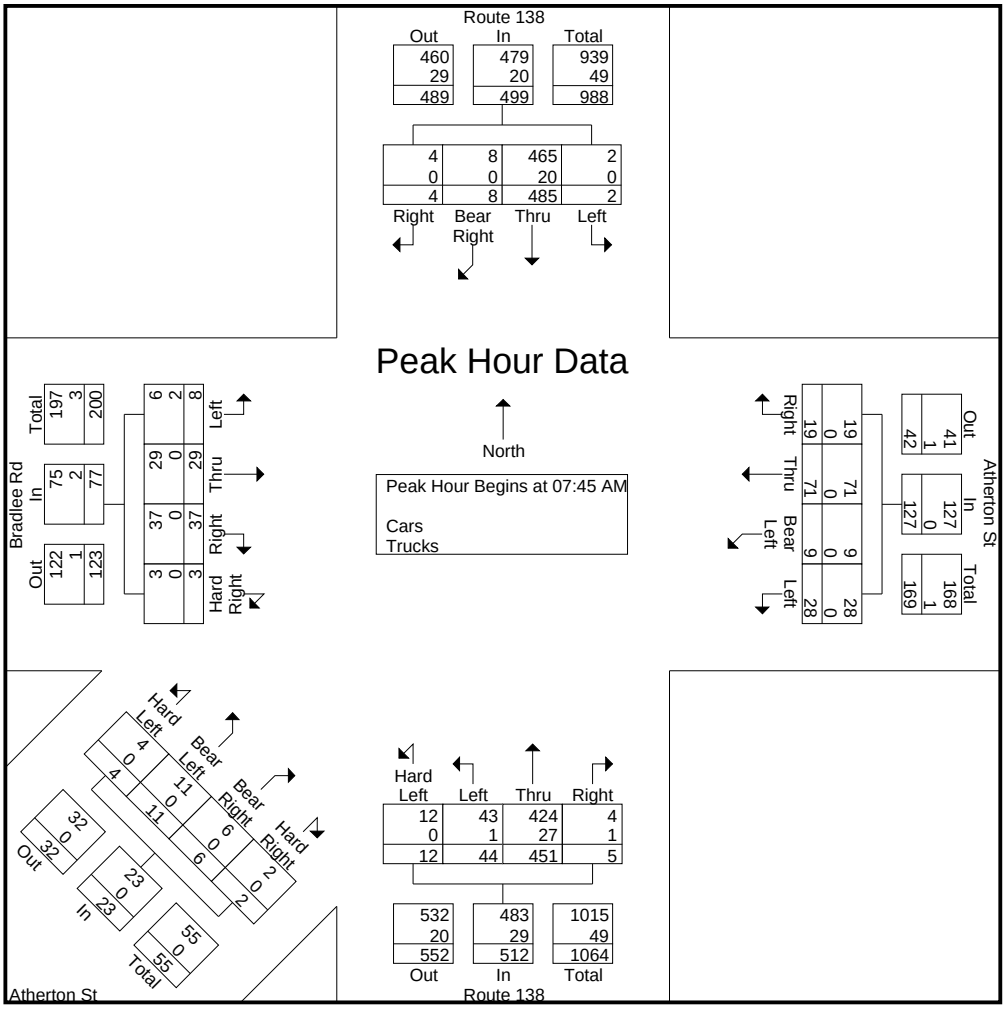
	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:45 AM																										
07:45 AM	0	119	**3**	**2**	124	4	2	**25**	3	34	2	13	109	**2**	126	**1**	2	**4**	**2**	**9**	**2**	5	10	**1**	18	311
08:00 AM	0	112	0	1	113	5	2	11	**6**	24	**4**	8	**120**	1	**133**	1	3	0	0	4	2	6	**11**	0	19	293
08:15 AM	**2**	120	3	0	125	8	2	18	4	32	4	7	113	0	124	1	2	2	0	5	2	**10**	6	1	19	305
08:30 AM	0	**134**	2	1	**137**	**11**	**3**	17	6	**37**	2	**16**	109	2	129	1	**4**	0	0	5	2	8	10	1	**21**	**329**
Total Volume	2	485	8	4	499	28	9	71	19	127	12	44	451	5	512	4	11	6	2	23	8	29	37	3	77	1238
% App. Total	0.4	97.2	1.6	0.8		22	7.1	55.9	15		2.3	8.6	88.1	1		17.4	47.8	26.1	8.7		10.4	37.7	48.1	3.9		
PHF	.250	.905	.667	.500	.911	.636	.750	.710	.792	.858	.750	.688	.940	.625	.962	1.00	.688	.375	.250	.639	1.00	.725	.841	.750	.917	.941
Cars	2	465	8	4	479	28	9	71	19	127	12	43	424	4	483	4	11	6	2	23	6	29	37	3	75	1187
% Cars	100	95.9	100	100	96.0	100	100	100	100	100	100	97.7	94.0	80.0	94.3	100	100	100	100	100	75.0	100	100	100	97.4	95.9
Trucks	0	20	0	0	20	0	0	0	0	0	0	1	27	1	29	0	0	0	0	0	2	0	0	0	2	51
% Trucks	0	4.1	0	0	4.0	0	0	0	0	0	0	2.3	6.0	20.0	5.7	0	0	0	0	0	25.0	0	0	0	2.6	4.1

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 2



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

Peak Hour for Each Approach Begins at:

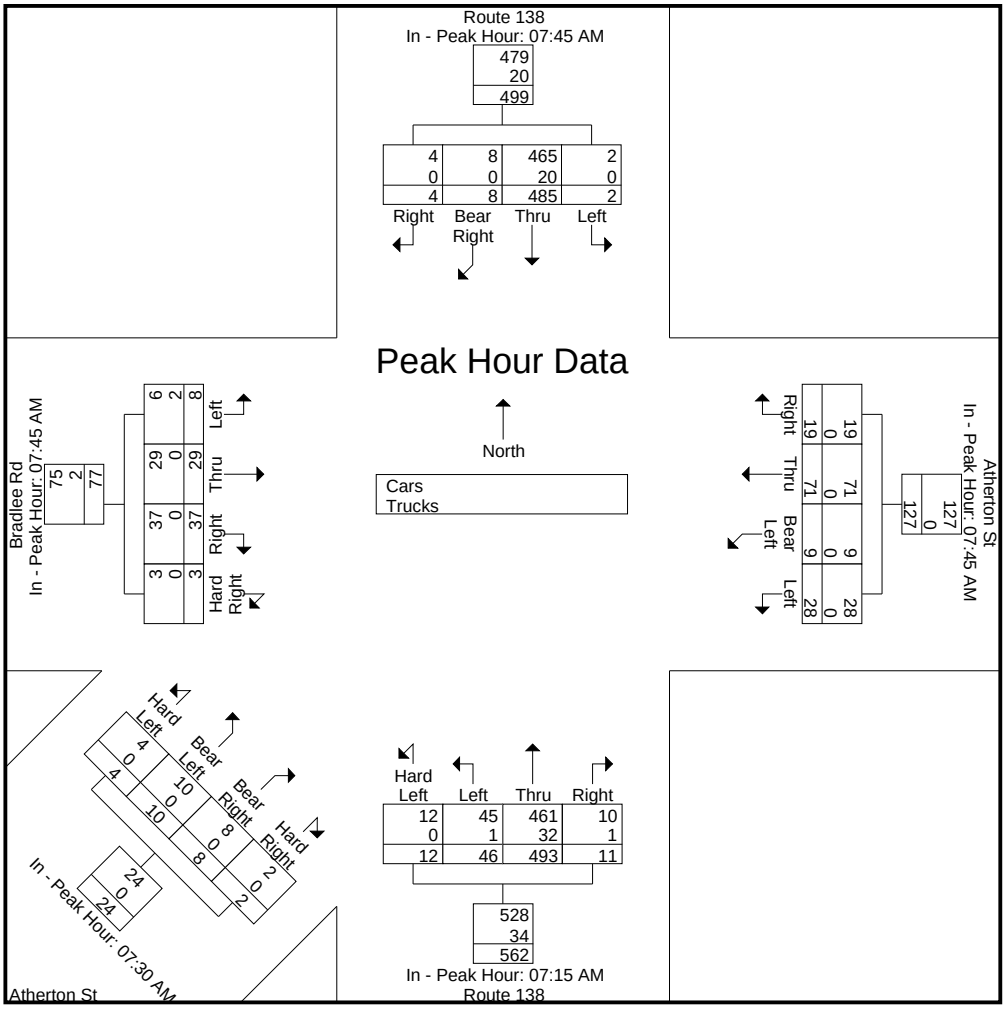
	07:45 AM					07:45 AM					07:15 AM					07:30 AM					07:45 AM				
+0 mins.	0	119	**3**	**2**	124	4	2	**25**	3	34	**4**	10	129	**7**	150	**1**	**3**	2	0	6	**2**	5	10	**1**	18
+15 mins.	0	112	0	1	113	5	2	11	**6**	24	2	**15**	**135**	1	**153**	1	2	**4**	**2**	**9**	2	6	**11**	0	19
+30 mins.	**2**	120	3	0	125	8	2	18	4	32	2	13	109	2	126	1	3	0	0	4	2	**10**	6	1	19
+45 mins.	0	**134**	2	1	**137**	**11**	**3**	17	6	**37**	4	8	120	1	133	1	2	2	0	5	2	8	10	1	**21**
Total Volume	2	485	8	4	499	28	9	71	19	127	12	46	493	11	562	4	10	8	2	24	8	29	37	3	77
% App. Total	0.4	97.2	1.6	0.8		22	7.1	55.9	15		2.1	8.2	87.7	2		16.7	41.7	33.3	8.3		10.4	37.7	48.1	3.9	
PHF	.250	.905	.667	.500	.911	.636	.750	.710	.792	.858	.750	.767	.913	.393	.918	1.000	.833	.500	.250	.667	1.000	.725	.841	.750	.917
Cars	2	465	8	4	479	28	9	71	19	127	12	45	461	10	528	4	10	8	2	24	6	29	37	3	75
% Cars	100	95.9	100	100	96	100	100	100	100	100	100	97.8	93.5	90.9	94	100	100	100	100	100	75	100	100	100	97.4
Trucks	0	20	0	0	20	0	0	0	0	0	0	1	32	1	34	0	0	0	0	0	2	0	0	0	2
% Trucks	0	4.1	0	0	4	0	0	0	0	0	0	2.2	6.5	9.1	6	0	0	0	0	0	25	0	0	0	2.6

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 4

Groups Printed- Cars

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
07:00 AM	0	81	0	1	2	0	8	0	1	11	104	2	0	0	0	0	0	2	5	0	217
07:15 AM	1	121	2	3	0	1	12	7	4	10	121	7	0	0	2	1	3	5	7	1	308
07:30 AM	0	111	2	1	2	6	10	3	2	15	126	1	1	3	2	0	1	5	3	0	294
07:45 AM	0	115	3	2	4	2	25	3	2	13	103	2	1	2	4	2	2	5	10	1	301
Total	1	428	7	7	8	9	55	13	9	49	454	12	2	5	8	3	6	17	25	2	1120
08:00 AM	0	108	0	1	5	2	11	6	4	7	111	0	1	3	0	0	1	6	11	0	277
08:15 AM	2	113	3	0	8	2	18	4	4	7	106	0	1	2	2	0	2	10	6	1	291
08:30 AM	0	129	2	1	11	3	17	6	2	16	104	2	1	4	0	0	1	8	10	1	318
08:45 AM	0	100	1	2	4	1	13	2	1	11	92	2	0	3	2	1	1	5	9	2	252
Total	2	450	6	4	28	8	59	18	11	41	413	4	3	12	4	1	5	29	36	4	1138
Grand Total	3	878	13	11	36	17	114	31	20	90	867	16	5	17	12	4	11	46	61	6	2258
Apprch %	0.3	97	1.4	1.2	18.2	8.6	57.6	15.7	2	9.1	87.3	1.6	13.2	44.7	31.6	10.5	8.9	37.1	49.2	4.8	
Total %	0.1	38.9	0.6	0.5	1.6	0.8	5	1.4	0.9	4	38.4	0.7	0.2	0.8	0.5	0.2	0.5	2	2.7	0.3	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:45 AM																										
07:45 AM	0	115	**3**	**2**	120	4	2	**25**	3	34	2	13	103	**2**	120	**1**	2	**4**	**2**	**9**	**2**	5	10	**1**	18	301
08:00 AM	0	108	0	1	109	5	2	11	**6**	24	**4**	7	**111**	0	122	1	3	0	0	4	1	6	**11**	0	18	277
08:15 AM	**2**	113	3	0	118	8	2	18	4	32	4	7	106	0	117	1	2	2	0	5	2	**10**	6	1	19	291
08:30 AM	0	**129**	2	1	**132**	**11**	**3**	17	6	**37**	2	**16**	104	2	**124**	1	**4**	0	0	5	1	8	10	1	**20**	**318**
Total Volume	2	465	8	4	479	28	9	71	19	127	12	43	424	4	483	4	11	6	2	23	6	29	37	3	75	1187
% App. Total	0.4	97.1	1.7	0.8		22	7.1	55.9	15		2.5	8.9	87.8	0.8		17.4	47.8	26.1	8.7		8	38.7	49.3	4		
PHF	.250	.901	.667	.500	.907	.636	.750	.710	.792	.858	.750	.672	.955	.500	.974	1.00	.688	.375	.250	.639	.750	.725	.841	.750	.938	.933

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 7

Groups Printed- Trucks

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
07:00 AM	0	5	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	13
07:15 AM	0	4	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	12
07:30 AM	0	1	0	0	1	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	11
07:45 AM	0	4	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	10
Total	0	14	0	0	1	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	46
08:00 AM	0	4	0	0	0	0	0	0	0	1	9	1	0	0	0	0	1	0	0	0	16
08:15 AM	0	7	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	14
08:30 AM	0	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	1	0	0	0	11
08:45 AM	1	2	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	11
Total	1	18	0	0	0	0	0	0	0	1	29	1	0	0	0	0	2	0	0	0	52
Grand Total	1	32	0	0	1	0	0	0	0	1	60	1	0	0	0	0	2	0	0	0	98
Apprch %	3	97	0	0	100	0	0	0	0	1.6	96.8	1.6	0	0	0	0	100	0	0	0	
Total %	1	32.7	0	0	1	0	0	0	0	1	61.2	1	0	0	0	0	2	0	0	0	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	4	0	0	4	0	0	0	0	0	0	**1**	**9**	**1**	**11**	0	0	0	0	0	**1**	0	0	0	**1**	**16**
08:15 AM	0	**7**	0	0	**7**	0	0	0	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	14
08:30 AM	0	5	0	0	5	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	1	0	0	0	1	11
08:45 AM	**1**	2	0	0	3	0	0	0	0	0	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	11
Total Volume	1	18	0	0	19	0	0	0	0	0	0	1	29	1	31	0	0	0	0	0	2	0	0	0	2	52
% App. Total	5.3	94.7	0	0		0	0	0	0		0	3.2	93.5	3.2		0	0	0	0		100	0	0	0		
PHF	.250	.643	.000	.000	.679	.000	.000	.000	.000	.000	.000	.250	.806	.250	.705	.000	.000	.000	.000	.000	.500	.000	.000	.000	.500	.813

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024

Groups Printed- Bikes Peds

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West							
Start Time	Left	Thru	Bear Right	Right	Peds	Left	Bear Left	Thru	Right	Peds	Hard Left	Left	Thru	Right	Peds	Hard Left	Bear Left	Bear Right	Hard Right	Peds	Left	Thru	Right	Hard Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
08:00 AM	0	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3	0	3
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4	0	4
Grand Total	0	0	0	0	4	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7	0	7
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0				
Total %																										100	0	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:00 AM																										
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 1

Groups Printed- Cars - Trucks

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
04:00 PM	11	66	3	2	6	0	8	4	1	13	111	3	3	4	0	0	3	16	11	1	266
04:15 PM	12	66	1	2	3	3	9	5	0	4	115	5	1	4	1	0	6	14	7	0	258
04:30 PM	7	81	2	3	2	3	19	3	1	7	125	7	2	2	2	0	6	21	18	2	313
04:45 PM	9	60	6	0	3	3	11	5	4	13	114	5	2	0	0	1	2	13	10	2	263
Total	39	273	12	7	14	9	47	17	6	37	465	20	8	10	3	1	17	64	46	5	1100
05:00 PM	9	71	2	2	0	4	14	3	2	15	131	2	1	5	3	0	2	14	10	1	291
05:15 PM	12	95	0	2	2	4	15	6	5	6	146	2	2	3	3	1	0	16	7	0	327
05:30 PM	6	79	0	3	1	2	14	9	0	12	114	3	2	1	4	0	2	18	8	0	278
05:45 PM	12	76	0	1	4	0	23	6	0	9	138	8	0	0	3	0	1	27	7	0	315
Total	39	321	2	8	7	10	66	24	7	42	529	15	5	9	13	1	5	75	32	1	1211
Grand Total	78	594	14	15	21	19	113	41	13	79	994	35	13	19	16	2	22	139	78	6	2311
Apprch %	11.1	84.7	2	2.1	10.8	9.8	58.2	21.1	1.2	7	88.7	3.1	26	38	32	4	9	56.7	31.8	2.4	
Total %	3.4	25.7	0.6	0.6	0.9	0.8	4.9	1.8	0.6	3.4	43	1.5	0.6	0.8	0.7	0.1	1	6	3.4	0.3	
Cars	78	567	14	15	20	19	113	40	13	79	977	34	13	19	16	2	22	139	78	6	2264
% Cars	100	95.5	100	100	95.2	100	100	97.6	100	100	98.3	97.1	100	100	100	100	100	100	100	100	98
Trucks	0	27	0	0	1	0	0	1	0	0	17	1	0	0	0	0	0	0	0	0	47
% Trucks	0	4.5	0	0	4.8	0	0	2.4	0	0	1.7	2.9	0	0	0	0	0	0	0	0	2

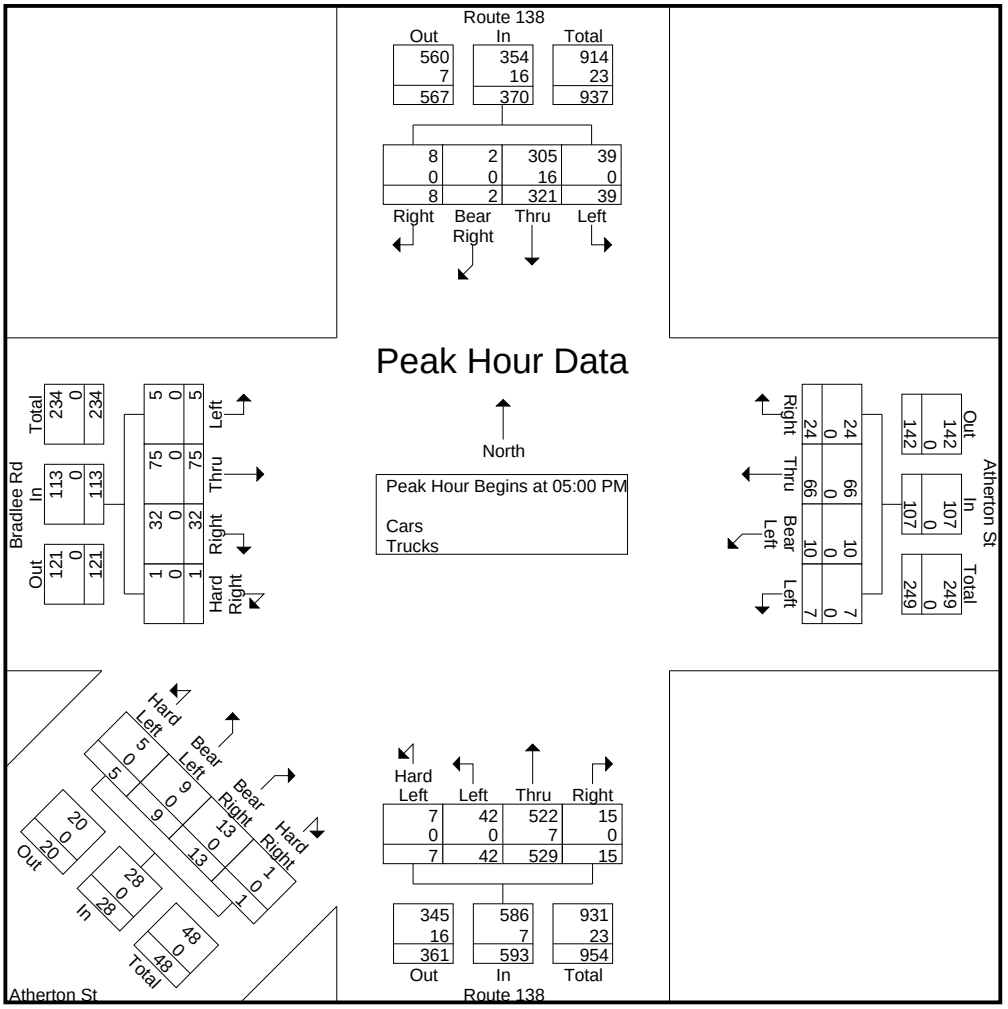
	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	9	71	**2**	2	84	0	**4**	14	3	21	2	**15**	131	2	150	1	**5**	3	0	**9**	**2**	14	**10**	**1**	27	291
05:15 PM	**12**	**95**	0	2	**109**	2	4	15	6	27	**5**	6	**146**	2	**159**	**2**	3	3	**1**	9	0	16	7	0	23	**327**
05:30 PM	6	79	0	**3**	88	1	2	14	**9**	26	0	12	114	3	129	2	1	**4**	0	7	2	18	8	0	28	278
05:45 PM	12	76	0	1	89	**4**	0	**23**	6	**33**	0	9	138	**8**	155	0	0	3	0	3	1	**27**	7	0	**35**	315
Total Volume	39	321	2	8	370	7	10	66	24	107	7	42	529	15	593	5	9	13	1	28	5	75	32	1	113	1211
% App. Total	10.5	86.8	0.5	2.2		6.5	9.3	61.7	22.4		1.2	7.1	89.2	2.5		17.9	32.1	46.4	3.6		4.4	66.4	28.3	0.9		
PHF	.813	.845	.250	.667	.849	.438	.625	.717	.667	.811	.350	.700	.906	.469	.932	.625	.450	.813	.250	.778	.625	.694	.800	.250	.807	.926
Cars	39	305	2	8	354	7	10	66	24	107	7	42	522	15	586	5	9	13	1	28	5	75	32	1	113	1188
% Cars	100	95.0	100	100	95.7	100	100	100	100	100	100	100	98.7	100	98.8	100	100	100	100	100	100	100	100	100	100	98.1
Trucks	0	16	0	0	16	0	0	0	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	23
% Trucks	0	5.0	0	0	4.3	0	0	0	0	0	0	0	1.3	0	1.2	0	0	0	0	0	0	0	0	0	0	1.9

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 2



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

Peak Hour for Each Approach Begins at:

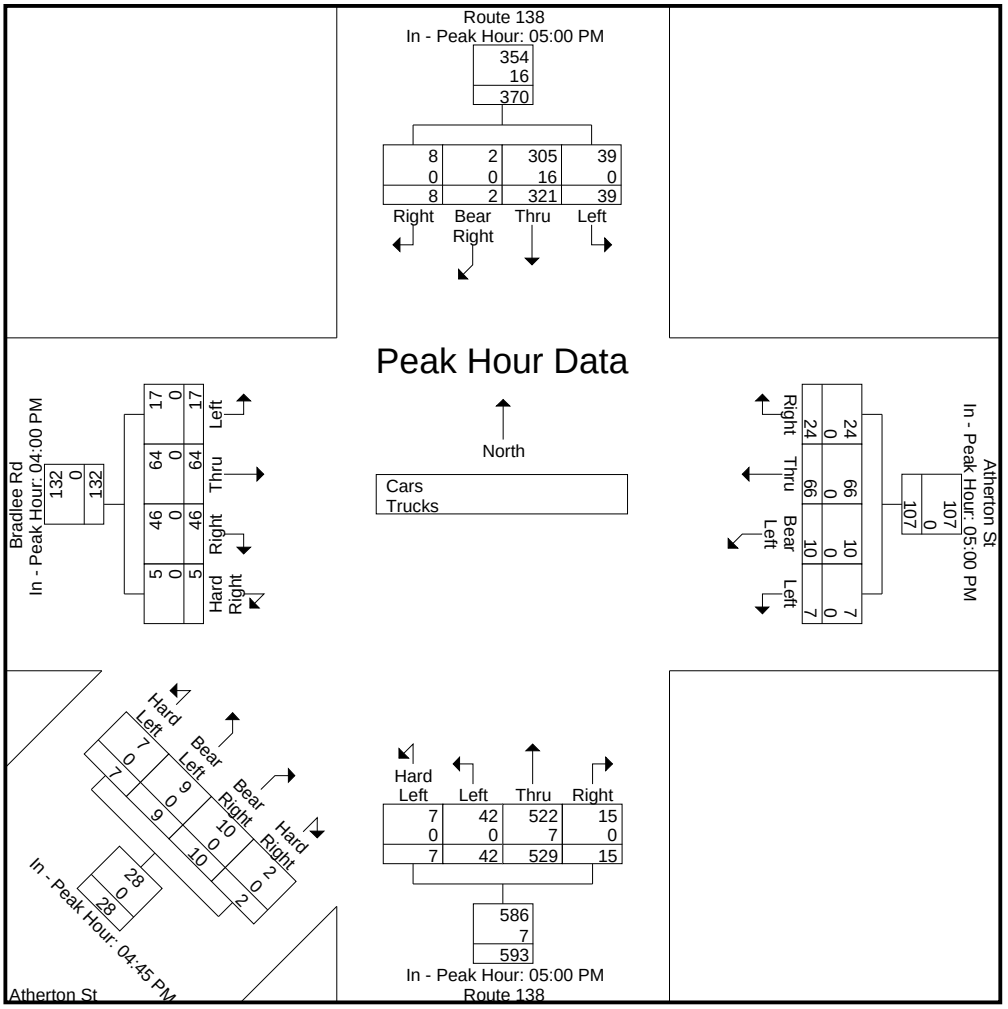
	05:00 PM					05:00 PM					05:00 PM					04:45 PM					04:00 PM				
+0 mins.	9	71	**2**	2	84	0	**4**	14	3	21	2	**15**	131	2	150	**2**	0	0	**1**	3	3	16	11	1	31
+15 mins.	**12**	**95**	0	2	**109**	2	4	15	6	27	**5**	6	**146**	2	**159**	1	**5**	3	0	**9**	**6**	14	7	0	27
+30 mins.	6	79	0	**3**	88	1	2	14	**9**	26	0	12	114	3	129	2	3	3	1	9	6	**21**	**18**	**2**	**47**
+45 mins.	12	76	0	1	89	**4**	0	**23**	6	**33**	0	9	138	**8**	155	2	1	**4**	0	7	2	13	10	2	27
Total Volume	39	321	2	8	370	7	10	66	24	107	7	42	529	15	593	7	9	10	2	28	17	64	46	5	132
% App. Total	10.5	86.8	0.5	2.2		6.5	9.3	61.7	22.4		1.2	7.1	89.2	2.5		25	32.1	35.7	7.1		12.9	48.5	34.8	3.8	
PHF	.813	.845	.250	.667	.849	.438	.625	.717	.667	.811	.350	.700	.906	.469	.932	.875	.450	.625	.500	.778	.708	.762	.639	.625	.702
Cars	39	305	2	8	354	7	10	66	24	107	7	42	522	15	586	7	9	10	2	28	17	64	46	5	132
% Cars	100	95	100	100	95.7	100	100	100	100	100	100	100	98.7	100	98.8	100	100	100	100	100	100	100	100	100	100
Trucks	0	16	0	0	16	0	0	0	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0
% Trucks	0	5	0	0	4.3	0	0	0	0	0	0	0	1.3	0	1.2	0	0	0	0	0	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024

Groups Printed- Cars

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
04:00 PM	11	61	3	2	5	0	8	3	1	13	110	2	3	4	0	0	3	16	11	1	257
04:15 PM	12	62	1	2	3	3	9	5	0	4	112	5	1	4	1	0	6	14	7	0	251
04:30 PM	7	79	2	3	2	3	19	3	1	7	122	7	2	2	2	0	6	21	18	2	308
04:45 PM	9	60	6	0	3	3	11	5	4	13	111	5	2	0	0	1	2	13	10	2	260
Total	39	262	12	7	13	9	47	16	6	37	455	19	8	10	3	1	17	64	46	5	1076
05:00 PM	9	68	2	2	0	4	14	3	2	15	130	2	1	5	3	0	2	14	10	1	287
05:15 PM	12	88	0	2	2	4	15	6	5	6	143	2	2	3	3	1	0	16	7	0	317
05:30 PM	6	74	0	3	1	2	14	9	0	12	113	3	2	1	4	0	2	18	8	0	272
05:45 PM	12	75	0	1	4	0	23	6	0	9	136	8	0	0	3	0	1	27	7	0	312
Total	39	305	2	8	7	10	66	24	7	42	522	15	5	9	13	1	5	75	32	1	1188
Grand Total	78	567	14	15	20	19	113	40	13	79	977	34	13	19	16	2	22	139	78	6	2264
Apprch %	11.6	84.1	2.1	2.2	10.4	9.9	58.9	20.8	1.2	7.2	88.6	3.1	26	38	32	4	9	56.7	31.8	2.4	
Total %	3.4	25	0.6	0.7	0.9	0.8	5	1.8	0.6	3.5	43.2	1.5	0.6	0.8	0.7	0.1	1	6.1	3.4	0.3	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:00 PM																										
05:00 PM	9	68	**2**	2	81	0	**4**	14	3	21	2	**15**	130	2	149	1	**5**	3	0	**9**	**2**	14	**10**	**1**	27	287
05:15 PM	**12**	**88**	0	2	**102**	2	4	15	6	27	**5**	6	**143**	2	**156**	**2**	3	3	**1**	9	0	16	7	0	23	**317**
05:30 PM	6	74	0	**3**	83	1	2	14	**9**	26	0	12	113	3	128	2	1	**4**	0	7	2	18	8	0	28	272
05:45 PM	12	75	0	1	88	**4**	0	**23**	6	**33**	0	9	136	**8**	153	0	0	3	0	3	1	**27**	7	0	**35**	312
Total Volume	39	305	2	8	354	7	10	66	24	107	7	42	522	15	586	5	9	13	1	28	5	75	32	1	113	1188
% App. Total	11	86.2	0.6	2.3		6.5	9.3	61.7	22.4		1.2	7.2	89.1	2.6		17.9	32.1	46.4	3.6		4.4	66.4	28.3	0.9		
PHF	.813	.866	.250	.667	.868	.438	.625	.717	.667	.811	.350	.700	.913	.469	.939	.625	.450	.813	.250	.778	.625	.694	.800	.250	.807	.937

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024
Page No : 7

Groups Printed- Trucks

	Route 138 From North				Atherton St From East				Route 138 From South				Atherton St From Southwest				Bradlee Rd From West				
Start Time	Left	Thru	Bear Right	Right	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Int. Total
04:00 PM	0	5	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	9
04:15 PM	0	4	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	7
04:30 PM	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
Total	0	11	0	0	1	0	0	1	0	0	10	1	0	0	0	0	0	0	0	0	24
05:00 PM	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4
05:15 PM	0	7	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	10
05:30 PM	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	6
05:45 PM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
Total	0	16	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	23
Grand Total	0	27	0	0	1	0	0	1	0	0	17	1	0	0	0	0	0	0	0	0	47
Apprch %	0	100	0	0	50	0	0	50	0	0	94.4	5.6	0	0	0	0	0	0	0	0	
Total %	0	57.4	0	0	2.1	0	0	2.1	0	0	36.2	2.1	0	0	0	0	0	0	0	0	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:00 PM																										
04:00 PM	0	**5**	0	0	**5**	**1**	0	0	**1**	**2**	0	0	1	**1**	2	0	0	0	0	0	0	0	0	0	0	**9**
04:15 PM	0	4	0	0	4	0	0	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0	0	0	7
04:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
Total Volume	0	11	0	0	11	1	0	0	1	2	0	0	10	1	11	0	0	0	0	0	0	0	0	0	0	24
% App. Total	0	100	0	0		50	0	0	50		0	0	90.9	9.1		0	0	0	0		0	0	0	0		
PHF	.000	.550	.000	.000	.550	.250	.000	.000	.250	.250	.000	.000	.833	.250	.917	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.667

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Atherton St / Bradlee Rd
City/State : Milton, MA
Weather : Clear

File Name : 10000001
Site Code : 10000001
Start Date : 6/26/2024

Groups Printed- Bikes Peds

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West							
Start Time	Left	Thru	Bear Right	Right	Peds	Left	Bear Left	Thru	Right	Peds	Hard Left	Left	Thru	Right	Peds	Hard Left	Bear Left	Bear Right	Hard Right	Peds	Left	Thru	Right	Hard Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2
05:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	0	6
Grand Total	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	0	7
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0				
Total %																										100	0	

	Route 138 From North					Atherton St From East					Route 138 From South					Atherton St From Southwest					Bradlee Rd From West					
Start Time	Left	Thru	Bear Right	Right	App. Total	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:00 PM																										
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 1

Groups Printed- Cars - Trucks

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	82	0	1	6	2	1	103	2	0	1	0	198
07:15 AM	2	121	2	2	10	1	0	140	1	0	3	0	282
07:30 AM	0	100	1	5	2	0	1	150	4	0	2	2	267
07:45 AM	0	122	2	9	5	0	1	119	1	1	4	0	264
Total	2	425	5	17	23	3	3	512	8	1	10	2	1011
08:00 AM	0	101	5	2	6	0	0	134	0	0	3	1	252
08:15 AM	0	120	1	3	3	1	1	120	2	0	3	0	254
08:30 AM	2	125	0	3	5	2	4	118	2	0	5	1	267
08:45 AM	0	96	1	0	3	2	1	102	2	0	4	2	213
Total	2	442	7	8	17	5	6	474	6	0	15	4	986
Grand Total	4	867	12	25	40	8	9	986	14	1	25	6	1997
Apprch %	0.5	98.2	1.4	34.2	54.8	11	0.9	97.7	1.4	3.1	78.1	18.8	
Total %	0.2	43.4	0.6	1.3	2	0.4	0.5	49.4	0.7	0.1	1.3	0.3	
Cars	4	849	12	24	40	8	9	948	14	1	25	6	1940
% Cars	100	97.9	100	96	100	100	100	96.1	100	100	100	100	97.1
Trucks	0	18	0	1	0	0	0	38	0	0	0	0	57
% Trucks	0	2.1	0	4	0	0	0	3.9	0	0	0	0	2.9

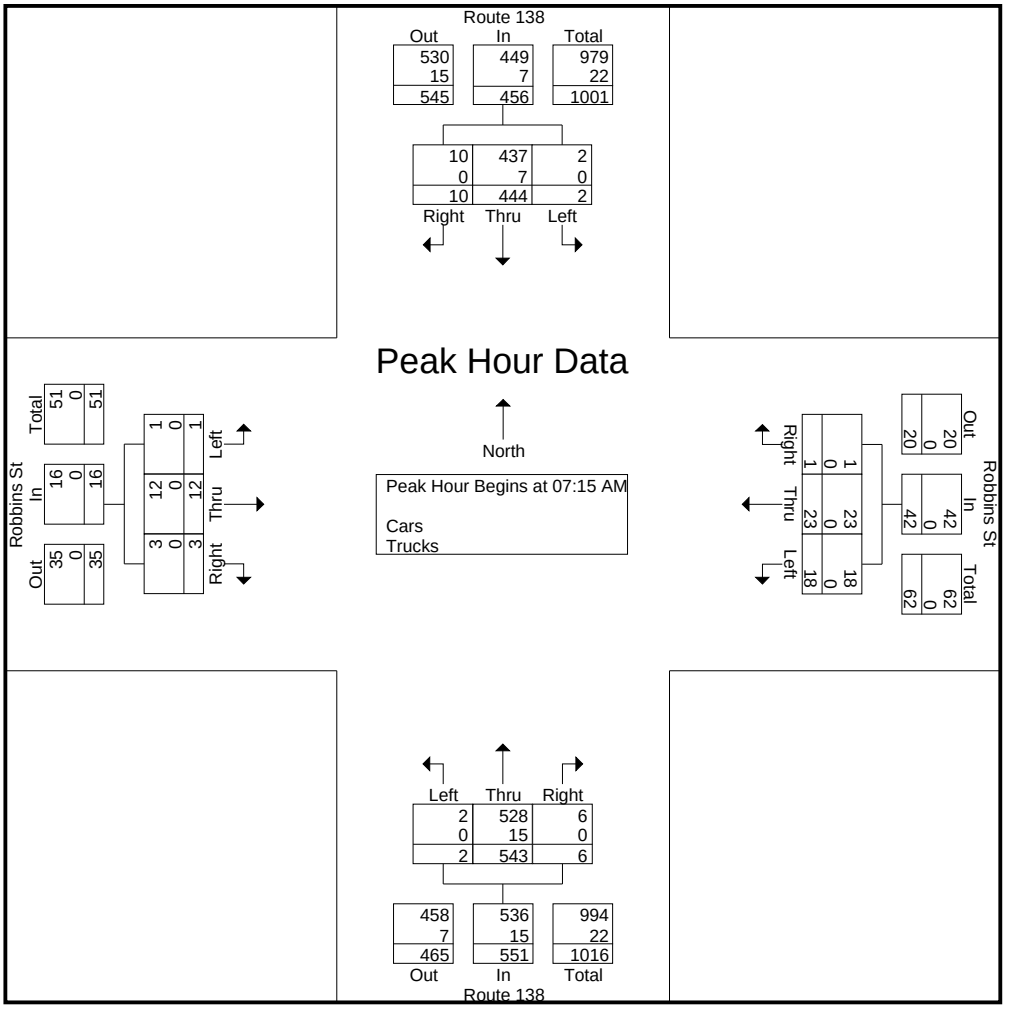
	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**2**	121	2	**125**	2	**10**	**1**	13	0	140	1	141	0	3	0	3	**282**
07:30 AM	0	100	1	101	5	2	0	7	**1**	**150**	**4**	**155**	0	2	**2**	4	267
07:45 AM	0	**122**	2	124	**9**	5	0	**14**	1	119	1	121	**1**	**4**	0	**5**	264
08:00 AM	0	101	**5**	106	2	6	0	8	0	134	0	134	0	3	1	4	252
Total Volume	2	444	10	456	18	23	1	42	2	543	6	551	1	12	3	16	1065
% App. Total	0.4	97.4	2.2		42.9	54.8	2.4		0.4	98.5	1.1		6.2	75	18.8		
PHF	.250	.910	.500	.912	.500	.575	.250	.750	.500	.905	.375	.889	.250	.750	.375	.800	.944
Cars	2	437	10	449	18	23	1	42	2	528	6	536	1	12	3	16	1043
% Cars	100	98.4	100	98.5	100	100	100	100	100	97.2	100	97.3	100	100	100	100	97.9
Trucks	0	7	0	7	0	0	0	0	0	15	0	15	0	0	0	0	22
% Trucks	0	1.6	0	1.5	0	0	0	0	0	2.8	0	2.7	0	0	0	0	2.1

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 2



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

Peak Hour for Each Approach Begins at:

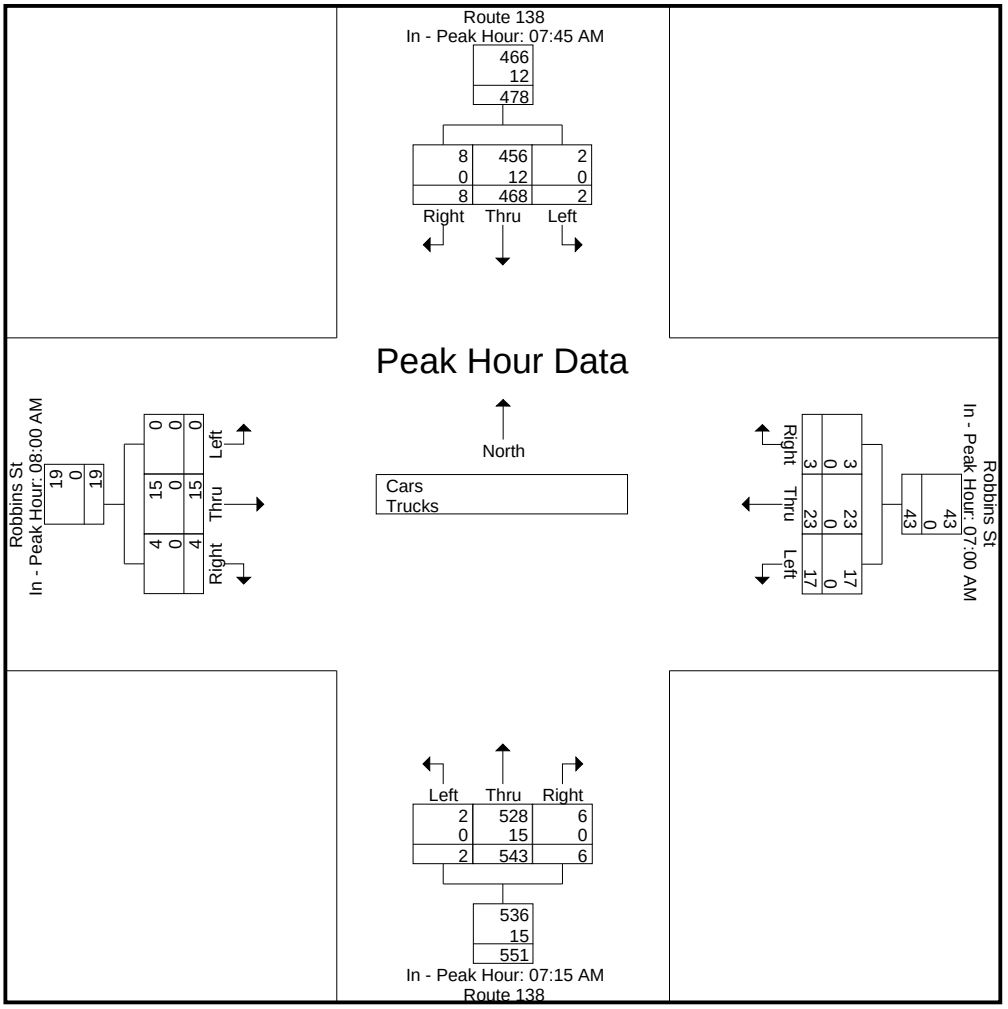
	07:45 AM				07:00 AM				07:15 AM				08:00 AM			
+0 mins.	0	122	2	124	1	6	**2**	9	0	140	1	141	0	3	1	4
+15 mins.	0	101	**5**	106	2	**10**	1	13	**1**	**150**	**4**	**155**	0	3	0	3
+30 mins.	0	120	1	121	5	2	0	7	1	119	1	121	0	**5**	1	**6**
+45 mins.	**2**	**125**	0	**127**	**9**	5	0	**14**	0	134	0	134	0	4	**2**	6
Total Volume	2	468	8	478	17	23	3	43	2	543	6	551	0	15	4	19
% App. Total	0.4	97.9	1.7		39.5	53.5	7		0.4	98.5	1.1		0	78.9	21.1	
PHF	.250	.936	.400	.941	.472	.575	.375	.768	.500	.905	.375	.889	.000	.750	.500	.792
Cars	2	456	8	466	17	23	3	43	2	528	6	536	0	15	4	19
% Cars	100	97.4	100	97.5	100	100	100	100	100	97.2	100	97.3	0	100	100	100
Trucks	0	12	0	12	0	0	0	0	0	15	0	15	0	0	0	0
% Trucks	0	2.6	0	2.5	0	0	0	0	0	2.8	0	2.7	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024

Groups Printed- Cars

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	79	0	1	6	2	1	95	2	0	1	0	187
07:15 AM	2	120	2	2	10	1	0	138	1	0	3	0	279
07:30 AM	0	99	1	5	2	0	1	148	4	0	2	2	264
07:45 AM	0	119	2	9	5	0	1	115	1	1	4	0	257
Total	2	417	5	17	23	3	3	496	8	1	10	2	987
08:00 AM	0	99	5	2	6	0	0	127	0	0	3	1	243
08:15 AM	0	117	1	3	3	1	1	116	2	0	3	0	247
08:30 AM	2	121	0	2	5	2	4	114	2	0	5	1	258
08:45 AM	0	95	1	0	3	2	1	95	2	0	4	2	205
Total	2	432	7	7	17	5	6	452	6	0	15	4	953
Grand Total	4	849	12	24	40	8	9	948	14	1	25	6	1940
Apprch %	0.5	98.2	1.4	33.3	55.6	11.1	0.9	97.6	1.4	3.1	78.1	18.8	
Total %	0.2	43.8	0.6	1.2	2.1	0.4	0.5	48.9	0.7	0.1	1.3	0.3	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**2**	**120**	2	**124**	2	**10**	**1**	13	0	138	1	139	0	3	0	3	**279**
07:30 AM	0	99	1	100	5	2	0	7	**1**	**148**	**4**	**153**	0	2	**2**	4	264
07:45 AM	0	119	2	121	**9**	5	0	**14**	1	115	1	117	**1**	**4**	0	**5**	257
08:00 AM	0	99	**5**	104	2	6	0	8	0	127	0	127	0	3	1	4	243
Total Volume	2	437	10	449	18	23	1	42	2	528	6	536	1	12	3	16	1043
% App. Total	0.4	97.3	2.2		42.9	54.8	2.4		0.4	98.5	1.1		6.2	75	18.8		
PHF	.250	.910	.500	.905	.500	.575	.250	.750	.500	.892	.375	.876	.250	.750	.375	.800	.935

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 7

Groups Printed- Trucks

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	3	0	0	0	0	0	8	0	0	0	0	11
07:15 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
07:30 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
07:45 AM	0	3	0	0	0	0	0	4	0	0	0	0	7
Total	0	8	0	0	0	0	0	16	0	0	0	0	24
08:00 AM	0	2	0	0	0	0	0	7	0	0	0	0	9
08:15 AM	0	3	0	0	0	0	0	4	0	0	0	0	7
08:30 AM	0	4	0	1	0	0	0	4	0	0	0	0	9
08:45 AM	0	1	0	0	0	0	0	7	0	0	0	0	8
Total	0	10	0	1	0	0	0	22	0	0	0	0	33
Grand Total	0	18	0	1	0	0	0	38	0	0	0	0	57
Apprch %	0	100	0	100	0	0	0	100	0	0	0	0	
Total %	0	31.6	0	1.8	0	0	0	66.7	0	0	0	0	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	2	0	2	0	0	0	0	0	**7**	0	**7**	0	0	0	0	**9**
08:15 AM	0	3	0	3	0	0	0	0	0	4	0	4	0	0	0	0	7
08:30 AM	0	**4**	0	**4**	**1**	0	0	**1**	0	4	0	4	0	0	0	0	9
08:45 AM	0	1	0	1	0	0	0	0	0	7	0	7	0	0	0	0	8
Total Volume	0	10	0	10	1	0	0	1	0	22	0	22	0	0	0	0	33
% App. Total	0	100	0		100	0	0		0	100	0		0	0	0		
PHF	.000	.625	.000	.625	.250	.000	.000	.250	.000	.786	.000	.786	.000	.000	.000	.000	.917

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024

Groups Printed- Bikes Peds

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3	0	3
07:15 AM	0	0	0	1	0	0	0	2	0	0	0	2	0	0	0	0	5	0	5
07:30 AM	0	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	3	1	4
07:45 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	3	0	3
Total	0	0	0	4	0	0	0	4	0	1	0	4	0	0	0	2	14	1	15
08:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:15 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	2
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	2	0	1	0	0	2	1	3
Total	0	0	1	1	0	0	0	1	0	0	0	2	0	1	0	0	4	2	6
Grand Total	0	0	1	5	0	0	0	5	0	1	0	6	0	1	0	2	18	3	21
Apprch %	0	0	100		0	0	0		0	100	0		0	100	0				
Total %	0	0	33.3		0	0	0		0	33.3	0		0	33.3	0		85.7	14.3	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% App. Total	0	0	100		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.500

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 1

Groups Printed- Cars - Trucks

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	3	77	3	4	3	1	1	106	3	2	2	1	206
04:15 PM	2	78	4	2	3	1	0	129	7	1	4	0	231
04:30 PM	0	96	0	2	3	2	1	128	4	2	7	0	245
04:45 PM	1	68	2	5	5	1	1	117	6	0	6	2	214
Total	6	319	9	13	14	5	3	480	20	5	19	3	896
05:00 PM	1	86	1	1	4	5	1	142	3	0	4	0	248
05:15 PM	0	111	1	4	6	5	0	141	7	2	6	1	284
05:30 PM	0	78	3	1	6	4	0	137	1	0	6	2	238
05:45 PM	0	87	1	1	8	1	1	141	2	1	5	0	248
Total	1	362	6	7	24	15	2	561	13	3	21	3	1018
Grand Total	7	681	15	20	38	20	5	1041	33	8	40	6	1914
Apprch %	1	96.9	2.1	25.6	48.7	25.6	0.5	96.5	3.1	14.8	74.1	11.1	
Total %	0.4	35.6	0.8	1	2	1	0.3	54.4	1.7	0.4	2.1	0.3	
Cars	7	668	15	20	38	20	5	1034	32	8	40	6	1893
% Cars	100	98.1	100	100	100	100	100	99.3	97	100	100	100	98.9
Trucks	0	13	0	0	0	0	0	7	1	0	0	0	21
% Trucks	0	1.9	0	0	0	0	0	0.7	3	0	0	0	1.1

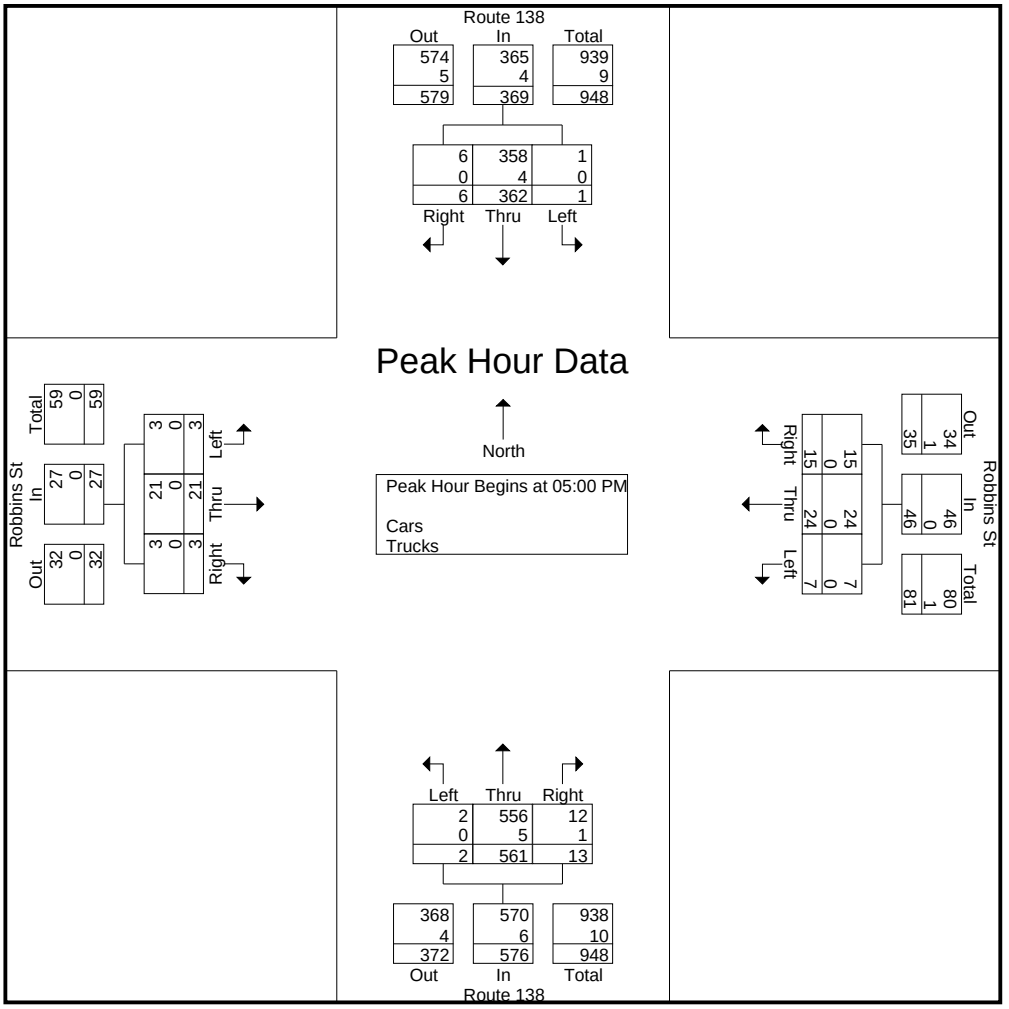
	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	86	1	88	1	4	**5**	10	**1**	**142**	3	146	0	4	0	4	248
05:15 PM	0	**111**	1	**112**	**4**	6	5	**15**	0	141	**7**	**148**	**2**	**6**	1	**9**	**284**
05:30 PM	0	78	**3**	81	1	6	4	11	0	137	1	138	0	6	**2**	8	238
05:45 PM	0	87	1	88	1	**8**	1	10	1	141	2	144	1	5	0	6	248
Total Volume	1	362	6	369	7	24	15	46	2	561	13	576	3	21	3	27	1018
% App. Total	0.3	98.1	1.6		15.2	52.2	32.6		0.3	97.4	2.3		11.1	77.8	11.1		
PHF	.250	.815	.500	.824	.438	.750	.750	.767	.500	.988	.464	.973	.375	.875	.375	.750	.896
Cars	1	358	6	365	7	24	15	46	2	556	12	570	3	21	3	27	1008
% Cars	100	98.9	100	98.9	100	100	100	100	100	99.1	92.3	99.0	100	100	100	100	99.0
Trucks	0	4	0	4	0	0	0	0	0	5	1	6	0	0	0	0	10
% Trucks	0	1.1	0	1.1	0	0	0	0	0	0.9	7.7	1.0	0	0	0	0	1.0

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 2



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

Peak Hour for Each Approach Begins at:

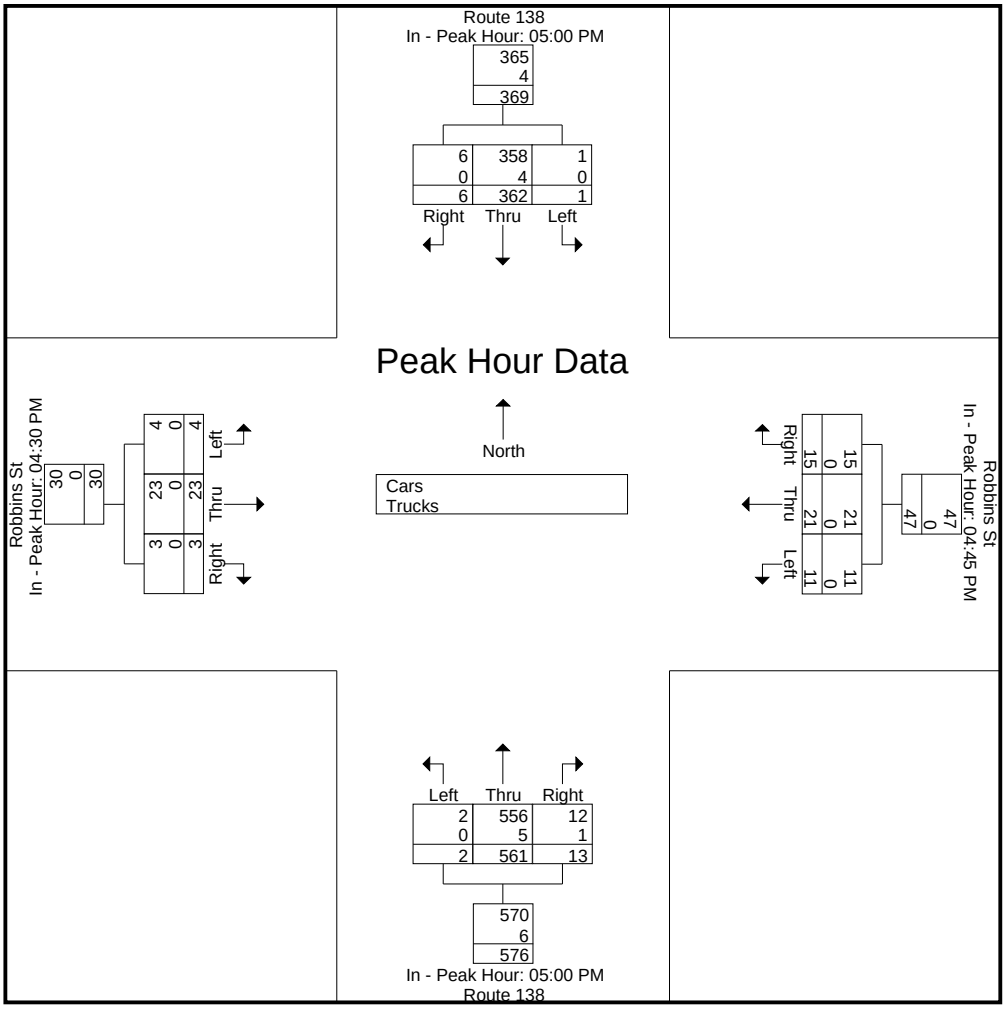
	05:00 PM				04:45 PM				05:00 PM				04:30 PM			
+0 mins.	**1**	86	1	88	**5**	5	1	11	**1**	**142**	3	146	**2**	**7**	0	**9**
+15 mins.	0	**111**	1	**112**	1	4	**5**	10	0	141	**7**	**148**	0	6	**2**	8
+30 mins.	0	78	**3**	81	4	**6**	5	**15**	0	137	1	138	0	4	0	4
+45 mins.	0	87	1	88	1	6	4	11	1	141	2	144	2	6	1	9
Total Volume	1	362	6	369	11	21	15	47	2	561	13	576	4	23	3	30
% App. Total	0.3	98.1	1.6		23.4	44.7	31.9		0.3	97.4	2.3		13.3	76.7	10	
PHF	.250	.815	.500	.824	.550	.875	.750	.783	.500	.988	.464	.973	.500	.821	.375	.833
Cars	1	358	6	365	11	21	15	47	2	556	12	570	4	23	3	30
% Cars	100	98.9	100	98.9	100	100	100	100	100	99.1	92.3	99	100	100	100	100
Trucks	0	4	0	4	0	0	0	0	0	5	1	6	0	0	0	0
% Trucks	0	1.1	0	1.1	0	0	0	0	0	0.9	7.7	1	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 4

Groups Printed- Cars

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	3	72	3	4	3	1	1	105	3	2	2	1	200
04:15 PM	2	75	4	2	3	1	0	128	7	1	4	0	227
04:30 PM	0	95	0	2	3	2	1	128	4	2	7	0	244
04:45 PM	1	68	2	5	5	1	1	117	6	0	6	2	214
Total	6	310	9	13	14	5	3	478	20	5	19	3	885
05:00 PM	1	85	1	1	4	5	1	141	3	0	4	0	246
05:15 PM	0	110	1	4	6	5	0	139	6	2	6	1	280
05:30 PM	0	76	3	1	6	4	0	136	1	0	6	2	235
05:45 PM	0	87	1	1	8	1	1	140	2	1	5	0	247
Total	1	358	6	7	24	15	2	556	12	3	21	3	1008
Grand Total	7	668	15	20	38	20	5	1034	32	8	40	6	1893
Apprch %	1	96.8	2.2	25.6	48.7	25.6	0.5	96.5	3	14.8	74.1	11.1	
Total %	0.4	35.3	0.8	1.1	2	1.1	0.3	54.6	1.7	0.4	2.1	0.3	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 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**	85	1	87	1	4	**5**	10	**1**	**141**	3	**145**	0	4	0	4	246
05:15 PM	0	**110**	1	**111**	**4**	6	5	**15**	0	139	**6**	145	**2**	**6**	1	**9**	**280**
05:30 PM	0	76	**3**	79	1	6	4	11	0	136	1	137	0	6	**2**	8	235
05:45 PM	0	87	1	88	1	**8**	1	10	1	140	2	143	1	5	0	6	247
Total Volume	1	358	6	365	7	24	15	46	2	556	12	570	3	21	3	27	1008
% App. Total	0.3	98.1	1.6		15.2	52.2	32.6		0.4	97.5	2.1		11.1	77.8	11.1		
PHF	.250	.814	.500	.822	.438	.750	.750	.767	.500	.986	.500	.983	.375	.875	.375	.750	.900

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024
Page No : 7

Groups Printed- Trucks

	Route 138 From North			Robbins St From East			Route 138 From South			Robbins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	5	0	0	0	0	0	1	0	0	0	0	6
04:15 PM	0	3	0	0	0	0	0	1	0	0	0	0	4
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	9	0	0	0	0	0	2	0	0	0	0	11
05:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
05:15 PM	0	1	0	0	0	0	0	2	1	0	0	0	4
05:30 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
05:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	4	0	0	0	0	0	5	1	0	0	0	10
Grand Total	0	13	0	0	0	0	0	7	1	0	0	0	21
Apprch %	0	100	0	0	0	0	0	87.5	12.5	0	0	0	
Total %	0	61.9	0	0	0	0	0	33.3	4.8	0	0	0	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 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	**5**	0	**5**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**6**
04:15 PM	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	9	0	9	0	0	0	0	0	2	0	2	0	0	0	0	11
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.450	.000	.450	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.458

Accurate Counts

978-664-2565

N/S Street : Route 138
E/W Street : Robbins Street
City/State : Milton, MA
Weather : Clear

File Name : 10000002
Site Code : 10000002
Start Date : 6/26/2024

Groups Printed- Bikes Peds

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:15 PM	0	1	0	0	0	0	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	1	0	0	0	0	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	1	3
05:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	1	2	3
Total	0	0	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3	2	5
Grand Total	0	1	0	2	0	0	0	0	0	2	0	3	0	0	0	0	5	3	8
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0				
Total %	0	33.3	0		0	0	0		0	66.7	0		0	0	0		62.5	37.5	

	Route 138 From North				Robbins St From East				Route 138 From South				Robbins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	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
05:30 PM	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	**2**	0	**2**	0	0	0	0	**2**
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

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

Round off:
0-999 = 10
>1000 = 100

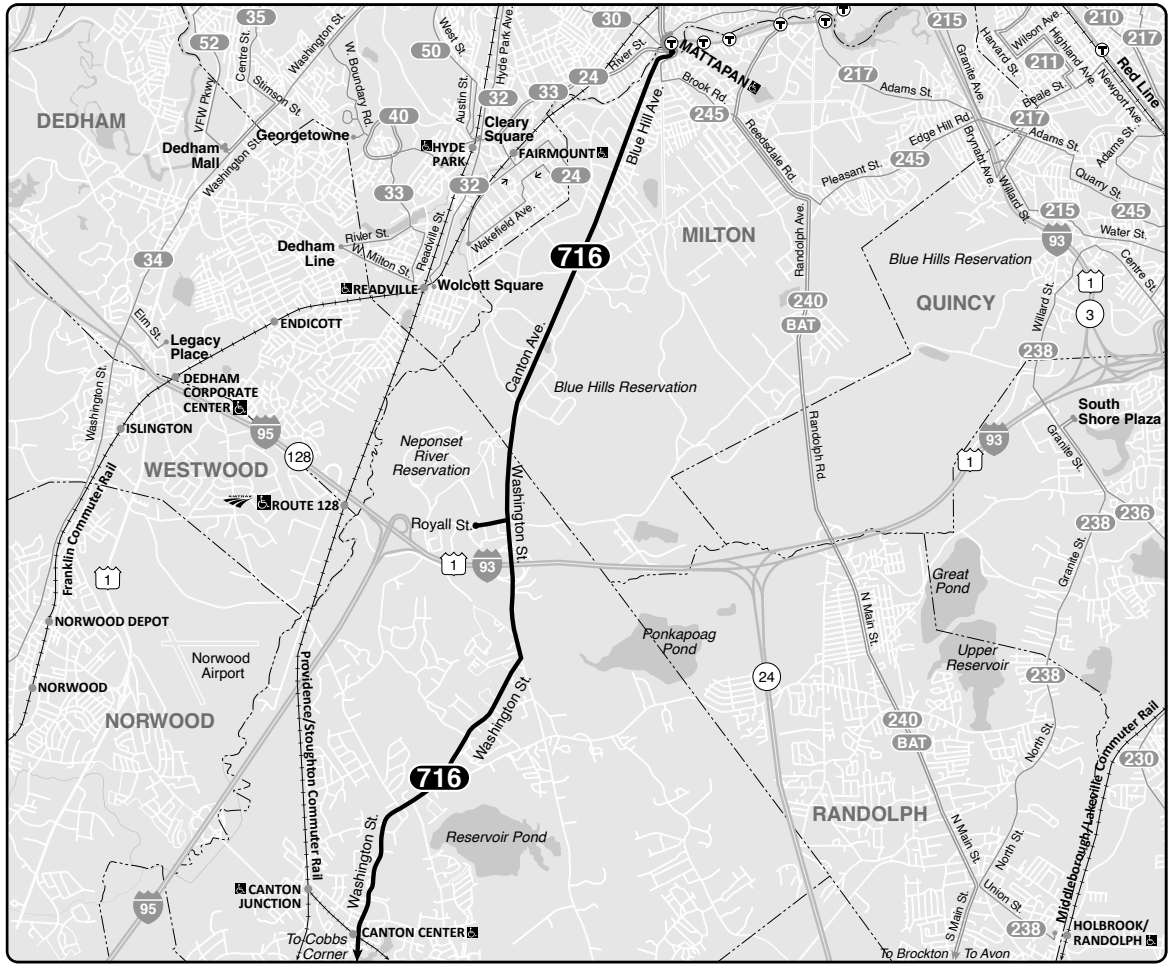
U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113, 1114,1116,2196,2197 and 2198.

PUBLIC TRANSPORTATION



- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free.

All buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
Bus	**$1.70**	**$1.70**	**$0.85**
Bus + Subway	**$2.40**	**$4.10**	**$1.10**

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

Effective **July 16, 2024** Replaces April 2024

716 Cobbs Corner – Mattapan Sta

Schedule Change
Weekday, Saturday

Connections

MATTAPAN LINE

PROVIDENCE/STOUGHTON LINE

Information **617-222-3200**
Lost and Found **877-378-4445**
TTY **617-222-5146**

Operated by DPV Transportation

mbta.com

PVT-3-24.3

Monday–Friday

716

Inbound
towards Mattapan Station

Cobbs Corner	Canton Center Sta	Royall St, Park/Ride	Curry College	Mattapan Station
6:30	6:36	6:46	6:57	7:07
8:00	8:06	8:16	8:27	8:37
9:30	9:36	9:46	9:57	10:07
11:00	11:06	11:16	11:27	11:37
12:30	**12:36**	**12:46**	**12:57**	**1:07**
2:00	**2:06**	**2:16**	**2:27**	**2:37**
3:30	**3:36**	**3:46**	**3:57**	**4:07**
5:05	**5:11**	**5:21**	**5:32**	**5:42**
6:35	**6:41**	**6:51**	**7:02**	**7:12**

Saturday

716

Inbound
towards Mattapan Station

Cobbs Corner	Canton Center Sta	Royall St, Park/Ride	Curry College	Mattapan Station
8:30	8:35	8:43	8:52	8:57
9:35	9:40	9:48	9:57	10:02
10:40	10:45	10:53	11:02	11:07
11:45	11:50	11:58	**12:07**	**12:12**
12:50	**12:55**	**1:03**	**1:12**	**1:17**
1:55	**2:00**	**2:08**	**2:17**	**2:22**
3:00	**3:05**	**3:13**	**3:22**	**3:27**
4:05	**4:10**	**4:18**	**4:27**	**4:32**
5:10	**5:15**	**5:23**	**5:32**	**5:37**
6:15	**6:20**	**6:28**	**6:37**	**6:42**

Monday–Friday

716

Outbound
towards Cobbs Corner

Mattapan Station	Curry College	Royall St, Park/Ride	Canton Center Sta	Cobbs Corner
5:45	5:56	6:03	6:10	6:16
7:15	7:26	7:33	7:40	7:46
8:45	8:56	9:03	9:10	9:16
10:15	10:26	10:33	10:40	10:46
11:45	11:56	**12:03**	**12:10**	**12:16**
1:15	**1:26**	**1:33**	**1:40**	**1:46**
2:45	**2:56**	**3:03**	**3:10**	**3:16**
4:15	**4:26**	**4:33**	**4:40**	**4:46**
5:45	**5:56**	**6:03**	**6:10**	**6:16**
7:15	**7:26**	**7:33**	**7:40**	**7:46**

Saturday

716

Outbound
towards Cobbs Corner

Mattapan Station	Curry College	Royall St, Park/Ride	Canton Center Sta	Cobbs Corner
8:00	8:04	8:11	8:19	8:24
9:05	9:09	9:16	9:24	9:29
10:10	10:14	10:21	10:29	10:34
11:15	11:19	11:26	11:34	11:39
12:20	**12:24**	**12:31**	**12:39**	**12:44**
1:25	**1:29**	**1:36**	**1:44**	**1:49**
2:30	**2:34**	**2:41**	**2:49**	**2:54**
3:35	**3:39**	**3:46**	**3:54**	**3:59**
4:40	**4:44**	**4:51**	**4:59**	**5:04**
5:45	**5:49**	**5:56**	**6:04**	**6:09**

Now accepting CharlieCards and CharlieTickets

Pay your fare with Charlie. Now available on routes 714 and 716.

This route is operated by DPV Transportation, under contract for the MBTA.

DPV Transportation
383 2nd Street
Everett, MA 02149
877-378-4445

Request service by flagging vehicle in any safe place along the route.

PM times are **bold**

Information in this timetable is subject to change without notice.

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

Holiday Service 2024

Saturday service operates on: Martin Luther King Day, Presidents Day, Patriots' Day, Columbus/ Indigenous Peoples Day.

Sunday service operates on: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas, New Year's Eve.

VEHICLE SPEED DATA

Accurate Counts
978-664-2565

Location : Route 138 Site Code: 10000001
Location : Just North of 665 Rt 138
City/State: Milton, MA
Direction: SB,

6/27/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	4	20	53	43	21	4	3	0	0	0	0	148
1:00	0	0	0	2	22	23	13	2	2	0	0	0	0	64
2:00	0	0	0	1	5	16	8	9	0	0	0	0	0	39
3:00	0	0	0	1	10	16	9	5	2	0	0	0	0	43
4:00	0	0	0	2	11	36	26	11	6	1	0	0	0	93
5:00	0	0	1	5	28	83	41	18	4	0	0	0	0	180
6:00	0	0	5	14	82	138	51	20	3	1	1	0	0	315
7:00	0	0	1	24	166	150	48	10	1	0	0	1	0	401
8:00	0	0	6	31	194	136	40	10	0	1	0	0	0	418
9:00	0	1	0	14	166	151	39	8	1	2	0	0	0	382
10:00	0	0	1	13	94	174	44	14	2	0	0	0	0	342
11:00	0	1	4	28	112	130	55	12	4	0	0	0	0	346
12:00 PM	0	0	1	22	134	126	42	7	2	1	2	0	0	337
1:00	0	1	0	51	130	151	39	2	4	1	0	0	0	379
2:00	0	0	5	26	159	91	39	6	0	0	0	0	0	326
3:00	0	0	0	26	107	96	38	8	6	0	0	0	0	281
4:00	0	0	2	26	113	97	30	7	0	0	0	0	0	275
5:00	0	0	1	33	110	128	31	5	1	0	0	0	0	309
6:00	0	0	1	33	126	121	32	7	2	1	0	0	0	323
7:00	0	0	1	42	147	122	35	4	0	0	0	0	0	351
8:00	0	0	1	43	132	84	30	3	1	0	0	0	0	294
9:00	0	0	0	19	118	107	22	1	3	1	0	0	0	271
10:00	0	0	0	14	81	134	36	4	2	1	0	0	0	272
11:00	0	0	1	7	57	79	46	11	3	1	1	0	0	206
Total	0	3	35	497	2357	2432	815	188	52	11	4	1	0	6395
			Percentile	15th	50th	85th	95th							
			Speed	30	34	39	43							
			Mean Speed (Average)	36.4										
			10 MPH Pace Speed	31-40										
			Number in Pace	4438										
			Percent in Pace	75.0%										
			Number > 35 MPH	3503										
			Percent > 35 MPH	54.8%										
Grand Total	1	11	133	1111	4497	4286	1396	312	91	17	6	1	0	11862
			Percentile	15th	50th	85th	95th							
			Speed	30	34	39	42							
			Mean Speed (Average)	36.0										
			10 MPH Pace Speed	31-40										
			Number in Pace	8647										
			Percent in Pace	74.0%										
			Number > 35 MPH	6109										
			Percent > 35 MPH	51.5%										

Accurate Counts
978-664-2565

Location : Route 138
Location : Just North of 665 Rt 138
City/State: Milton, MA
Direction: NB,

Site Code: 10000001

6/27/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	7	20	34	21	10	3	0	0	0	0	0	95
1:00	0	0	2	2	31	13	13	5	0	1	1	0	0	68
2:00	0	0	0	2	5	8	13	4	1	1	0	0	0	34
3:00	0	0	0	5	8	6	17	3	1	0	0	0	0	40
4:00	0	1	3	6	20	22	7	5	5	0	0	0	0	69
5:00	0	1	2	21	74	88	36	18	5	2	0	0	0	247
6:00	1	4	17	63	146	117	64	15	6	0	0	0	0	433
7:00	0	2	19	110	178	126	37	8	1	2	1	0	0	484
8:00	0	1	10	88	174	105	36	15	5	0	0	0	0	434
9:00	1	2	16	73	143	130	40	10	6	2	0	0	0	423
10:00	2	3	14	48	145	102	44	16	8	0	0	2	0	384
11:00	0	0	8	53	131	121	46	10	3	1	0	0	0	373
12:00 PM	0	0	10	62	141	104	57	13	4	3	1	0	0	395
1:00	0	2	28	70	142	109	52	8	2	3	0	0	1	417
2:00	0	4	13	70	143	137	56	29	7	1	0	0	0	460
3:00	0	2	7	66	181	141	54	26	5	1	0	0	0	483
4:00	4	2	14	66	178	150	48	10	3	1	0	2	0	478
5:00	2	1	16	110	176	168	32	16	1	5	2	0	0	529
6:00	1	0	9	57	172	174	70	9	3	1	0	0	0	496
7:00	0	3	9	42	124	124	47	15	3	1	2	0	0	370
8:00	0	1	9	57	137	100	33	10	0	1	2	0	0	350
9:00	0	0	3	44	96	70	42	9	4	0	1	0	0	269
10:00	0	1	3	25	72	87	34	16	3	0	1	0	0	242
11:00	0	0	0	10	43	50	31	22	7	2	0	0	0	165
Total	11	30	219	1170	2694	2273	919	295	83	28	11	4	1	7738
			Percentile	15th	50th	85th	95th							
			Speed	28	34	39	44							
			Mean Speed (Average)	35.5										
			10 MPH Pace Speed	31-40										
			Number in Pace	4715										
			Percent in Pace	64.0%										
			Number > 35 MPH	3614										
			Percent > 35 MPH	46.7%										
Grand Total	31	76	537	2506	5267	4326	1790	530	158	55	21	8	4	15309
			Percentile	15th	50th	85th	95th							
			Speed	28	33	39	44							
			Mean Speed (Average)	35.2										
			10 MPH Pace Speed	31-40										
			Number in Pace	9500										
			Percent in Pace	63.0%										
			Number > 35 MPH	6892										
			Percent > 35 MPH	45.0%										

Accurate Counts
978-664-2565

Location : Route 138
Location : Just North of 665 Rt 138
City/State: Milton, MA
Direction: Combined

Site Code: 10000001

6/27/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	11	40	87	64	31	7	3	0	0	0	0	243
1:00	0	0	2	4	53	36	26	7	2	1	1	0	0	132
2:00	0	0	0	3	10	24	21	13	1	1	0	0	0	73
3:00	0	0	0	6	18	22	26	8	3	0	0	0	0	83
4:00	0	1	3	8	31	58	33	16	11	1	0	0	0	162
5:00	0	1	3	26	102	171	77	36	9	2	0	0	0	427
6:00	1	4	22	77	228	255	115	35	9	1	1	0	0	748
7:00	0	2	20	134	344	276	85	18	2	2	1	1	0	885
8:00	0	1	16	119	368	241	76	25	5	1	0	0	0	852
9:00	1	3	16	87	309	281	79	18	7	4	0	0	0	805
10:00	2	3	15	61	239	276	88	30	10	0	0	2	0	726
11:00	0	1	12	81	243	251	101	22	7	1	0	0	0	719
12:00 PM	0	0	11	84	275	230	99	20	6	4	3	0	0	732
1:00	0	3	28	121	272	260	91	10	6	4	0	0	1	796
2:00	0	4	18	96	302	228	95	35	7	1	0	0	0	786
3:00	0	2	7	92	288	237	92	34	11	1	0	0	0	764
4:00	4	2	16	92	291	247	78	17	3	1	0	2	0	753
5:00	2	1	17	143	286	296	63	21	2	5	2	0	0	838
6:00	1	0	10	90	298	295	102	16	5	2	0	0	0	819
7:00	0	3	10	84	271	246	82	19	3	1	2	0	0	721
8:00	0	1	10	100	269	184	63	13	1	1	2	0	0	644
9:00	0	0	3	63	214	177	64	10	7	1	1	0	0	540
10:00	0	1	3	39	153	221	70	20	5	1	1	0	0	514
11:00	0	0	1	17	100	129	77	33	10	3	1	0	0	371
Total	11	33	254	1667	5051	4705	1734	483	135	39	15	5	1	14133
			Percentile	15th	50th	85th	95th							
			Speed	29	34	39	44							
			Mean Speed (Average)	35.9										
			10 MPH Pace Speed	31-40										
			Number in Pace	9153										
			Percent in Pace	69.0%										
			Number > 35 MPH	7117										
			Percent > 35 MPH	50.4%										
Grand Total	32	87	670	3617	9764	8612	3186	842	249	72	27	9	4	27171
			Percentile	15th	50th	85th	95th							
			Speed	29	34	39	43							
			Mean Speed (Average)	35.5										
			10 MPH Pace Speed	31-40										
			Number in Pace	18147										
			Percent in Pace	68.0%										
			Number > 35 MPH	13001										
			Percent > 35 MPH	47.8%										

MOTOR VEHICLE CRASH DATA

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Milton COUNT DATE : Jun-24

DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

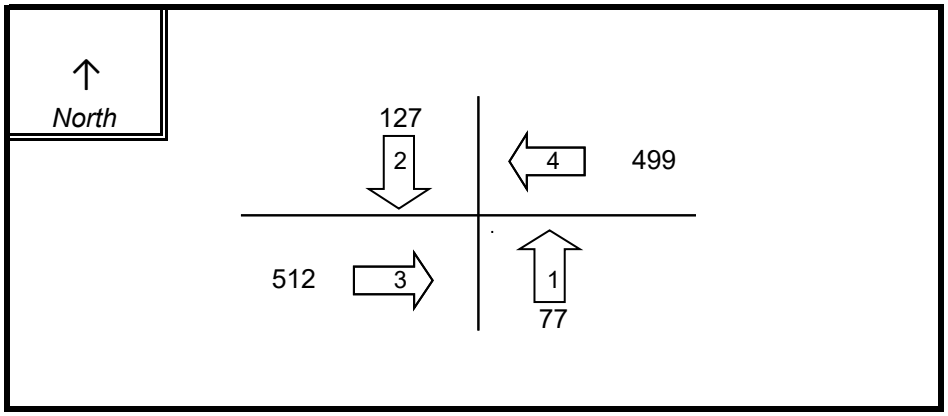
~ INTERSECTION DATA ~

MAJOR STREET : Route 138

MINOR STREET(S) : Bradlee Road

Atherton Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB	NEB	
PEAK HOURLY VOLUMES (AM) :	77	127	512	499	23	**1,238**

" K " FACTOR : **0.075** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,507**

TOTAL # OF CRASHES : 21 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **4.20**

CRASH RATE CALCULATION : **0.70** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Accident Rate for District 6 signalized intersections = 0.71

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Milton COUNT DATE : Jun-24

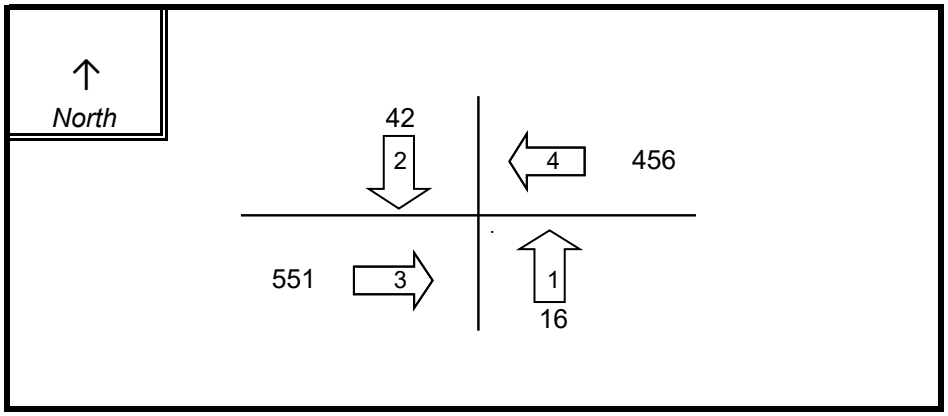
DISTRICT : 6 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Route 138

MINOR STREET(S) : Ribbins Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	16	42	551	456		1,065

" K " FACTOR : **0.075** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,200**

TOTAL # OF CRASHES : 16 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **3.20**

CRASH RATE CALCULATION : **0.62** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Accident Rate for District 6 signalized intersections = 0.71

GROWTH RATE CALCULATIONS

General Background Traffic Growth - Daily Traffic Volumes

CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average Annual
Milton	Route 138	North of Atherton Street	10,678	10,800		12,651	10,443	11,017	11,907	12,242	12,234	14,621	14,679	**3.19%**
Milton	Blue Hill Avenue	North of Neponset Valley Parkway	11,834	14,000	14,409	14,435	13,009	13,724	13,875	14,629	14,790	17,096	13,250	**1.55%**
Milton	Milton Street	West of Route 138										3,917	3,901	**-0.41%**
Milton	Blue Hill Avenue	North of Milton Street										18,582	18,656	**0.40%**
Milton	Bradlee Road	West of Route 138										2,168	2,159	**-0.42%**
Milton	Atherton Street	East of Route 138										1,825	1,818	**-0.38%**
Milton	Robbins Street	East of Route 138										1,170	1,165	**-0.43%**
Milton	Blue Hill Avenue	North of Robbins Street										12,378	12,428	**0.40%**
														0.49%

TRIP GENERATION

Day Care Center
(565)

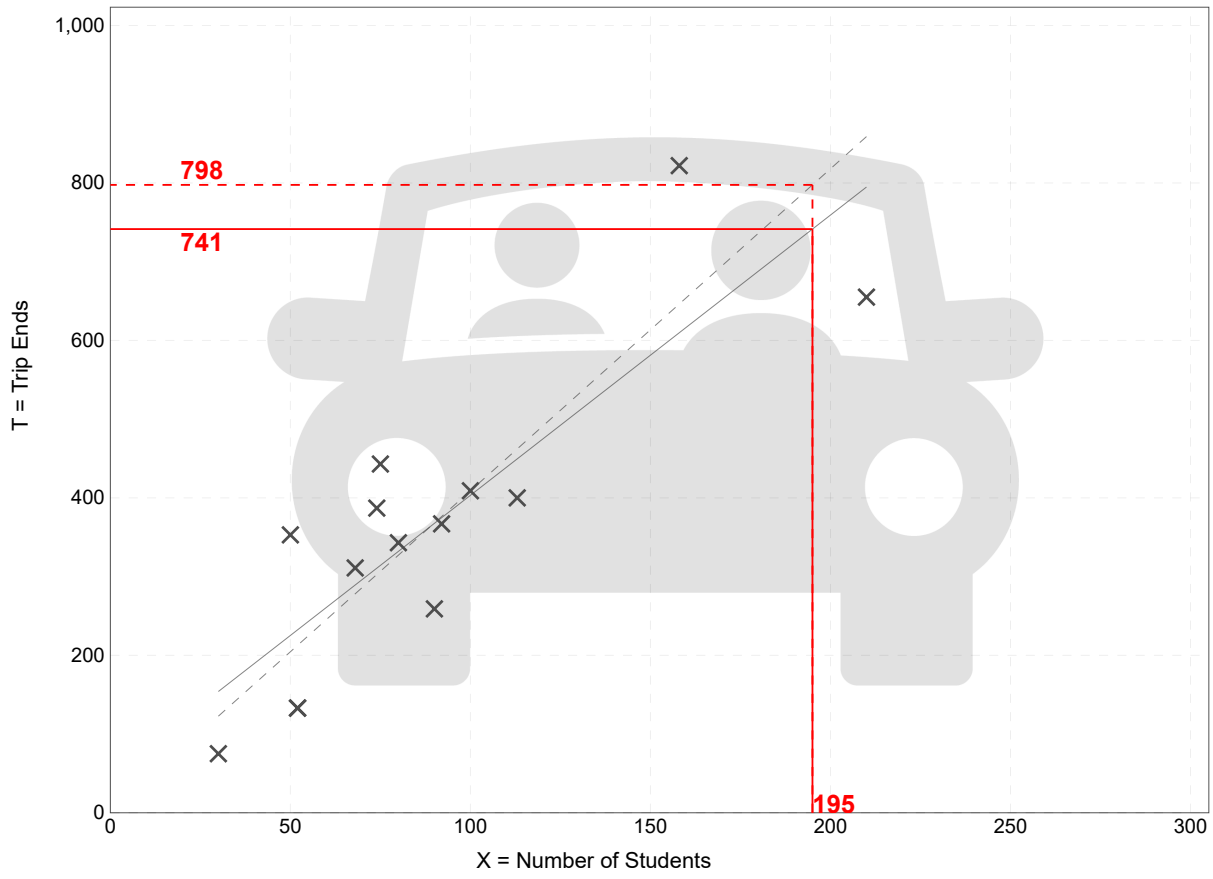
Vehicle Trip Ends vs: **Students**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Students: 89
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
4.09	2.50 - 7.06	1.21

Data Plot and Equation



Fitted Curve Equation: T = 3.56(X) + 47.23

R^2= 0.72

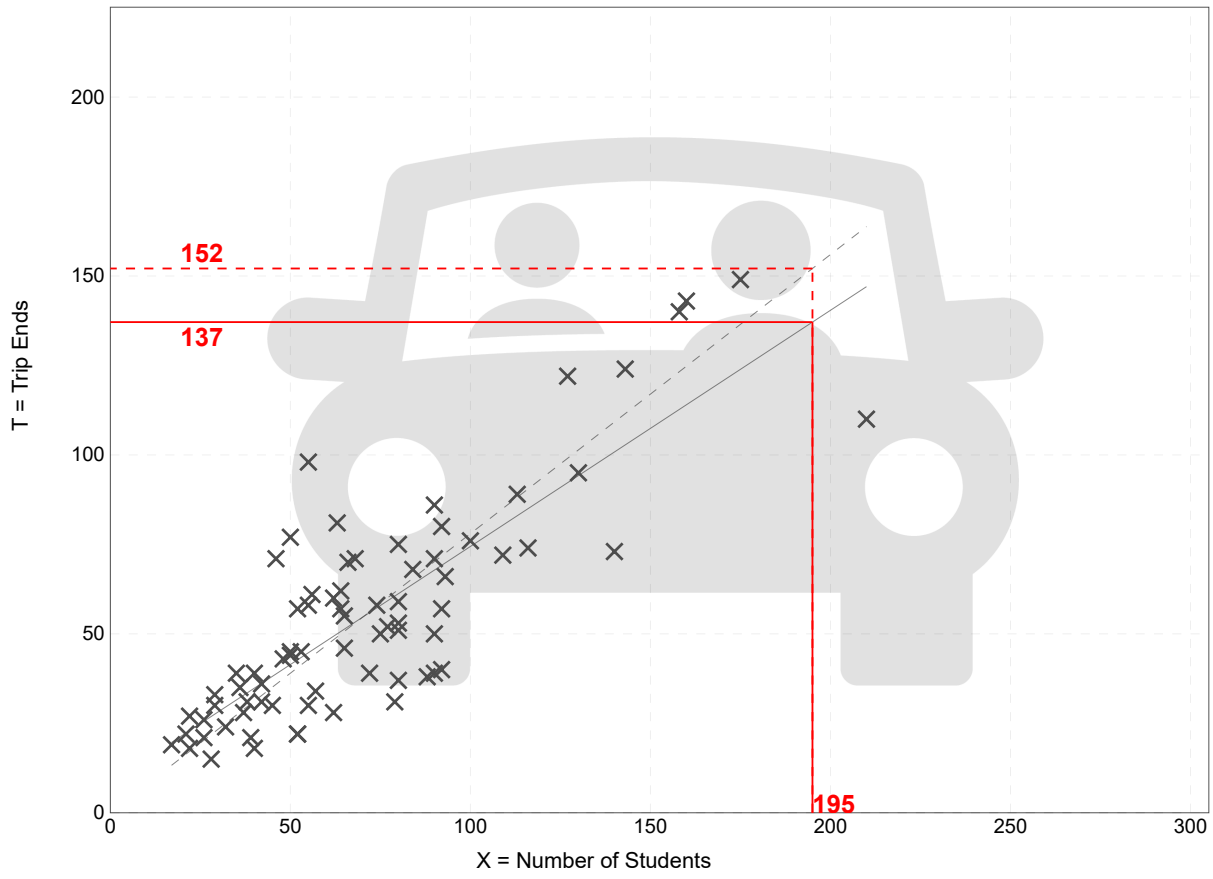
Day Care Center
(565)

Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 75
Avg. Num. of Students: 71
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.78	0.39 - 1.78	0.25

Data Plot and Equation



Fitted Curve Equation: T = 0.66(X) + 8.42

R^2= 0.69

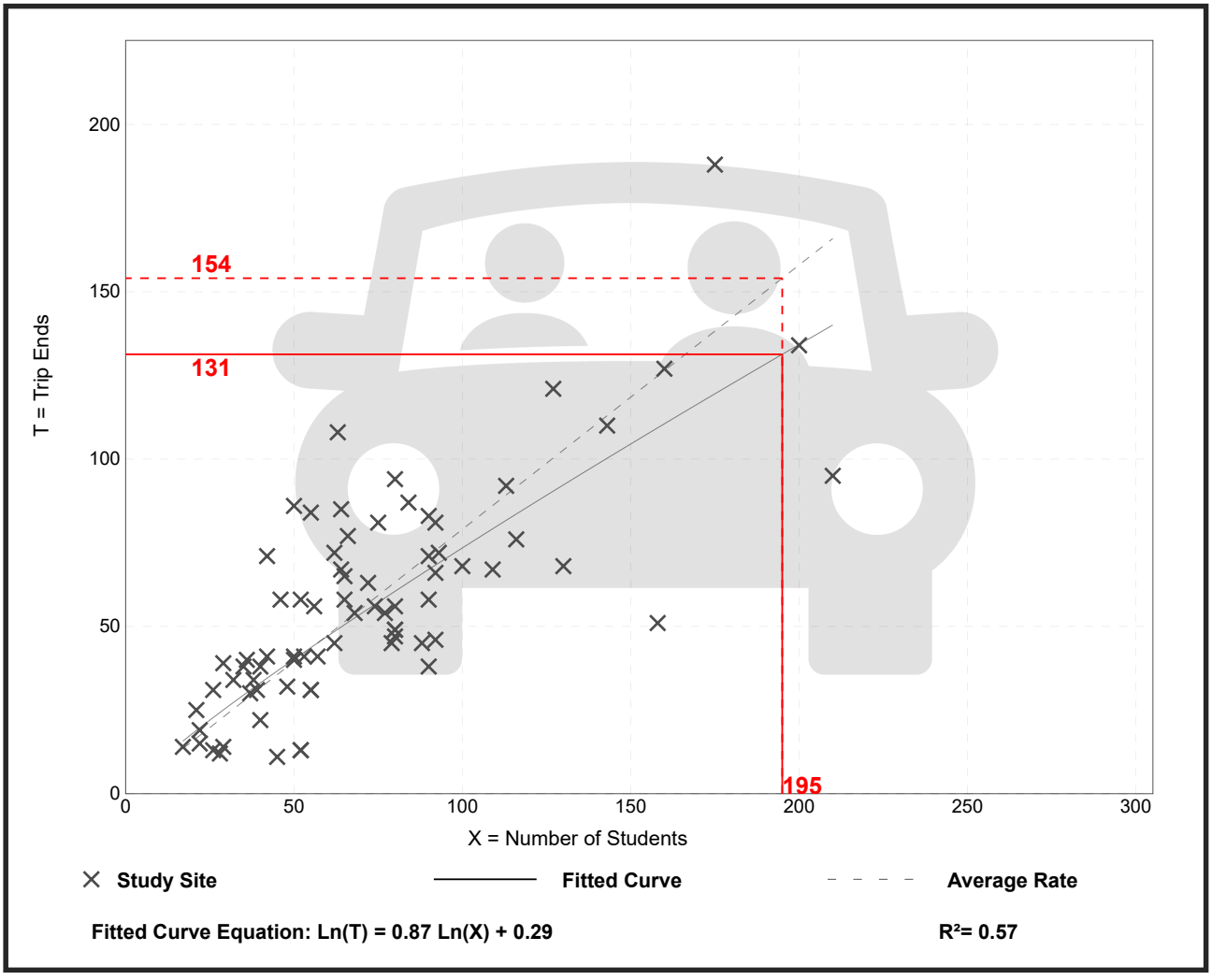
Day Care Center
(565)

Vehicle Trip Ends vs: **Students**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 75
Avg. Num. of Students: 72
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.79	0.24 - 1.72	0.30

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.87 Ln(X) + 0.29

R^2= 0.57

CAPACITY ANALYSIS

2024 Baseline Weekday Morning Peak Hour
2024 Baseline Weekday Evening Peak Hour
2031 No-Build Weekday Morning Peak Hour
2031 No-Build Weekday Evening Peak Hour
2031 Build Weekday Morning Peak Hour
2031 Build Weekday Evening Peak Hour

2024 Baseline Weekday Morning Peak Hour

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	8	29	37	3	28	9	71	19	12	44	451	5
Future Volume (vph)	8	29	37	3	28	9	71	19	12	44	451	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.93					0.97				0.99	
Flt Protected		0.99					0.98				0.99	
Satd. Flow (prot)		1656					1774				1786	
Flt Permitted		0.96					0.89				0.89	
Satd. Flow (perm)		1604					1607				1608	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	9	32	40	3	33	10	83	22	12	46	470	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	84	0	0	0	0	148	0	0	0	534	0
Heavy Vehicles (%)	25%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	20%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		11.7					11.7				41.3	
Effective Green, g (s)		11.7					11.7				41.3	
Actuated g/C Ratio		0.15					0.15				0.52	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		236					237				837	
v/s Ratio Prot												
v/s Ratio Perm		0.05					c0.09				c0.33	
v/c Ratio		0.35					0.62				0.63	
Uniform Delay, d1		30.4					31.7				13.6	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		0.9					5.0				3.7	
Delay (s)		31.3					36.7				17.3	
Level of Service		C					D				B	
Approach Delay (s/veh)		31.3					36.7				17.3	
Approach LOS		C					D				B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	2	485	8	4	4	11	6	2
Future Volume (vph)	2	485	8	4	4	11	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		0.99				0.95		
Flt Protected		0.99				0.96		
Satd. Flow (prot)		1823				1637		
Flt Permitted		0.99				0.96		
Satd. Flow (perm)		1821				1637		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.64	0.64	0.64	0.64
Adj. Flow (vph)	2	533	9	4	6	17	9	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	548	0	0	0	35	0	0
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.3				4.4		
Effective Green, g (s)		41.3				4.4		
Actuated g/C Ratio		0.52				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		948				90		
v/s Ratio Prot								
v/s Ratio Perm		0.30				0.02		
v/c Ratio		0.57				0.38		
Uniform Delay, d1		13.0				36.1		
Progression Factor		1.00				1.00		
Incremental Delay, d2		2.5				2.7		
Delay (s)		15.5				38.9		
Level of Service		B				D		
Approach Delay (s/veh)		15.5				38.9		
Approach LOS		B				D		

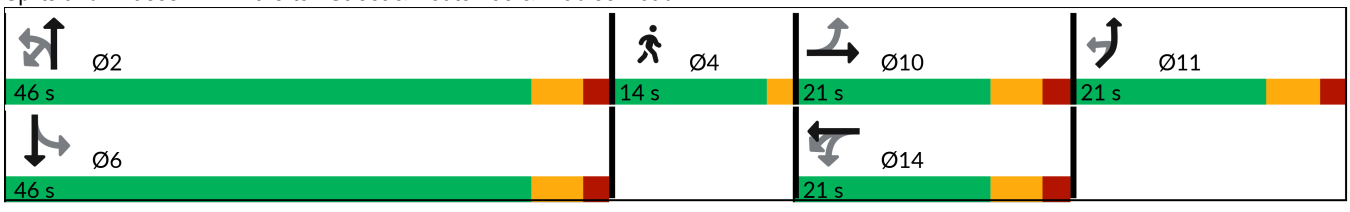
Intersection Summary

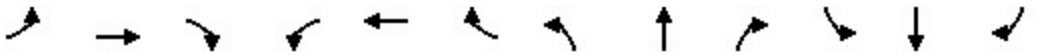
Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	8	29	28	9	71	12	44	451	2	485	11	
Future Volume (vph)	8	29	28	9	71	12	44	451	2	485	11	
Lane Group Flow (vph)	0	84	0	0	148	0	0	534	0	548	35	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.33			0.59			0.60		0.54	0.22	
Control Delay (s/veh)		35.4			42.6			19.5		17.4	39.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		35.4			42.6			19.5		17.4	39.5	
Queue Length 50th (ft)		36			67			176		172	16	
Queue Length 95th (ft)		92			143			#462		407	35	
Internal Link Dist (ft)		958			955			1162		3141	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		330			331			883		1000	337	
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		0.25			0.45			0.60		0.55	0.10	

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 75.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	12	3	18	23	1	2	543	6	2	444	10
Future Volume (vph)	1	12	3	18	23	1	2	543	6	2	444	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			0.99			0.99	
Flt Protected		0.99			0.97			0.99			0.99	
Satd. Flow (prot)		1844			1856			1904			1858	
Flt Permitted		0.98			0.85			0.99			0.99	
Satd. Flow (perm)		1815			1615			1902			1855	
Peak-hour factor, PHF	0.80	0.80	0.80	0.75	0.75	0.75	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	1	15	4	24	31	1	2	610	7	2	488	11
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	16	0	0	55	0	0	619	0	0	500	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1			60.2			60.2	
Effective Green, g (s)		7.1			7.1			60.2			60.2	
Actuated g/C Ratio		0.07			0.07			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		121			107			1076			1049	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.03			c0.33			0.27	
v/c Ratio		0.13			0.51			0.57			0.47	
Uniform Delay, d1		46.7			47.9			14.8			13.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			4.1			2.2			1.5	
Delay (s)		47.2			52.1			17.1			15.2	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		47.2			52.1			17.1			15.2	
Approach LOS		D			D			B			B	

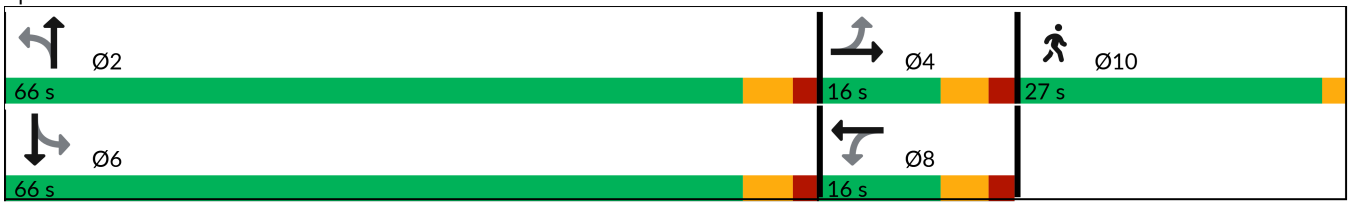
Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	106.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

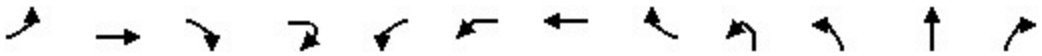
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	1	12	18	23	2	543	2	444	
Future Volume (vph)	1	12	18	23	2	543	2	444	
Lane Group Flow (vph)	0	20	0	56	0	619	0	501	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.13		0.43		0.56		0.47	
Control Delay (s/veh)		41.3		57.2		17.6		15.7	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		41.3		57.2		17.6		15.7	
Queue Length 50th (ft)		10		37		267		199	
Queue Length 95th (ft)		30		64		378		293	
Internal Link Dist (ft)		649		588		3141		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		155		1089		1064	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.11		0.36		0.57		0.47	

Intersection Summary
Cycle Length: 109
Actuated Cycle Length: 105.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



2024 Baseline Weekday Evening Peak Hour



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	5	75	32	1	7	10	66	24	7	42	529	15
Future Volume (vph)	5	75	32	1	7	10	66	24	7	42	529	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.96					0.96				0.99	
Flt Protected		0.99					0.99				0.99	
Satd. Flow (prot)		1760					1766				1869	
Flt Permitted		0.98					0.91				0.93	
Satd. Flow (perm)		1738					1628				1753	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	93	40	1	9	12	81	30	8	45	569	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	140	0	0	0	0	132	0	0	0	638	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		11.0					11.0				41.4	
Effective Green, g (s)		11.0					11.0				41.4	
Actuated g/C Ratio		0.14					0.14				0.53	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		242					227				922	
v/s Ratio Prot												
v/s Ratio Perm		0.08					c0.08				c0.36	
v/c Ratio		0.57					0.58				0.69	
Uniform Delay, d1		31.6					31.6				13.8	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		3.3					3.7				4.2	
Delay (s)		35.0					35.4				18.1	
Level of Service		D					D				B	
Approach Delay (s/veh)		35.0					35.4				18.1	
Approach LOS		D					D				B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

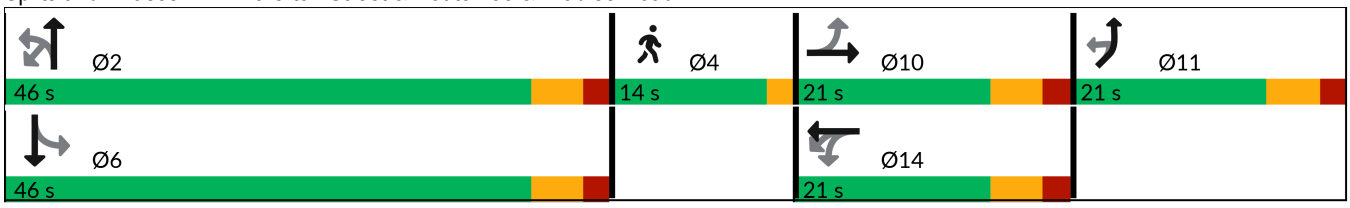
Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	39	321	2	8	5	9	13	1
Future Volume (vph)	39	321	2	8	5	9	13	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.97		
Satd. Flow (prot)		1805				1613		
Flt Permitted		0.89				0.97		
Satd. Flow (perm)		1621				1613		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.78	0.78	0.78	0.78
Adj. Flow (vph)	46	378	2	9	6	12	17	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	435	0	0	0	36	0	0
Heavy Vehicles (%)	0%	5%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.4				4.5		
Effective Green, g (s)		41.4				4.5		
Actuated g/C Ratio		0.53				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		852				92		
v/s Ratio Prot								
v/s Ratio Perm		0.27				0.02		
v/c Ratio		0.51				0.39		
Uniform Delay, d1		12.0				35.7		
Progression Factor		1.00				1.00		
Incremental Delay, d2		2.1				2.7		
Delay (s)		14.2				38.5		
Level of Service		B				D		
Approach Delay (s/veh)		14.2				38.5		
Approach LOS		B				D		

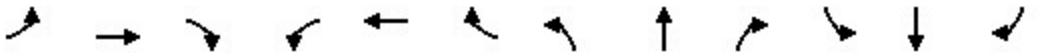
Intersection Summary

Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	5	75	7	10	66	7	42	529	39	321	9	
Future Volume (vph)	5	75	7	10	66	7	42	529	39	321	9	
Lane Group Flow (vph)	0	140	0	0	132	0	0	638	0	435	36	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.54			0.55			0.65		0.48	0.22	
Control Delay (s/veh)		40.7			41.5			20.3		16.3	39.2	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		40.7			41.5			20.3		16.3	39.2	
Queue Length 50th (ft)		63			59			212		126	16	
Queue Length 95th (ft)		126			121			#571		293	44	
Internal Link Dist (ft)		958			955			1162		3141	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		360			338			972		899	335	
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		0.39			0.39			0.66		0.48	0.11	

Intersection Summary
Cycle Length: 102
Actuated Cycle Length: 74.6
Natural Cycle: 75
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	21	3	7	24	15	2	561	13	1	362	6
Future Volume (vph)	3	21	3	7	24	15	2	561	13	1	362	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.95			0.99			0.99	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1861			1804			1935			1877	
Flt Permitted		0.96			0.93			0.99			0.99	
Satd. Flow (perm)		1810			1706			1933			1876	
Peak-hour factor, PHF	0.75	0.75	0.75	0.77	0.77	0.77	0.97	0.97	0.97	0.82	0.82	0.82
Adj. Flow (vph)	4	28	4	9	31	19	2	578	13	1	441	7
RTOR Reduction (vph)	0	4	0	0	16	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	43	0	0	592	0	0	449	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	8%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.6			6.6			60.2			60.2	
Effective Green, g (s)		6.6			6.6			60.2			60.2	
Actuated g/C Ratio		0.06			0.06			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		112			106			1098			1066	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.03			c0.31			0.24	
v/c Ratio		0.28			0.40			0.53			0.42	
Uniform Delay, d1		47.4			47.7			14.2			12.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			2.5			1.9			1.2	
Delay (s)		48.8			50.2			16.1			14.1	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		48.8			50.2			16.1			14.1	
Approach LOS		D			D			B			B	

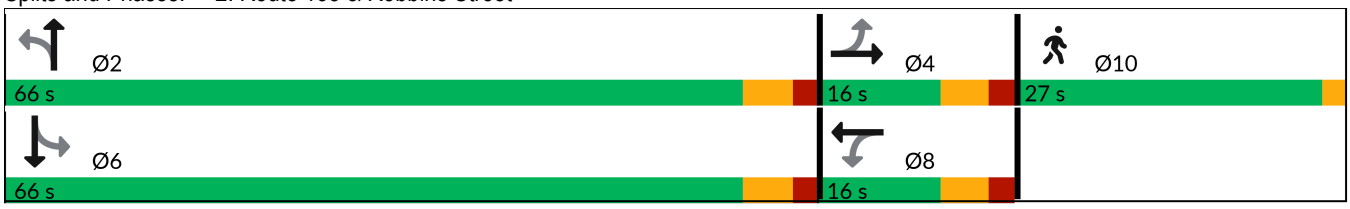
Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	105.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	3	21	7	24	2	561	1	362	
Future Volume (vph)	3	21	7	24	2	561	1	362	
Lane Group Flow (vph)	0	36	0	59	0	593	0	449	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.25		0.41		0.53		0.41	
Control Delay (s/veh)		47.1		44.7		16.6		14.7	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		47.1		44.7		16.6		14.7	
Queue Length 50th (ft)		21		28		243		168	
Queue Length 95th (ft)		44		58		358		222	
Internal Link Dist (ft)		649		588		3141		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		179		1113		1080	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.20		0.33		0.53		0.42	

Intersection Summary
Cycle Length: 109
Actuated Cycle Length: 104.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



2031 No-Build Weekday Morning Peak Hour

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	9	31	40	3	30	10	76	20	13	47	488	5
Future Volume (vph)	9	31	40	3	30	10	76	20	13	47	488	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.93					0.98				0.99	
Flt Protected		0.99					0.98				0.99	
Satd. Flow (prot)		1655					1774				1787	
Flt Permitted		0.96					0.89				0.89	
Satd. Flow (perm)		1598					1606				1602	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	34	43	3	35	12	88	23	14	49	508	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	90	0	0	0	0	158	0	0	0	576	0
Heavy Vehicles (%)	25%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	20%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		12.3					12.3				41.3	
Effective Green, g (s)		12.3					12.3				41.3	
Actuated g/C Ratio		0.15					0.15				0.52	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		245					246				827	
v/s Ratio Prot												
v/s Ratio Perm		0.06					c0.10				c0.36	
v/c Ratio		0.36					0.64				0.69	
Uniform Delay, d1		30.3					31.7				14.6	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		0.9					5.6				4.8	
Delay (s)		31.2					37.4				19.4	
Level of Service		C					D				B	
Approach Delay (s/veh)		31.2					37.4				19.4	
Approach LOS		C					D				B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	2	532	9	4	4	12	6	2
Future Volume (vph)	2	532	9	4	4	12	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		0.99				0.95		
Flt Protected		0.99				0.96		
Satd. Flow (prot)		1823				1640		
Flt Permitted		0.99				0.96		
Satd. Flow (perm)		1821				1640		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.64	0.64	0.64	0.64
Adj. Flow (vph)	2	585	10	4	6	19	9	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	601	0	0	0	37	0	0
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.3				4.5		
Effective Green, g (s)		41.3				4.5		
Actuated g/C Ratio		0.52				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		940				92		
v/s Ratio Prot								
v/s Ratio Perm		0.33				0.02		
v/c Ratio		0.63				0.40		
Uniform Delay, d1		13.9				36.4		
Progression Factor		1.00				1.00		
Incremental Delay, d2		3.3				2.8		
Delay (s)		17.2				39.3		
Level of Service		B				D		
Approach Delay (s/veh)		17.2				39.3		
Approach LOS		B				D		

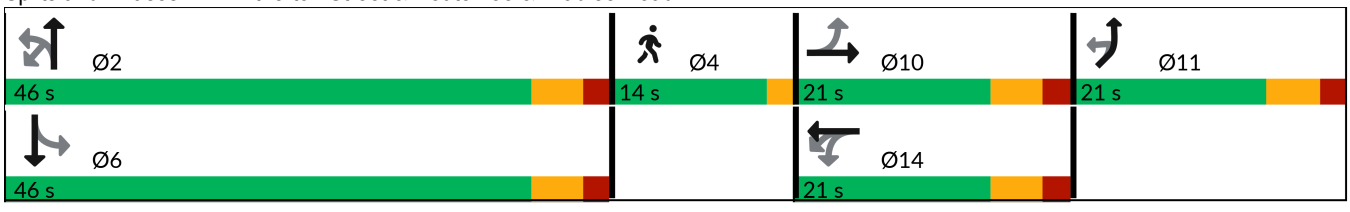
Intersection Summary

Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	9	31	30	10	76	13	47	488	2	532	12	
Future Volume (vph)	9	31	30	10	76	13	47	488	2	532	12	
Lane Group Flow (vph)	0	90	0	0	158	0	0	576	0	601	37	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.34			0.61			0.66		0.60	0.23	
Control Delay (s/veh)		35.5			43.1			21.4		19.1	39.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		35.5			43.1			21.4		19.1	39.7	
Queue Length 50th (ft)		39			72			204		204	17	
Queue Length 95th (ft)		99			152			#523		#478	37	
Internal Link Dist (ft)		958			955			1162		3141	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		326			327			872		991	334	
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		0.28			0.48			0.66		0.61	0.11	

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 75.8
Natural Cycle: 80
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	1	13	3	19	25	1	2	586	6	2	488	11
Future Volume (vph)	1	13	3	19	25	1	2	586	6	2	488	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			0.99			0.99	
Flt Protected		0.99			0.97			0.99			0.99	
Satd. Flow (prot)		1847			1856			1904			1858	
Flt Permitted		0.98			0.85			0.99			0.99	
Satd. Flow (perm)		1821			1617			1902			1855	
Peak-hour factor, PHF	0.80	0.80	0.80	0.75	0.75	0.75	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	1	16	4	25	33	1	2	658	7	2	536	12
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	58	0	0	667	0	0	549	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.2			7.2			60.2			60.2	
Effective Green, g (s)		7.2			7.2			60.2			60.2	
Actuated g/C Ratio		0.07			0.07			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		123			109			1075			1048	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.04			c0.35			0.30	
v/c Ratio		0.14			0.53			0.62			0.52	
Uniform Delay, d1		46.7			48.0			15.4			14.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			4.9			2.6			1.8	
Delay (s)		47.2			52.9			18.1			16.1	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		47.2			52.9			18.1			16.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

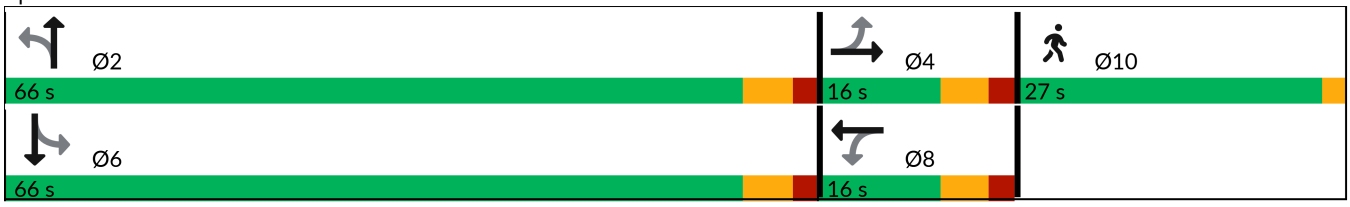
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	1	13	19	25	2	586	2	488	
Future Volume (vph)	1	13	19	25	2	586	2	488	
Lane Group Flow (vph)	0	21	0	59	0	667	0	550	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.14		0.45		0.61		0.51	
Control Delay (s/veh)		41.7		58.0		18.7		16.6	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		41.7		58.0		18.7		16.6	
Queue Length 50th (ft)		11		39		301		228	
Queue Length 95th (ft)		31		67		422		331	
Internal Link Dist (ft)		649		588		3141		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		155		1089		1063	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.12		0.38		0.61		0.52	

Intersection Summary

Cycle Length: 109
Actuated Cycle Length: 105.2
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



2031 No-Build Weekday Evening Peak Hour

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	5	80	34	1	8	11	71	26	8	45	580	16
Future Volume (vph)	5	80	34	1	8	11	71	26	8	45	580	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.96					0.97				0.99	
Flt Protected		0.99					0.99				0.99	
Satd. Flow (prot)		1761					1767				1869	
Flt Permitted		0.98					0.90				0.92	
Satd. Flow (perm)		1740					1605				1743	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	99	42	1	10	14	88	32	9	48	624	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	148	0	0	0	0	144	0	0	0	698	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		11.6					11.6				41.4	
Effective Green, g (s)		11.6					11.6				41.4	
Actuated g/C Ratio		0.15					0.15				0.52	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		253					234				907	
v/s Ratio Prot												
v/s Ratio Perm		0.09					c0.09				c0.40	
v/c Ratio		0.58					0.61				0.76	
Uniform Delay, d1		31.7					31.8				15.2	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		3.4					4.7				6.2	
Delay (s)		35.1					36.6				21.4	
Level of Service		D					D				C	
Approach Delay (s/veh)		35.1					36.6				21.4	
Approach LOS		D					D				C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	42	352	2	9	5	10	14	1
Future Volume (vph)	42	352	2	9	5	10	14	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.97		
Satd. Flow (prot)		1805				1613		
Flt Permitted		0.89				0.97		
Satd. Flow (perm)		1617				1613		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.78	0.78	0.78	0.78
Adj. Flow (vph)	49	414	2	11	6	13	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	476	0	0	0	38	0	0
Heavy Vehicles (%)	0%	5%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.4				4.6		
Effective Green, g (s)		41.4				4.6		
Actuated g/C Ratio		0.52				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		842				93		
v/s Ratio Prot								
v/s Ratio Perm		0.29				0.02		
v/c Ratio		0.56				0.40		
Uniform Delay, d1		12.9				36.1		
Progression Factor		1.00				1.00		
Incremental Delay, d2		2.7				2.9		
Delay (s)		15.6				39.0		
Level of Service		B				D		
Approach Delay (s/veh)		15.6				39.0		
Approach LOS		B				D		

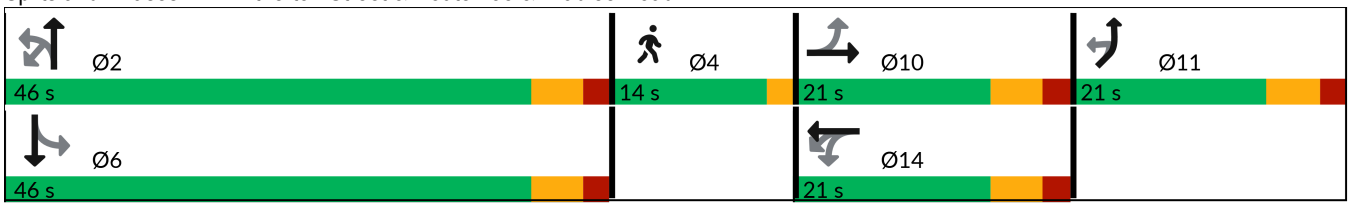
Intersection Summary

Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	5	80	8	11	71	8	45	580	42	352	10	
Future Volume (vph)	5	80	8	11	71	8	45	580	42	352	10	
Lane Group Flow (vph)	0	148	0	0	144	0	0	698	0	476	38	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.55			0.58			0.73		0.53	0.23	
Control Delay (s/veh)		40.5			42.5			23.1		17.7	39.6	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		40.5			42.5			23.1		17.7	39.6	
Queue Length 50th (ft)		67			65			256		148	17	
Queue Length 95th (ft)		133			131			#660		332	46	
Internal Link Dist (ft)		958			955			1162		3141	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		358			330			956		887	332	
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		0.41			0.44			0.73		0.54	0.11	

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 75.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	3	23	3	8	26	16	2	614	14	1	396	6
Future Volume (vph)	3	23	3	8	26	16	2	614	14	1	396	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.95			0.99			0.99	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1864			1803			1935			1878	
Flt Permitted		0.96			0.93			0.99			0.99	
Satd. Flow (perm)		1816			1703			1934			1877	
Peak-hour factor, PHF	0.75	0.75	0.75	0.77	0.77	0.77	0.97	0.97	0.97	0.82	0.82	0.82
Adj. Flow (vph)	4	31	4	10	34	21	2	633	14	1	483	7
RTOR Reduction (vph)	0	4	0	0	16	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	35	0	0	49	0	0	648	0	0	491	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	8%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.9			6.9			60.2			60.2	
Effective Green, g (s)		6.9			6.9			60.2			60.2	
Actuated g/C Ratio		0.06			0.06			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		117			110			1096			1063	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.03			c0.34			0.26	
v/c Ratio		0.30			0.44			0.59			0.46	
Uniform Delay, d1		47.3			47.8			14.9			13.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			2.8			2.3			1.4	
Delay (s)		48.8			50.6			17.3			14.9	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		48.8			50.6			17.3			14.9	
Approach LOS		D			D			B			B	

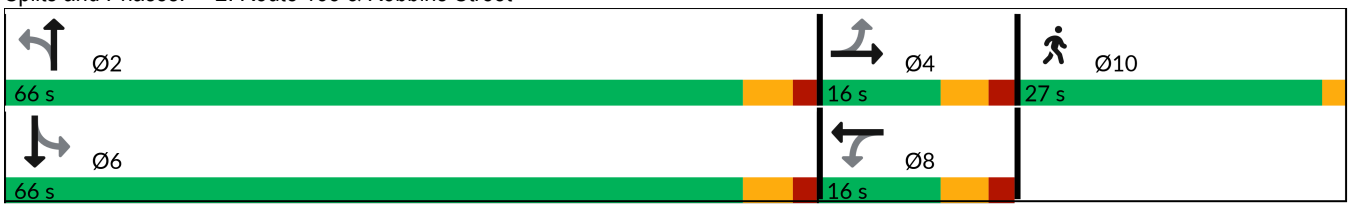
Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	3	23	8	26	2	614	1	396	
Future Volume (vph)	3	23	8	26	2	614	1	396	
Lane Group Flow (vph)	0	39	0	65	0	649	0	491	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.27		0.44		0.58		0.45	
Control Delay (s/veh)		47.6		46.6		17.8		15.4	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		47.6		46.6		17.8		15.4	
Queue Length 50th (ft)		23		32		280		191	
Queue Length 95th (ft)		47		63		407		247	
Internal Link Dist (ft)		649		588		3141		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		178		1110		1077	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.22		0.37		0.58		0.46	

Intersection Summary
Cycle Length: 109
Actuated Cycle Length: 104.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



2031 Build Weekday Morning Peak Hour

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	14	31	40	3	30	10	76	27	13	47	518	5
Future Volume (vph)	14	31	40	3	30	10	76	27	13	47	518	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.93					0.97				1.00	
Flt Protected		0.99					0.99				0.99	
Satd. Flow (prot)		1659					1765				1787	
Flt Permitted		0.93					0.90				0.89	
Satd. Flow (perm)		1559					1603				1600	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	34	43	3	35	12	88	31	14	49	540	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	95	0	0	0	0	166	0	0	0	608	0
Heavy Vehicles (%)	17%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	20%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		12.6					12.6				41.2	
Effective Green, g (s)		12.6					12.6				41.2	
Actuated g/C Ratio		0.16					0.16				0.51	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		244					251				821	
v/s Ratio Prot												
v/s Ratio Perm		0.06					c0.10				c0.38	
v/c Ratio		0.39					0.66				0.74	
Uniform Delay, d1		30.3					31.8				15.3	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		1.0					6.4				6.0	
Delay (s)		31.4					38.2				21.3	
Level of Service		C					D				C	
Approach Delay (s/veh)		31.4					38.2				21.3	
Approach LOS		C					D				C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	4	559	9	10	4	12	6	2
Future Volume (vph)	4	559	9	10	4	12	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		1.00				0.96		
Flt Protected		1.00				0.97		
Satd. Flow (prot)		1821				1640		
Flt Permitted		1.00				0.97		
Satd. Flow (perm)		1816				1640		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.64	0.64	0.64	0.64
Adj. Flow (vph)	4	614	10	11	6	19	9	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	639	0	0	0	37	0	0
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.2				4.5		
Effective Green, g (s)		41.2				4.5		
Actuated g/C Ratio		0.51				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		932				92		
v/s Ratio Prot								
v/s Ratio Perm		0.35				0.02		
v/c Ratio		0.69				0.40		
Uniform Delay, d1		14.6				36.6		
Progression Factor		1.00				1.00		
Incremental Delay, d2		4.1				2.9		
Delay (s)		18.7				39.4		
Level of Service		B				D		
Approach Delay (s/veh)		18.7				39.4		
Approach LOS		B				D		

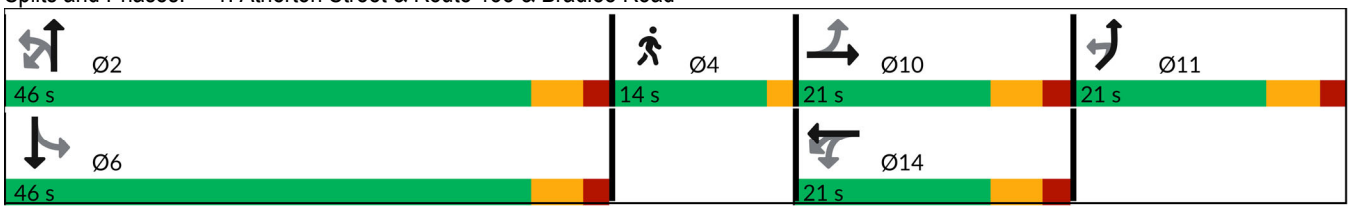
Intersection Summary

Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	14	31	30	10	76	13	47	518	4	559	12	
Future Volume (vph)	14	31	30	10	76	13	47	518	4	559	12	
Lane Group Flow (vph)	0	95	0	0	166	0	0	608	0	639	37	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.37			0.62			0.70		0.65	0.23	
Control Delay (s/veh)		36.0			43.7			23.0		20.5	39.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		36.0			43.7			23.0		20.5	39.9	
Queue Length 50th (ft)		42			76			227		228	17	
Queue Length 95th (ft)		104			#169			#571		#556	37	
Internal Link Dist (ft)		958			955			1162		1288	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		316			325			866		983	332	
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		0.30			0.51			0.70		0.65	0.11	

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 76.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	13	3	22	25	1	4	613	6	2	516	11
Future Volume (vph)	1	13	3	22	25	1	4	613	6	2	516	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			1.00			1.00	
Flt Protected		1.00			0.98			1.00			1.00	
Satd. Flow (prot)		1847			1853			1904			1858	
Flt Permitted		0.98			0.84			1.00			1.00	
Satd. Flow (perm)		1823			1597			1900			1856	
Peak-hour factor, PHF	0.80	0.80	0.80	0.75	0.75	0.75	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	1	16	4	29	33	1	4	689	7	2	567	12
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	62	0	0	700	0	0	580	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.3			7.3			60.2			60.2	
Effective Green, g (s)		7.3			7.3			60.2			60.2	
Actuated g/C Ratio		0.07			0.07			0.56			0.56	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		124			109			1072			1048	
v/s Ratio Prot												
v/s Ratio Perm		0.01			c0.04			c0.37			0.31	
v/c Ratio		0.14			0.57			0.65			0.55	
Uniform Delay, d1		46.7			48.1			16.0			14.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			6.7			3.1			2.1	
Delay (s)		47.2			54.8			19.1			16.8	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		47.2			54.8			19.1			16.8	
Approach LOS		D			D			B			B	

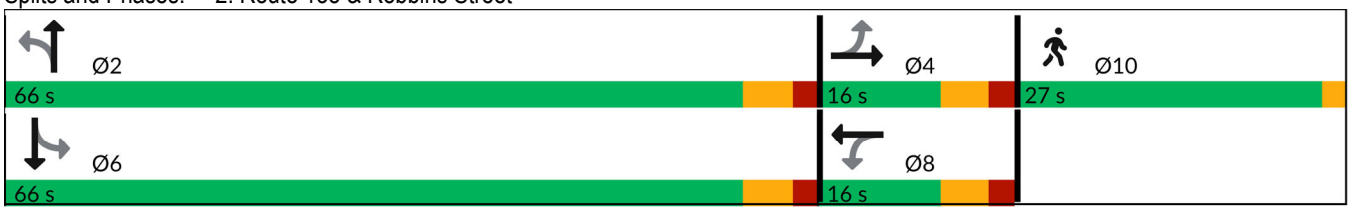
Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	1	13	22	25	4	613	2	516	
Future Volume (vph)	1	13	22	25	4	613	2	516	
Lane Group Flow (vph)	0	21	0	63	0	700	0	581	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.14		0.48		0.64		0.55	
Control Delay (s/veh)		41.6		59.4		19.7		17.4	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		41.6		59.4		19.7		17.4	
Queue Length 50th (ft)		11		42		328		249	
Queue Length 95th (ft)		31		71		455		357	
Internal Link Dist (ft)		649		588		1773		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		153		1086		1062	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.12		0.41		0.64		0.55	

Intersection Summary
Cycle Length: 109
Actuated Cycle Length: 105.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	35	42	529	547	31
Future Vol, veh/h	29	35	42	529	547	31
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	95	91	92
Heavy Vehicles, %	0	0	0	6	4	0
Mvmt Flow	32	38	46	557	601	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1266	618	635	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	648	-	-	-	-	-
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	188	493	958	-	-	-
Stage 1	542	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	493	958	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	22.83	0.68	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	136	-	271	-	-
HCM Lane V/C Ratio	0.048	-	0.257	-	-
HCM Control Delay (s/veh)	8.9	0	22.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

2031 Build Weekday Evening Peak Hour

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	11	80	34	1	8	11	71	31	8	45	609	16
Future Volume (vph)	11	80	34	1	8	11	71	31	8	45	609	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)		6.0					6.0				6.0	
Lane Util. Factor		1.00					1.00				1.00	
Frt		0.96					0.97				1.00	
Flt Protected		1.00					0.99				1.00	
Satd. Flow (prot)		1760					1760				1870	
Flt Permitted		0.96					0.90				0.93	
Satd. Flow (perm)		1704					1602				1739	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.93	0.93	0.93	0.93
Adj. Flow (vph)	14	99	42	1	10	14	88	38	9	48	655	17
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	156	0	0	0	0	150	0	0	0	729	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		10					14				2	
Permitted Phases	10				14	14			2	2		
Actuated Green, G (s)		12.0					12.0				41.3	
Effective Green, g (s)		12.0					12.0				41.3	
Actuated g/C Ratio		0.15					0.15				0.52	
Clearance Time (s)		6.0					6.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		256					240				900	
v/s Ratio Prot												
v/s Ratio Perm		0.09					c0.09				c0.42	
v/c Ratio		0.61					0.63				0.81	
Uniform Delay, d1		31.7					31.8				16.0	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		4.1					5.0				7.8	
Delay (s)		35.8					36.8				23.8	
Level of Service		D					D				C	
Approach Delay (s/veh)		35.8					36.8				23.8	
Approach LOS		D					D				C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR	SBR2	NEL2	NEL	NER	NER2
Lane Configurations								
Traffic Volume (vph)	49	372	2	15	5	10	14	1
Future Volume (vph)	49	372	2	15	5	10	14	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10
Total Lost time (s)		6.0				6.0		
Lane Util. Factor		1.00				1.00		
Frt		0.99				0.93		
Flt Protected		0.99				0.98		
Satd. Flow (prot)		1803				1613		
Flt Permitted		0.87				0.98		
Satd. Flow (perm)		1581				1613		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.78	0.78	0.78	0.78
Adj. Flow (vph)	58	438	2	18	6	13	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	516	0	0	0	38	0	0
Heavy Vehicles (%)	0%	5%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			Perm	Prot		
Protected Phases		6				11		
Permitted Phases	6				11			
Actuated Green, G (s)		41.3				4.6		
Effective Green, g (s)		41.3				4.6		
Actuated g/C Ratio		0.52				0.06		
Clearance Time (s)		6.0				6.0		
Vehicle Extension (s)		3.0				3.0		
Lane Grp Cap (vph)		818				92		
v/s Ratio Prot								
v/s Ratio Perm		0.33				0.02		
v/c Ratio		0.63				0.41		
Uniform Delay, d1		13.8				36.3		
Progression Factor		1.00				1.00		
Incremental Delay, d2		3.7				3.0		
Delay (s)		17.5				39.3		
Level of Service		B				D		
Approach Delay (s/veh)		17.5				39.3		
Approach LOS		B				D		

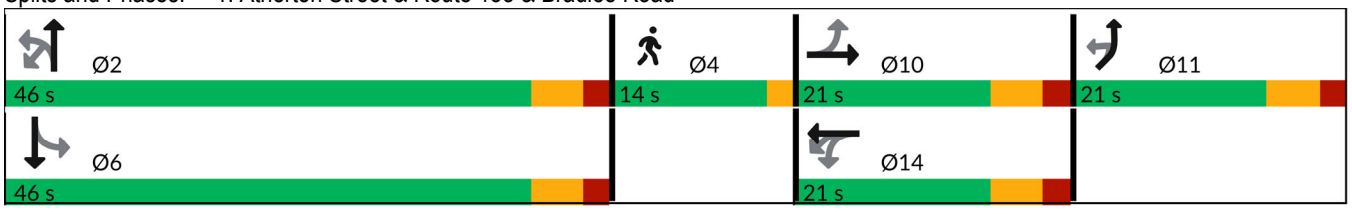
Intersection Summary

Lane Group	EBL	EBT	WBL2	WBL	WBT	NBL2	NBL	NBT	SBL	SBT	NEL	Ø4
Lane Configurations												
Traffic Volume (vph)	11	80	8	11	71	8	45	609	49	372	10	
Future Volume (vph)	11	80	8	11	71	8	45	609	49	372	10	
Lane Group Flow (vph)	0	156	0	0	150	0	0	729	0	516	38	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Prot	
Protected Phases		10			14			2		6	11	4
Permitted Phases	10		14	14		2	2		6			
Detector Phase	10	10	14	14	14	2	2	2	6	6	11	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	14.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	46.0	46.0	46.0	46.0	46.0	21.0	14.0
Total Split (%)	20.6%	20.6%	20.6%	20.6%	20.6%	45.1%	45.1%	45.1%	45.1%	45.1%	20.6%	14%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	None	None
v/c Ratio		0.58			0.59			0.77		0.60	0.24	
Control Delay (s/veh)		41.4			42.5			24.9		19.6	39.8	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay (s/veh)		41.4			42.5			24.9		19.6	39.8	
Queue Length 50th (ft)		71			68			281		172	18	
Queue Length 95th (ft)		140			135			#703		376	46	
Internal Link Dist (ft)		958			955			1162		1318	1273	
Turn Bay Length (ft)												
Base Capacity (vph)		348			328			950		863	330	
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		0.45			0.46			0.77		0.60	0.12	

Intersection Summary

Cycle Length: 102
Actuated Cycle Length: 75.7
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Atherton Street & Route 138 & Bradlee Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	3	23	4	10	26	16	4	646	16	1	415	6
Future Volume (vph)	3	23	4	10	26	16	4	646	16	1	415	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	13	13	13	12	12	12
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.96			1.00			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1859			1804			1934			1878	
Flt Permitted		0.97			0.92			1.00			1.00	
Satd. Flow (perm)		1809			1681			1930			1877	
Peak-hour factor, PHF	0.75	0.75	0.75	0.77	0.77	0.77	0.97	0.97	0.97	0.82	0.82	0.82
Adj. Flow (vph)	4	31	5	13	34	21	4	666	16	1	506	7
RTOR Reduction (vph)	0	5	0	0	15	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	35	0	0	53	0	0	685	0	0	514	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	8%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.0			7.0			60.2			60.2	
Effective Green, g (s)		7.0			7.0			60.2			60.2	
Actuated g/C Ratio		0.07			0.07			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		119			110			1093			1062	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.03			c0.35			0.27	
v/c Ratio		0.30			0.48			0.63			0.48	
Uniform Delay, d1		47.3			47.9			15.5			13.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			3.3			2.7			1.6	
Delay (s)		48.7			51.2			18.2			15.3	
Level of Service		D			D			B			B	
Approach Delay (s/veh)		48.7			51.2			18.2			15.3	
Approach LOS		D			D			B			B	

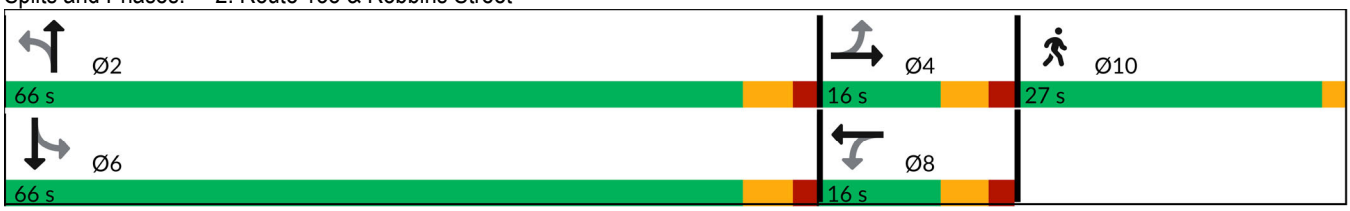
Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø10
Lane Configurations									
Traffic Volume (vph)	3	23	10	26	4	646	1	415	
Future Volume (vph)	3	23	10	26	4	646	1	415	
Lane Group Flow (vph)	0	40	0	68	0	686	0	514	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		4		8		2		6	10
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	27.0
Total Split (s)	16.0	16.0	16.0	16.0	66.0	66.0	66.0	66.0	27.0
Total Split (%)	14.7%	14.7%	14.7%	14.7%	60.6%	60.6%	60.6%	60.6%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		6.0		6.0		6.0		6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
v/c Ratio		0.28		0.47		0.62		0.48	
Control Delay (s/veh)		46.8		48.6		18.8		15.9	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay (s/veh)		46.8		48.6		18.8		15.9	
Queue Length 50th (ft)		23		35		307		205	
Queue Length 95th (ft)		47		66		444		261	
Internal Link Dist (ft)		649		588		1743		902	
Turn Bay Length (ft)									
Base Capacity (vph)		177		174		1108		1076	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.23		0.39		0.62		0.48	

Intersection Summary
Cycle Length: 109
Actuated Cycle Length: 105
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Route 138 & Robbins Street



Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	33	40	621	405	22
Future Vol, veh/h	36	33	40	621	405	22
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	85	92
Heavy Vehicles, %	0	0	0	1	4	0
Mvmt Flow	39	36	43	675	476	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1250	488	500	0	-	0
Stage 1	488	-	-	-	-	-
Stage 2	762	-	-	-	-	-
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	192	584	1074	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	180	584	1074	-	-	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	23.48	0.51	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	109	-	269	-	-
HCM Lane V/C Ratio	0.04	-	0.279	-	-
HCM Control Delay (s/veh)	8.5	0	23.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-