Transportation Impact Assessment

Proposed Residential Development

Wakefield, Massachusetts

Prepared for:

Bonacorso Construction & Development, LLC
Middleton, Massachusetts

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TRANSPORTATION IMPACT ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT
WAKEFIELD, MASSACHUSETTS

Prepared for:

Bonacorso Construction & Development, LLC
Middleton, MA

August 2018

Prepared by:

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EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to evaluate the potential traffic impacts associated with the proposed residential development to be located off Tarrant Lane in Wakefield, Massachusetts (the "Project"). The Project will consist of the development of 190 multifamily housing units with a total of approximately 299 parking spaces. Currently, the project site consists of 12-units single family homes, which will be demolished as a part of the proposed project. Access to the Project will be provided by way of four driveways onto Hopkins Street: two driveways (entrances only/exit only) to access the underground parking area; two driveways to access the surface parking.

This study was prepared in consultation with the Town of Wakefield and in accordance with the Massachusetts Department of Transportation (MassDOT) Guidelines for *Transportation Impact Assessment (TIA) Guideline*; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning Professions for the preparation of such reports. Based on the results of this study, the following can be concluded:

- The Project will add 68 new vehicle trips (18 entering and 50 exiting) during the weekday morning peak hour, and 84 new vehicle trips (51 entering and 33 exiting) during the weekday evening peak hour.

- Project-related traffic increases in the area are expected to be between 0.6 to 5.1 percent during the peak hours;

- 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.

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

RECOMMENDATIONS

The following improvements have been recommended, as part of this evaluation, to provide safe and efficient access to the Project.

Project Access

Access to the Project will be provided by way of four driveways onto Hopkins Street: two driveways (entrances only/exit only) to access the underground parking area; two driveways to access the surface parking. It is recommended that the site access driveways, be placed under STOP-sign control, with illumination provided. Appropriate signs ("One-Way", "Do Not Enter", etc.) and pavement markings should be provided to regulate the Enter only and Exit only driveways. Signs and landscaping adjacent to the Project driveway and within the Project site should be designed and maintained so as not to restrict lines of sight. All signs and other pavement markings to be installed should conform to the specifications of the Manual on Uniform Traffic Devices (MUTCD).[1]

Off-Site Improvements

Independent of the proposed project the Town of Wakefield should consider to the following:

Hopkins Street at Tarrant Lane/South Street

In order to improve the overall safety and operations of the intersection, it is recommended that this intersection should be placed under four-way stop control. This traffic control addresses the deficient sight distance on South Street and will improve safety conditions.

Layton Avenue

Layton Avenue is a residential street that intersects with Hopkins Avenue and Brook Street. Currently, the approach operates without stop sign control at the intersection. In order to improve the overall safety and operation of the intersection, it is recommended that a STOP-sign be placed at Layton Avenue and installed in conformance to the specifications of the Manual on Uniform Traffic Devices (MUTCD).

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

Travel Demand Management (TDM) Plan

Reducing the amount of traffic generated by the Project is an important component of the development plan. The goal of the TDM plan is to reduce the use of Single Occupant Vehicles by encouraging car/vanpooling, bicycle commuting, the use of public transportation and pedestrian travel. The following measures will be implemented as part of the proposed project management team in an effort to reduce the number of vehicle trips generated:

- In order to encourage the use of public transportation, the property management team will make available public transportation schedules, which will be posted in a centralized location for residents.
- In order to encourage car/vanpooling, the property management team will identify car/vanpool resources that may be available to residents of the proposed project. This information will be posted in a centralized location for the residents.
- Information on car services such as Uber and Lyft will also be posted at a centralized location.
- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the project site. This information will be posted in a centralized location.
- Bicycle racks will be provided on-site.

The above strategies will encourage non-auto travel by the residents.

CONCLUSIONS

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

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to evaluate the potential traffic impacts associated with the proposed residential development to be located off Tarrant Lane in Wakefield, Massachusetts (hereafter referred to as the "Project"). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project.

PROJECT DESCRIPTION

The Project will consist of the development of 190 multifamily housing units with a total of approximately 299 parking spaces. Currently, the project site consists of 12-units single family homes, which will be demolished as a part of the proposed project. Access to the Project will be provided by way of four driveways onto Hopkins Street: two driveways (entrances only/exit only) to access the underground parking area; two driveways to access the surface parking.

STUDY METHODOLOGY

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

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian 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 2018. 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 major roadways that provide access to the Project including, Hopkins Street, South Street, and Main Street (Route 28) as well as the intersection 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.

1. Hopkins Street at Tarrant Lane and South Street
2. Main Street (Route 28) at Hopkins Street
3. Hopkins Street at Brook Street and Layton Avenue
4. Main Street (Route 28) at South Street
5. Main Street (Route 28) at I-95 (Route 128) Southbound Ramps

The following describes the study area roadway and intersections and is depicted in Figure 2, which summarizes existing lane use and travel lane widths at the study area intersections.

GEOMETRY

Roadways

Hopkins Street

Hopkins Street is a two-lane roadway under the jurisdiction of the town of Wakefield and Reading that has a general north/south alignment. In the vicinity of the site, Hopkins Street is approximately 21 to 36-feet wide and provides one travel lane per direction with no marked centerline. Sidewalks are not provided within the study area. Land use along this corridor, in the vicinity of the site, consists of residential.

South Street

South Street is a two-lane roadway under the jurisdiction of the town of Wakefield and Reading that has a general east/west alignment. South Street is generally 18-feet wide, providing one travel lane per direction with no marked centerline. Sidewalks are not provided within the study area. Land use along South Street, consists of residential. The posted speed limit is 30 miles per hour (mph).

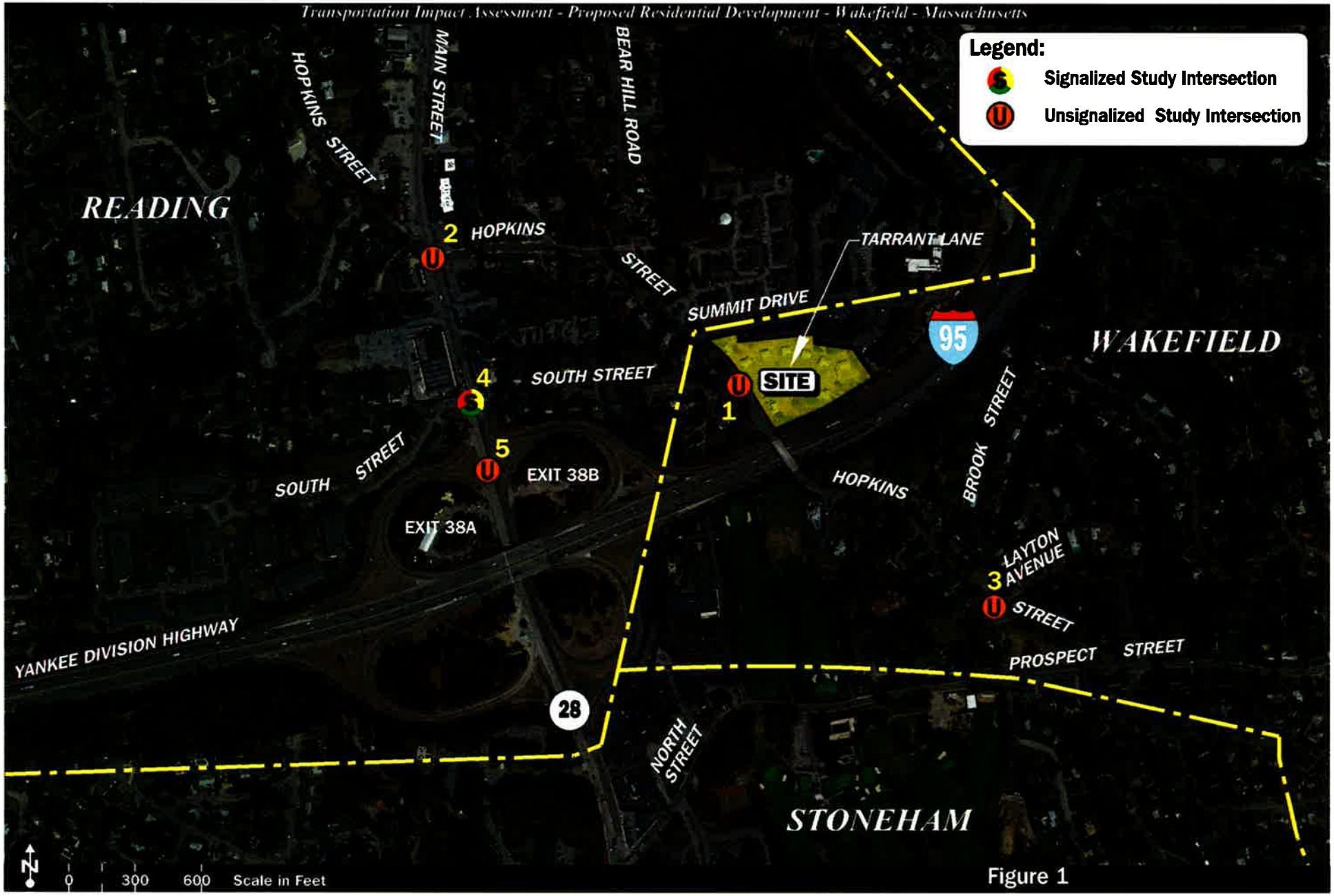

Figure 1

Site Location and Study Area Map

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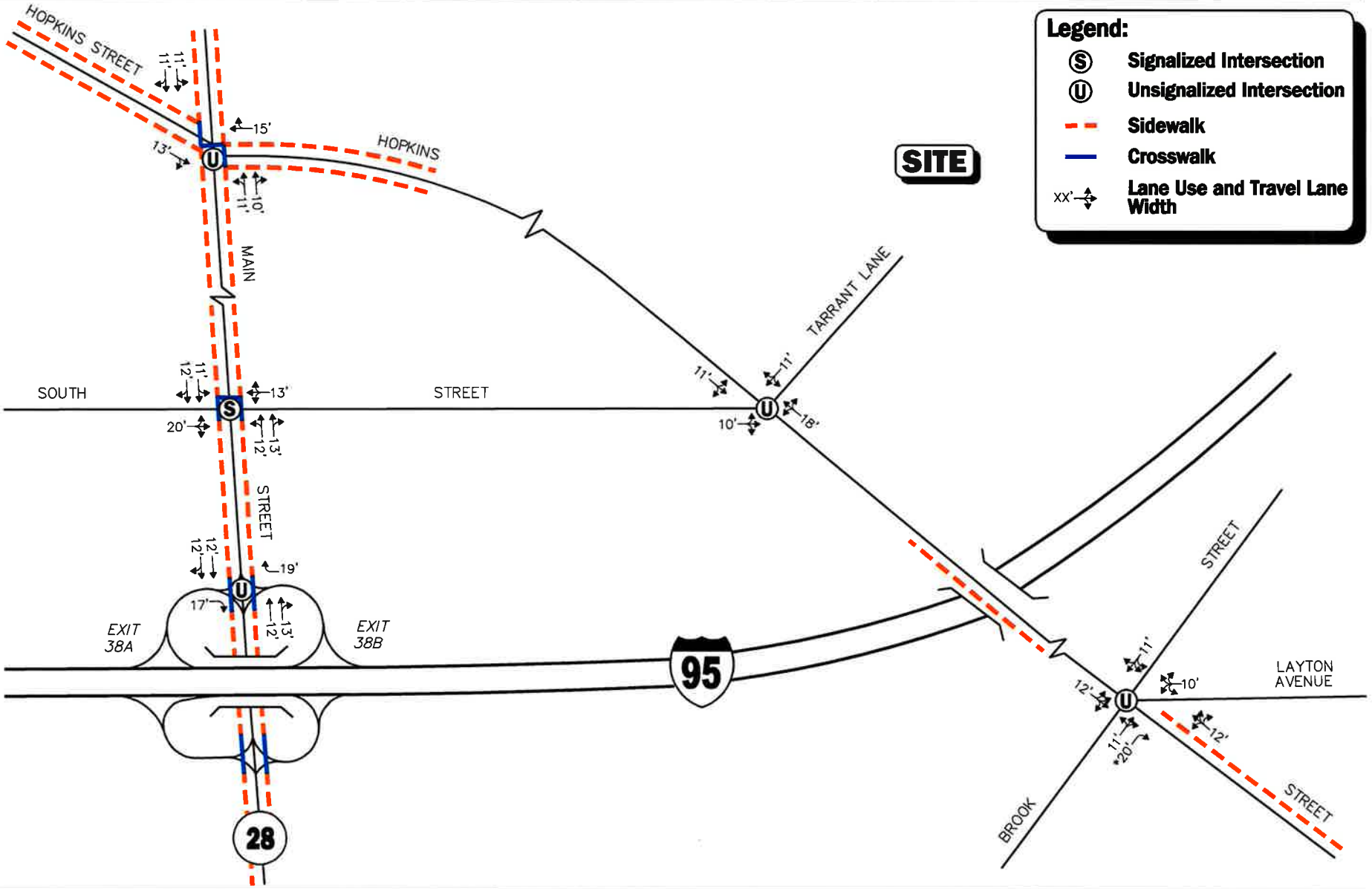

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Figure 2

Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities

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Main Street (Route 28)

Main Street (Route 28) is a four-lane roadway under the jurisdiction of the Massachusetts Department of Transportation that has a general north/south alignment. Main Street generally provides two through lanes and a shoulder in each direction with turn lanes at major intersections. Main Street lane in each direction is 24-feet wide with a ±3-foot wide shoulder in both directions. Sidewalks exist on both sides of the street with crosswalks provided at major intersections. Land use along this corridor is mostly commercial.

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) and vehicle classification counts were conducted in June 2018 during the weekday morning (7:00 to 9:00 AM), and weekday evening (4:00 to 6:00 PM) peak periods at each study area intersection.

Seasonal Adjustment

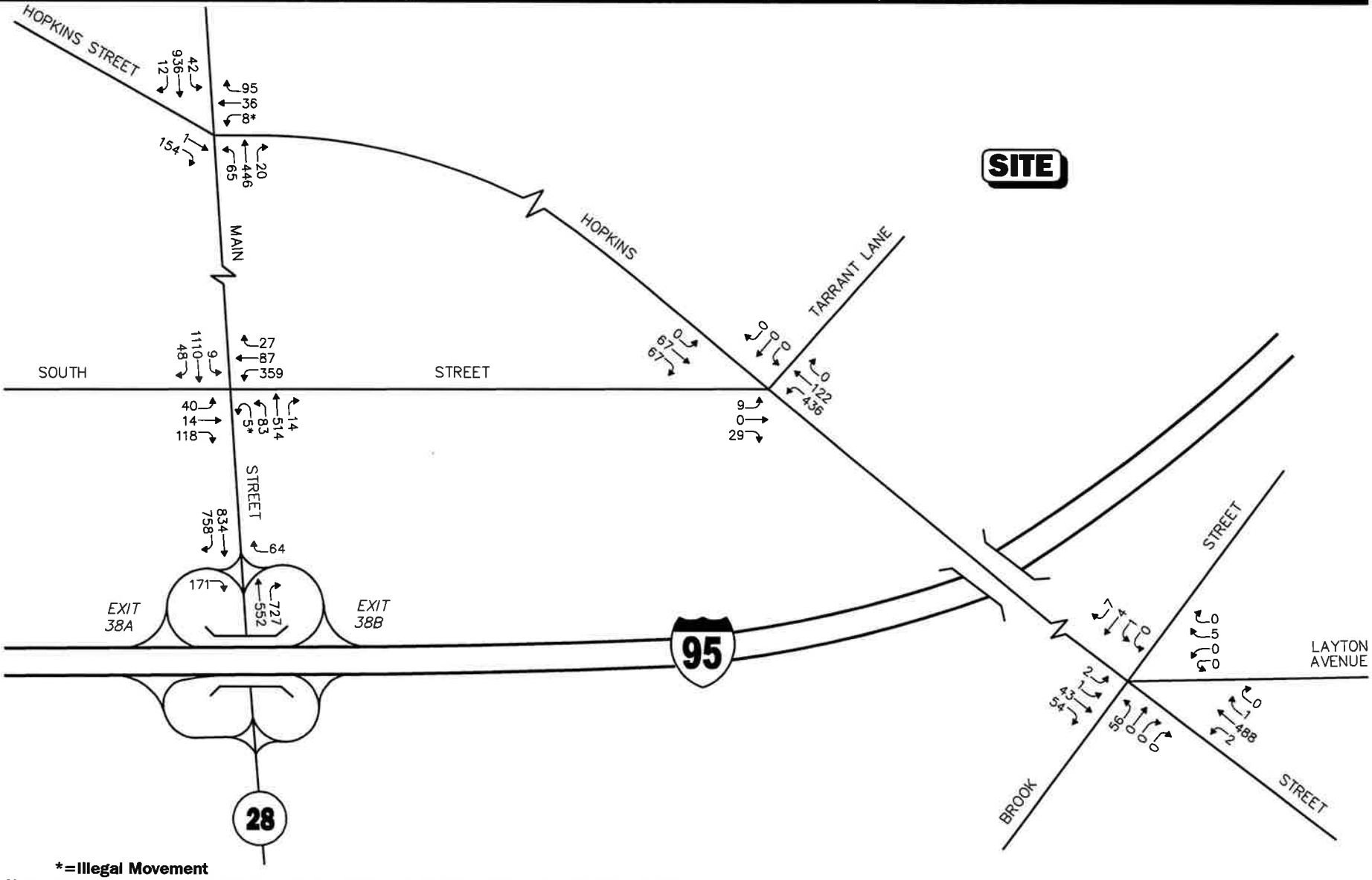
In order to determine whether traffic volumes collected in June are representative of average annual conditions, historical traffic data collected by MassDOT were examined. Based on a review of seasonal adjustment factors collected by MassDOT for urban arterials and collectors, June traffic volumes are approximately 3.0 percent above average-month conditions and, therefore, the traffic counts that form the basis of this assessment were not adjusted downward in order to provide a conservative (above-average) analysis condition. The 2018 Existing traffic volumes are summarized in Table 1, with the weekday morning and evening peak-hour traffic volumes graphically depicted on Figures 3 and 4, respectively.

Table 1
EXISTING ROADWAY TRAFFIC-VOLUME SUMMARY

		Weekday Morning Peak Hour (7:00 – 8:00 AM)			Weekday Afternoon Peak Hour (5:00 – 6:00 PM)		
Location	Daily Volume (vpd)[a]	Volume (vph)[b]	Percent of Daily Traffic[c]	Predominant Flow	Volume (vph)	Percent of Daily Traffic	Predominant Flow
Hopkins Street North of South Street	3,000	265	8.8	51%SB	252	8.4	55%NB
Main Street north of Hopkins Street	16,700	1,531	9.1	65%SB	1,395	8.4	54% NB

[a]Two-way daily traffic expressed in vehicles per day; from ATR Counts June 2018.
[b] Manual turning movement counts conducted in June 2018.
[c]The percent of daily traffic that occurs during the peak hour.
NB = northbound, SB = southbound, EB= eastbound, WB= westbound

As can be seen in Table 1, Hopkins Street, north of South Street, was found to accommodate approximately 3,000 vehicles per day (vpd) with 265 vehicles per hour (vph) during the weekday morning peak hour and 252 vph during the weekday evening peak hour. Main Street (Route 28), north of Hopkins Street, was found to accommodate approximately 16,700 vehicles per day (vpd) with 1,531 vehicles per hour (vph) during the weekday morning peak hour and 1,395 vph during the weekday evening peak hour. The predominant flow on Hopkins Street north of South Street during the weekday



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

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Figure 3

2018 Existing Weekday Morning Peak Hour Traffic Volumes

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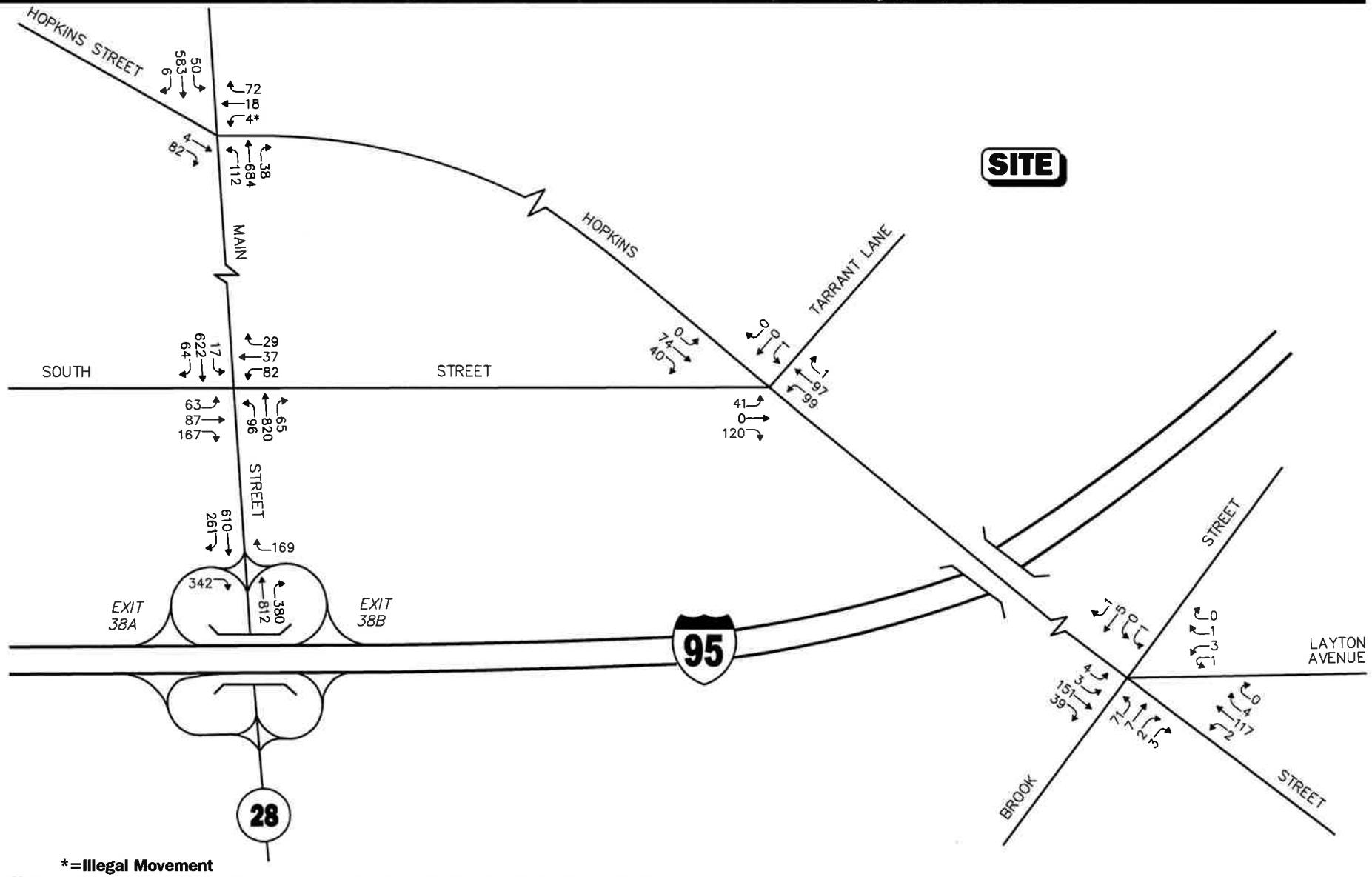

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Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 4

2018 Existing
Weekday Evening
Peak Hour Traffic Volumes

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morning is in the southbound and during the weekday evening is in the northbound direction. The predominance flow on Main Street (Route28) north of Hopkins Street during the weekday morning is in the southbound and during the weekday evening is in the northbound direction.

A review of the peak-period traffic counts indicate that the weekday morning peak hour generally occurs between 7:00 and 8:00 AM, with the weekday evening peak hour generally occurring between 5:00 and 6:00 PM.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in June 2018. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study area roadways and at the study area intersections. In general, sidewalks are provided along Main Street, with painted crosswalks provided at Main Street (Route 28) at Hopkins Street, Main Street (Route 28) at South Street and Main Street (Route 28) at I-95 (Route 128) Southbound Ramps intersections. No bicycle facilities were noted in the area.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Massachusetts Bay Transportation Authority (MBTA) for commuter rail and bus services. The Haverhill-Boston commuter rail stations in Wakefield and Reading are the closest stations to the proposed development. They are located approximately 1.2 miles north/west and north/east of the site, respectively. Within the study area, the MBTA operates the following bus services:

- 132- *Redstone Shopping Center - Malden Station* with connections to the MBTA *Orange Line* subway system Haverhill Purple Line. The bus stop is located 0.8 miles south of the site at Main Street on the Redstone Shopping Center. No service on Sunday

- 137 - *Reading Depot - Malden Center Station* with connections to the MBTA *Orange Line* subway system and Haverhill Purple Line. The bus stop is located 0.8 miles of the site at North Avenue at Wolcott Street, North Avenue at Linda Road, North Avenue, and North Avenue at Lakeview Office Parkway Intersections.

The MBTA commuter rail Haverhill Line operates Monday through Friday from 5:00 AM to 1:00 AM and Saturdays and Sundays from 6:43 to 1:00AM. Commuter Rail Zone Two Fares are $6.75 one way and $217,75 Monthly Pass. MBTA bus service is provided Monday through Saturday from approximately 5:00 AM to 1:30 AM. Bus Route 132/137 generally operates with 6 to 23-minute headways. Roundtrip fares for adults are $2.00.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2011 through 2015 inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, and severity, and is presented in Table 2.

Table 2
MOTOR VEHICLE CRASH DATA SUMMARY[a]

Scenario	Tarrant Lane at Hopkins Street[d] (Unsignalized)	Main Street at Hopkins Street[d] (Unsignalized)	Brook Street at Hopkins Street[d] (Unsignalized)	Main Street at South Street[c] (Signalized)	Main Street at I-95 (Route 128) Southbound Ramps[d] (Unsignalized)
Year:					
2011	0	7	0	8	1
2012	0	3	0	3	0
2013	1	3	1	2	1
2014	0	10	1	3	3
2015	0	6	0	8	5
Total	1	29	2	24	10
Average[b]	0.20	5.80	0.40	4.80	2.00
Crash Rate[c]	0.10	0.87	0.24	0.54	0.19
Significant[d]	No	Yes	No	No	No
Type:					
Angle	0	20	1	11	0
Rear-End	0	3	0	7	7
Head-On	0	2	1	1	0
Sideswipe	0	1	0	5	0
Fixed Object	1	3	0	0	3
Unknown/Other	0	0	0	0	0
Total	1	29	2	24	10
Time of Day:					
Weekday (7:00-9:00 AM)	0	4	0	4	1
Weekday (4:00-6:00 PM)	0	7	1	5	3
Remainder of Day	1	18	1	15	6
Total	1	29	2	24	10
Lighting Conditions:					
Daylight	1	23	2	17	6
Dawn/Dusk	0	1	0	0	1
Dark (lit)	0	5	0	7	3
Dark (unlit)	0	0	0	0	0
Unknown	0	0	0	0	0
Total	1	29	2	24	10
Pavement Conditions					
Dry	1	22	2	15	9
Wet	0	6	0	9	1
Snow	0	1	0	0	0
Icy	0	0	0	0	0
Unknown (Other)	0	0	0	0	0
Total	1	29	2	24	10
Severity:					
Property Only	0	25	2	21	6
Injury Accident	1	4	0	3	4
Fatal Accident	0	0	0	0	0
Hit and Run	0	0	0	0	0
Other	0	0	0	0	0
Total	1	29	2	24	10

[a]Source: MassDOT, 2011 through 2015.
[b]Average crashes over five-year period.
[c]Crash rate per million entering vehicles (mev).
[d]Unsignalized intersections are significant if rate >0.57 crashes per million vehicles
[e]Signalized intersections are significant if rate >0.73 crashes per million vehicles

As summarized in Table 2, the locations that experienced the highest number of reported collisions were the intersection of Main Street (Route28) at Hopkins Street and Main Street (Route28) at South Street. A total of 29 and 24 respectively motor vehicle collisions were reported at these locations over the five-year review period, the majority of which involved angle type collisions. The motor vehicle crash rate at the intersection of Main Street (Route 28) at Hopkins Street falls above the MassDOT average (0.57 for unsignalized intersections in District 4). Although, high number of collisions, those intersections were not listed on the Highway Safety Improvement Program (HSIP). No fatalities were reported at these intersections over the five-year review period.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Hopkins Street in the vicinity of the project site. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Hopkins Street Southbound	Hopkins Street Northbound
Mean Travel Speed (mph)	22	23
85th Percentile Speed (mph)	26	29
Posted Speed Limit (mph)	Not Posted	Not Posted

mph = miles per hour.

As can be seen in Table 3, the mean (average) vehicle travel speed Hopkins Street, in the vicinity of the project site, was found to be approximately 22 mph in the southbound direction and 23 mph in the northbound direction. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be approximately 26 mph in the southbound direction and 29 mph the northbound direction.

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2025, which reflects a seven-year planning horizon consistent with State Traffic Study Guidelines. Independent of the Project, traffic volumes on the roadway network in the year 2025 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon this 2025 No-Build traffic network reflect the 2025 Build conditions with the Project.

FUTURE TRAFFIC GROWTH

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

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

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

GENERAL BACKGROUND TRAFFIC GROWTH

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data and other area traffic studies, it was determined that the traffic volumes are increasing in the area by approximately 0.8 percent per year, but a 1.0 percent per year compounded annual background traffic growth rate was used in order to conservatively account for future traffic growth and presently unforeseen development within the study area.

SPECIFIC DEVELOPMENT BY OTHERS

The town of Wakefield and the nearby towns of the project as Reading and Stoneham were contacted to determine whether there are any specific area development projects that are expected to influence future traffic volumes within the study area. Based on these discussions, no background projects were identified at this time that are expected to result in a significant increase in traffic within the study area beyond the background traffic growth rate.

ROADWAY IMPROVEMENT PROJECTS

The town of Wakefield was contacted in order to determine if there are any planned roadway improvement projects expected to be completed within the study area. Based on these discussions, no roadway improvement projects were identified in the study area.

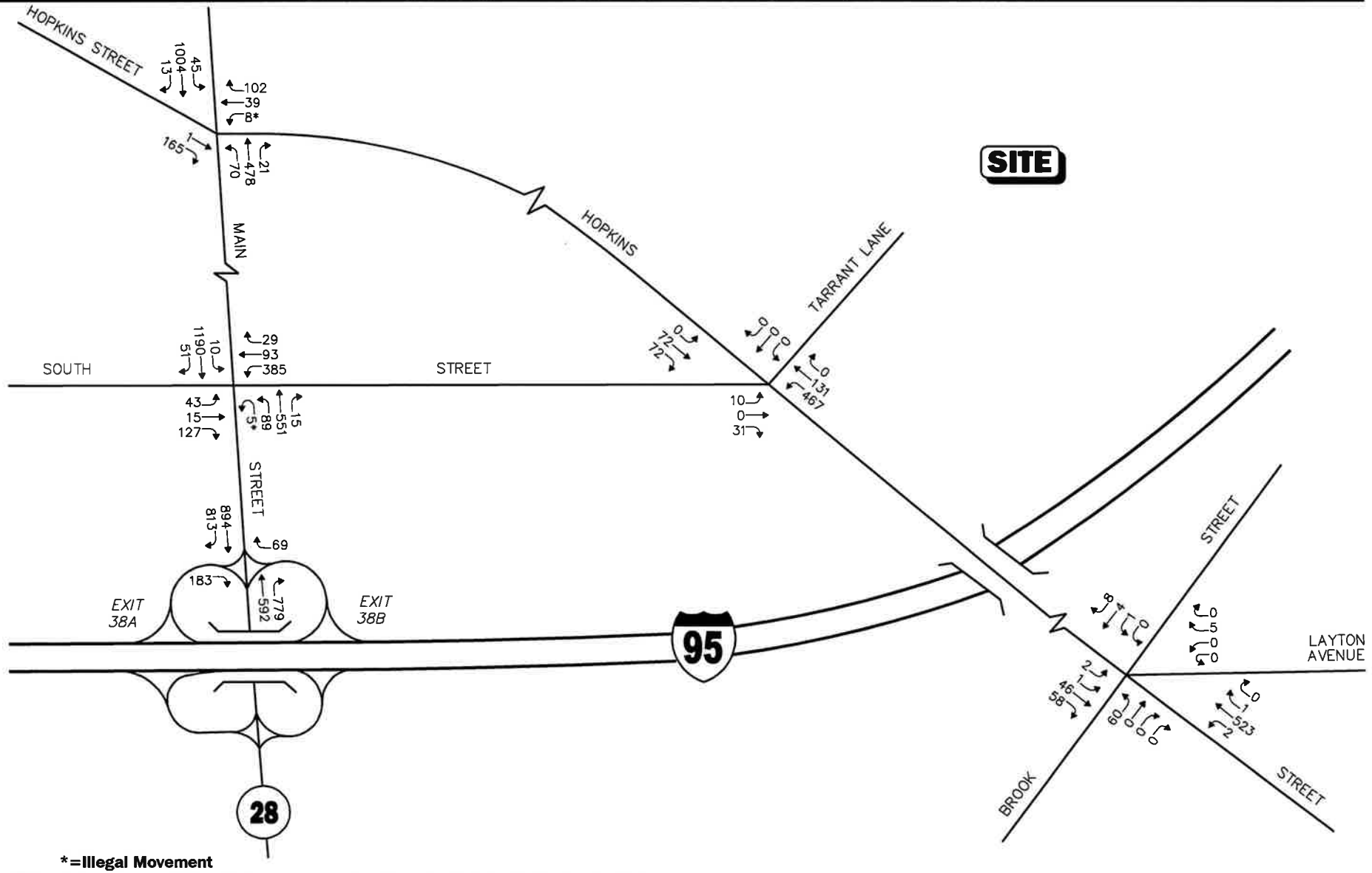
NO-BUILD TRAFFIC VOLUMES

The 2025 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 2018 Existing peak-hour traffic volumes. The resulting 2025 No-Build weekday morning and weekday evening peak-hour traffic volume networks are shown on Figures 5 and 6, respectively.

PROJECT-GENERATED TRAFFIC

The Project will entail the construction of 190 apartment units. In order to estimate the trip generation characteristics of the proposed development, the Institute of Transportation Engineers (ITE)[2] Trip Generation manual for similar land use as that proposed were used. ITE Land Use Code (LUC) 221, Multifamily Housing (Mid-Rise) was used to develop the traffic characteristics of the Project. 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. Based upon the US Census Journey to Work data, approximately 12-percent of trips in Wakefield are either public transportation or walking. Due to the distance from the project site to the public transportation services, the reduction of the non-auto trip was not applied. A summary of the expected vehicle trip generation is summarized in Table 4.

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



*=Illegal Movement

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

Not To Scale

Figure 5

2025 No-Build
Weekday Morning
Peak Hour Traffic Volumes

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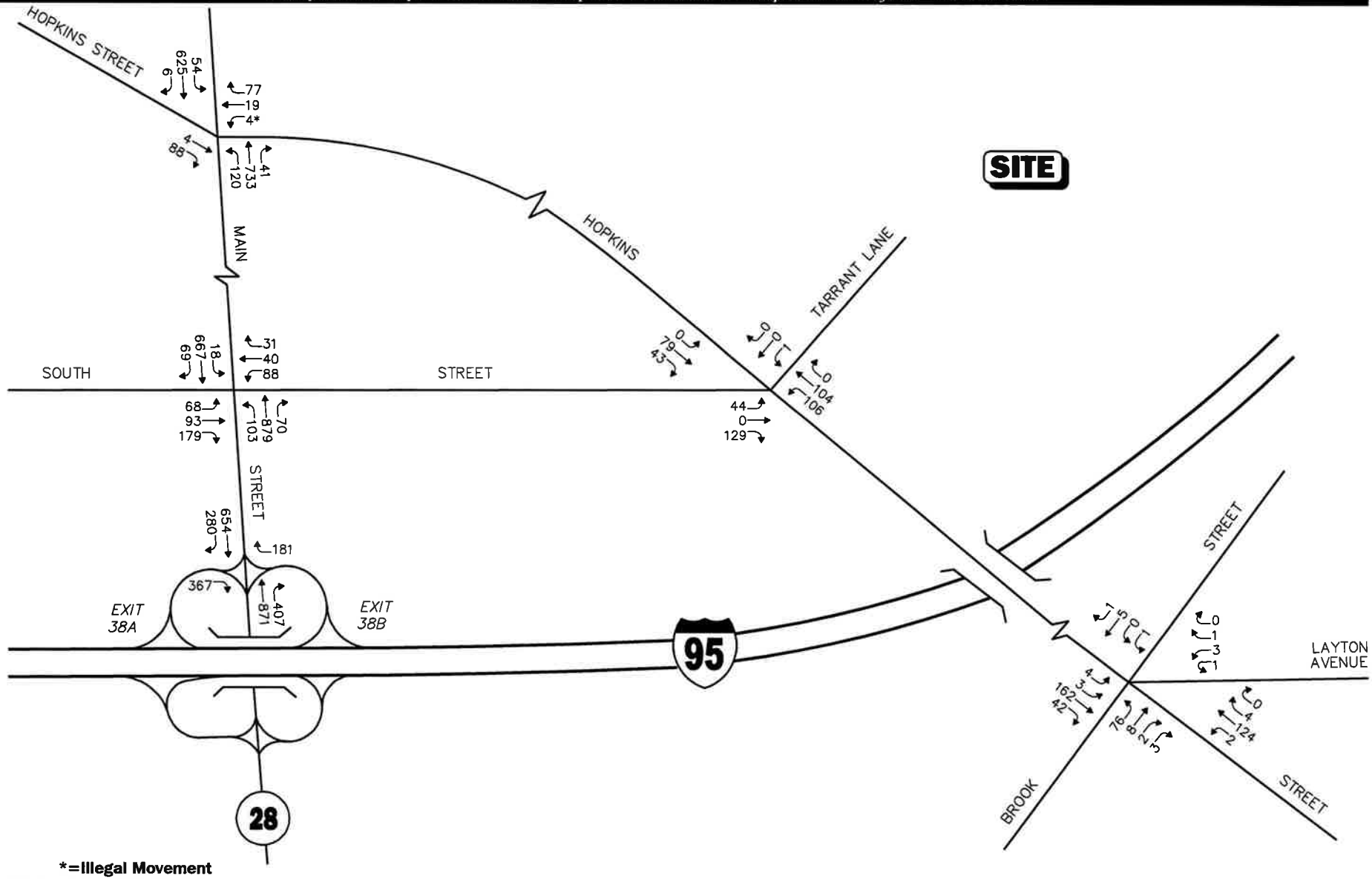

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Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 6

2025 No-Build
Weekday Evening
Peak Hour Traffic Volumes

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Table 4
TRIP GENERATION SUMMARY[a]

Time Period/ Directional Distribution	Vehicle Trips[a] (A)
Weekday Daily	1,034
Weekday Morning Peak Hour:	
Entering	18
Exiting	50
Total	68
Weekday Evening Peak Hour:	
Entering	51
Exiting	33
Total	84

[a]Based on ITE LUC 221 - Multifamily Housing (Mid-Rise), 190 units

As shown in table 4, the 190 apartment units will generate approximately 68 vehicle trips (18 entering and 50 exiting) during the weekday morning peak hour and 84 vehicle trips (51 entering and 33 exiting) during the weekday evening peak hour. These are one-hour projections and many trips, including work trips, can occur outside the peak hours. On a daily basis, the project will generate 1,034 trips (517 entering and 517 exiting).

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution to and from the proposed development was determined based on U.S. Census Journey to Work data and is summarized in Table 5. In general, 15 percent to the north and 30 percent to the south of the project site traffic will travel to and from Main Street (Route 28) direction; 20 percent to the west and 15 percent to the east of the project site traffic will travel to and from I-95 (Route 128) direction; 20 percent of the site is expected to travel to and from Hopkins Street south of the project site; The trip distribution is depicted in Figure 7. The weekday morning and weekday evening peak-hour traffic volumes expected to be generated by the Project were assigned on the study area roadway network as shown on Figures 8 and 9, respectively.

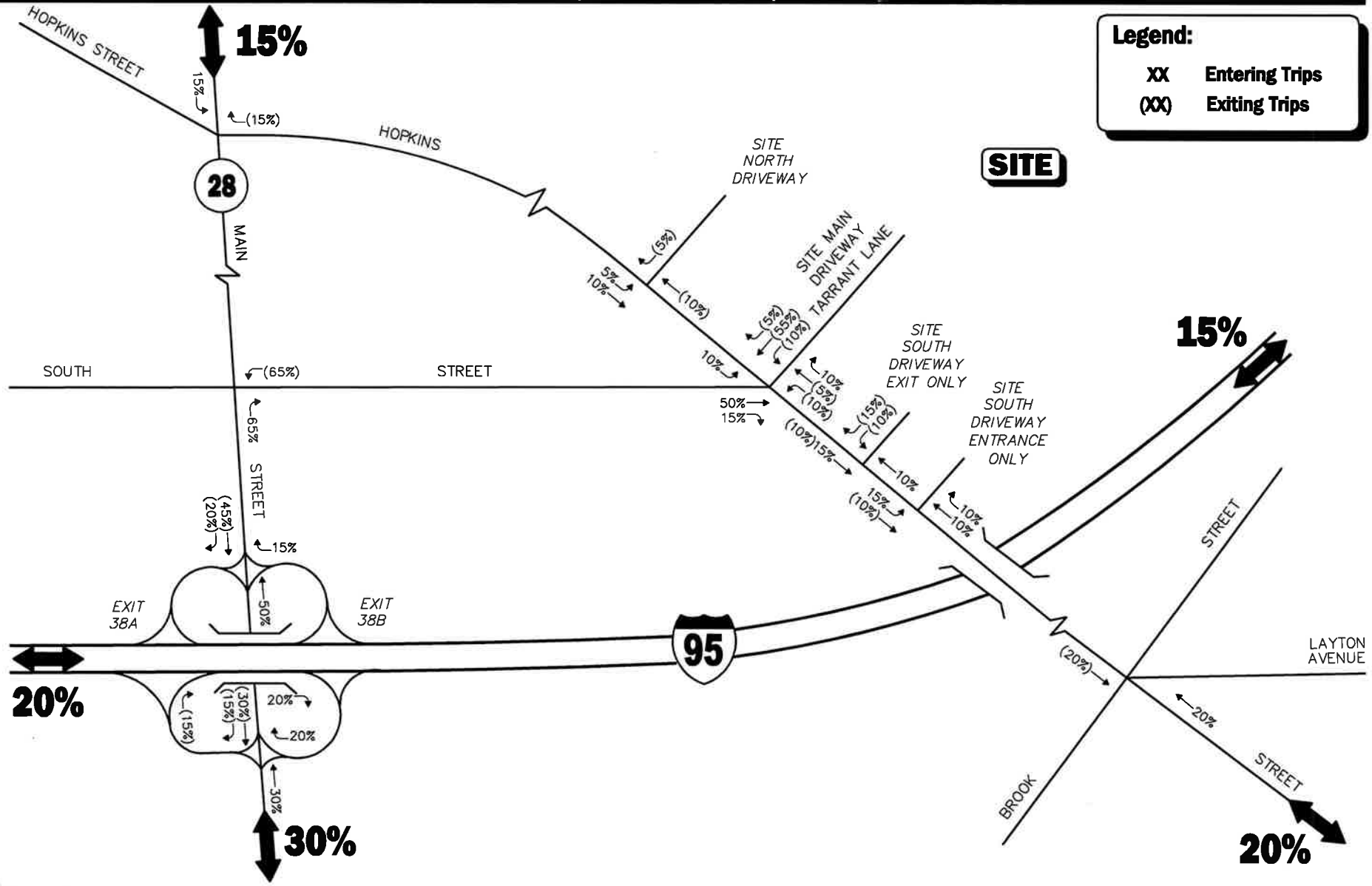

Figure 7

Trip Distribution Map

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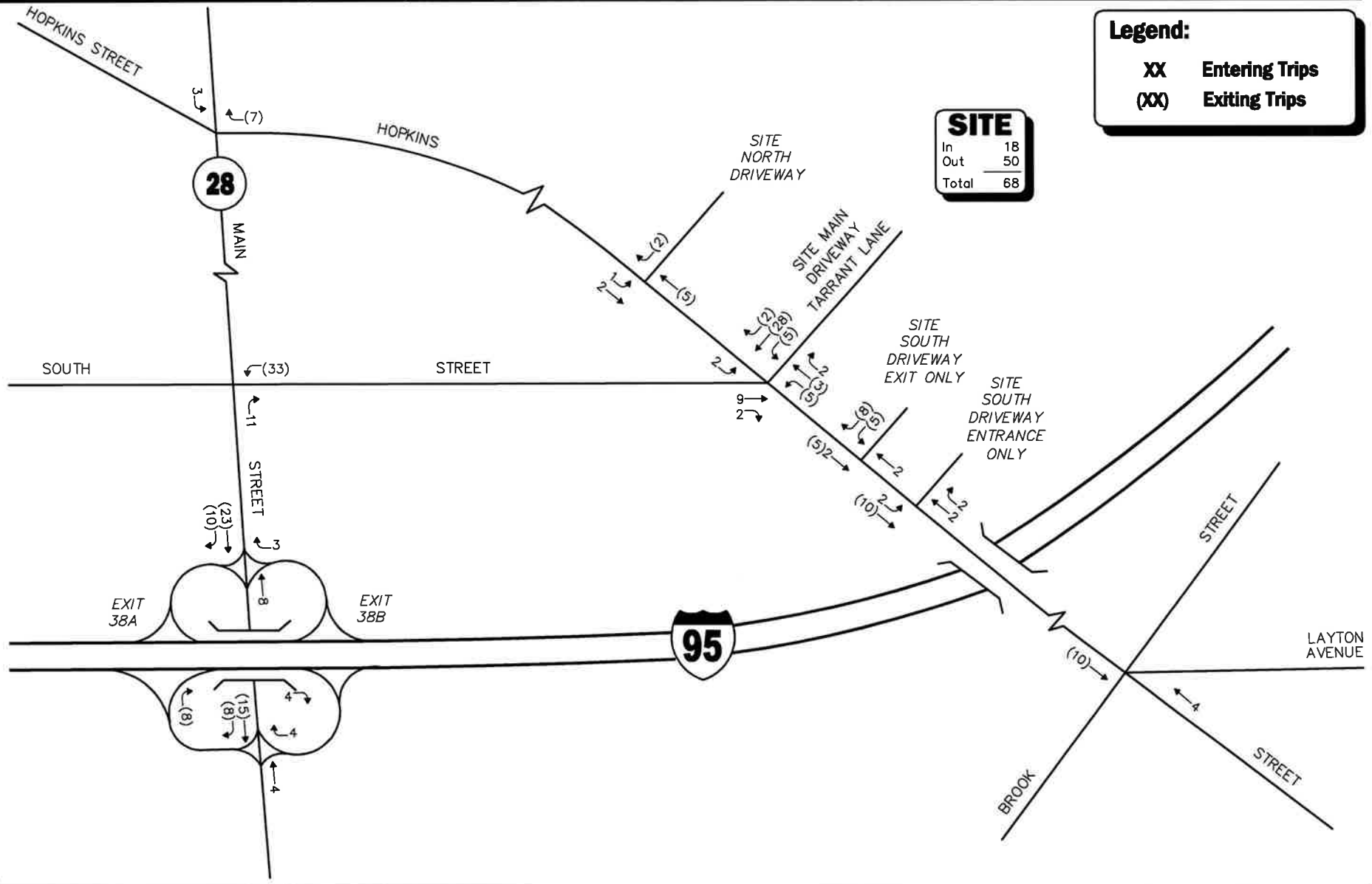

Figure 8

Project-Generated Weekday Morning Peak Hour Traffic Volume

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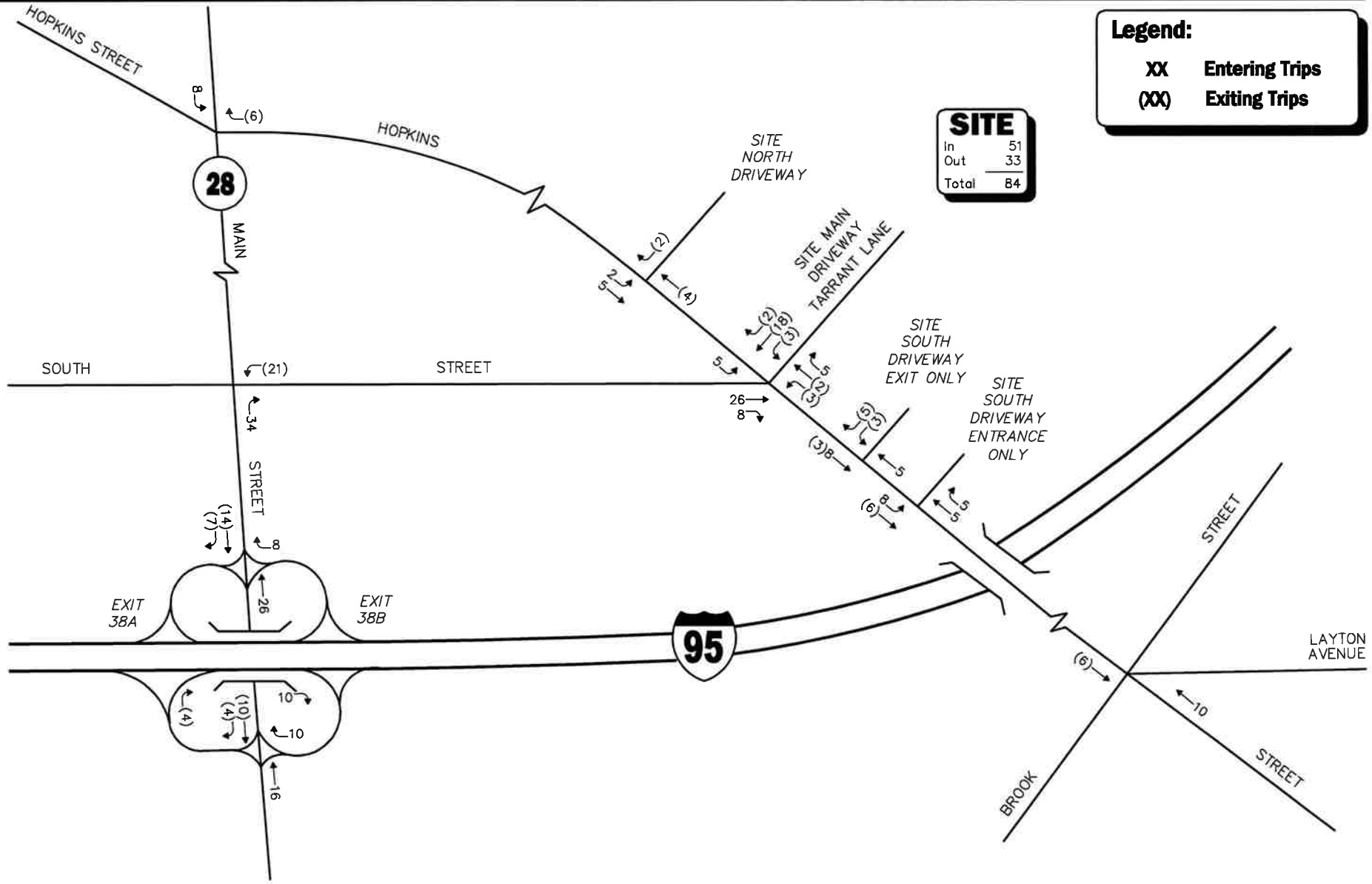

Figure 9

Project-Generated Weekday Evening Peak Hour Traffic Volume

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Table 5
TRIP-DISTRIBUTION SUMMARY

Roadway	Direction (To/From)	Percent
Main Street (Route 28)	North	15%
Main Street (Route 28)	South	30%
I-95 (Route 128) Southbound	West	20%
I-95 (Route 128) Northbound	East	15%
Hopkins Street	South	20%
TOTAL		**100%**

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

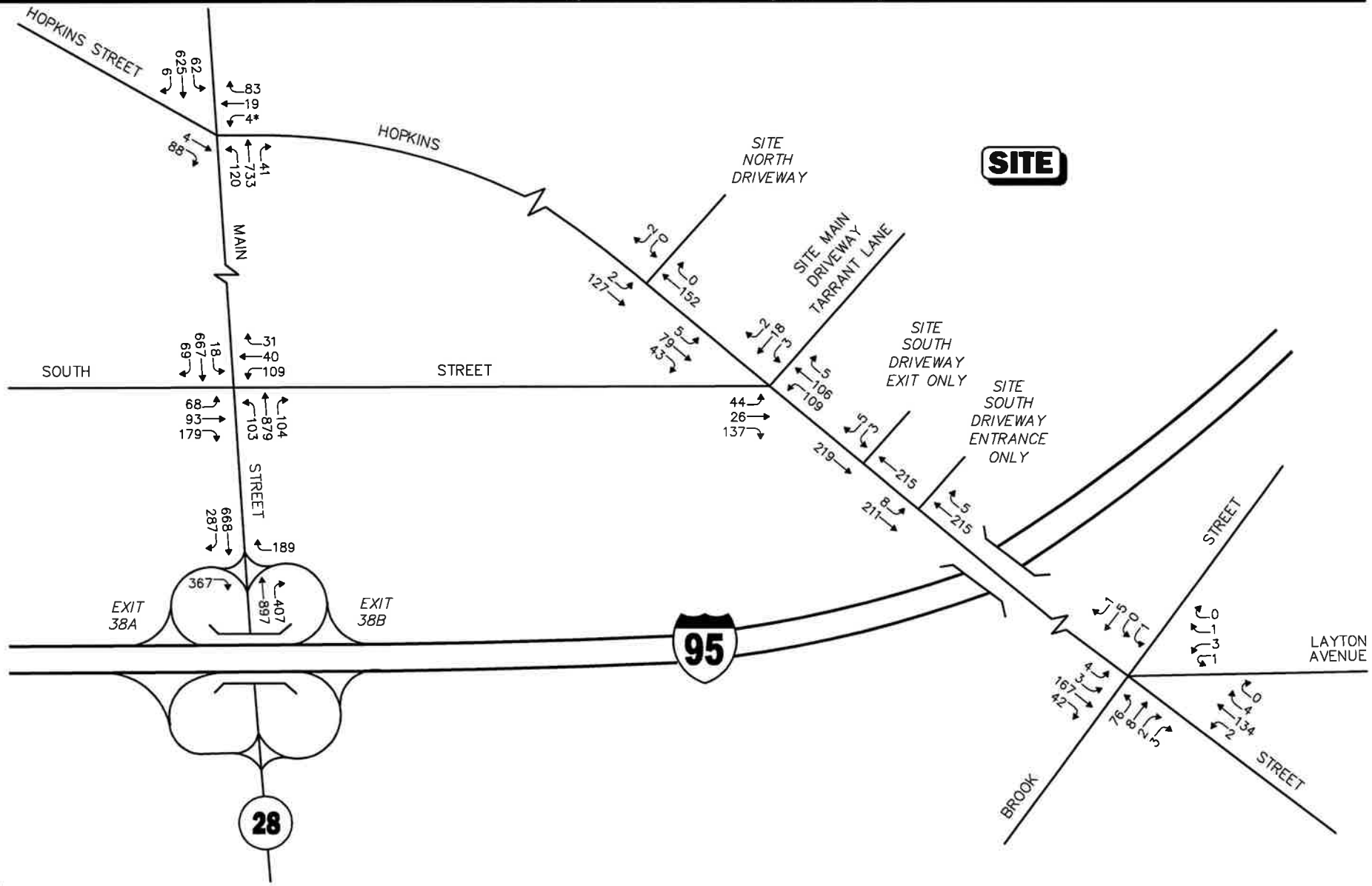
The 2025 Build condition networks consist of the 2025 No-Build traffic volumes with the anticipated Project-generated traffic added to them. The 2025 Build weekday morning and weekday evening peak-hour traffic volume networks are graphically depicted on Figures 10 and 11, respectively.

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

Table 6
PEAK HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2025 No-Build	2025 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
Main Street (Route 28), north of Hopkins Street:				
Weekday Morning	1,642	1,652	10	0.6
Weekday Evening	1,495	1,509	14	0.9
Main Street (Route 28), south of I-95 SB Ramps:				
Weekday Morning	2,448	2,479	31	1.3
Weekday Evening	2,299	2,339	40	1.7
Hopkins Street, South of Brook Street:				
Weekday Morning	571	585	14	2.4
Weekday Evening	295	311	16	5.1

As shown in Table 6, in comparison to future No-Build conditions, project-related traffic increases are projected to range between 10 to 40 vehicles during peak hours, with traffic percent increases ranging from 0.6 percent to 5.1 percent.



Not To Scale

Figure 11

2025 Build
Weekday Evening
Peak Hour Traffic Volume

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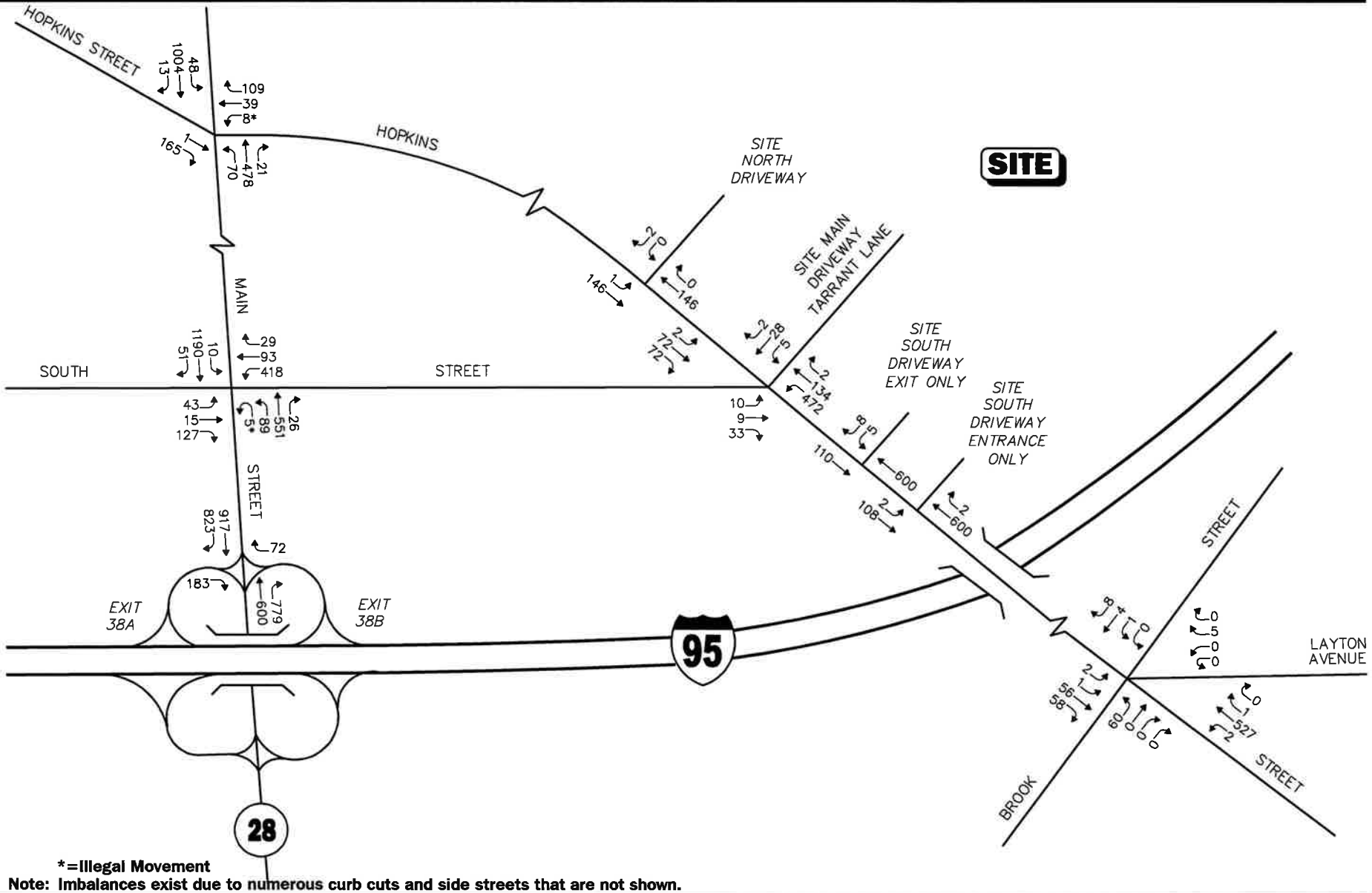

*=Illegal Movement

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

Not To Scale

Figure 10

2025 Build
Weekday Morning
Peak Hour Traffic Volume

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SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the proposed Site driveways onto Hopkins Street in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[3] standards. In brief, stopping sight distance (SSD) is the distance required by a vehicle travelling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. In accordance with AASHTO and MassDOT standards, at a minimum, sufficient SSD must be provided at an intersection for safe operation. Table 7 presents the measured sight distances at the proposed site driveway intersection with Hopkins Street

Table 7
SIGHT DISTANCE MEASUREMENTS

Intersection/Sight Distance	Required Minimum (Feet) [a] 25 mph	30 mph	Measured (Feet)
Hopkins Street at Site North driveway			
Existing Sight Distance:			
Looking north	155	200	500+
Looking south	155	200	408
Hopkins Street the Tarrant Lane			
Existing Sight Distance:			
Looking north	155	200	500+
Looking south	155	200	302
Hopkins Street Site South Driveway Exit only			
Existing Sight Distance:			
Looking north	155	200	500+
Looking south	155	200	410

As can be seen in Table 7, the available lines of sight for motorists exiting onto Hopkins exceed the recommended minimum sight distance to function in a safe manner based on the appropriate approach speeds on those streets. Hopkins Street does not have a posted speed; however, the 85th percentile speed of 26 and 29 mph for the street was used in calculations. As shown above, a clear line of sight is provided to Hopkins Street from the Project site driveways.

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

TRAFFIC OPERATIONS ANALYSIS

Measuring existing and future traffic volumes quantify traffic flow within the study area. To assess the 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. 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 LOS A representing the best operating conditions and LOS F representing the worst.

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.

Signalized Intersections

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

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

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual*. 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 8 summarizes the relationship between the level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 8
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS[a]

Level of Service	Control (Signal) 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.

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 the 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 2000 *Highway Capacity Manual.* 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 *2000 Highway Capacity Manual.* Table 9 summarizes the relationship between level of service and average control delay.

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

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	≤ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	>50.0

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000; page 17-2.

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2018 Existing, 2025 No-Build and 2025 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized for signalized intersections in Table 10 and for unsignalized intersections in Table 11, with the detailed analysis results presented in the Appendix. The following is a summary of the level-of-service and delay analyses for the intersections within the study area:

Signalized Intersections

Main Street (Route 28) at South Street

Under 2018 Existing and 2025 No-build conditions during the weekday morning peak hour this intersection operate at an overall LOS E and during the weekday evening peak hour at an overall LOS C. Under 2025 build conditions during the weekday morning peak hour this intersection operate at an overall LOS F and during the weekday evening peak hour at an overall LOS C. The proposed Project is projected to result in a minimal change in delay on approach at this location, as compared to the 2025 No-Build. It is important to note that field observations during the morning period indicates that South Street traffic, while experiencing delays, does process through the traffic signal on a single signal phase. As a result, no changes are recommended at this location.

Unsignalized Intersections

Hopkins Street at Tarrant Lane/South Street

Under 2018 existing conditions the critical movements at this unsignalized operate at LOS C during the weekday morning peak hours and at LOS B during weekday evening peak hours. Under 2025 no-build conditions the critical movements at this unsignalized operate at LOS C during the weekday morning and weekday evening peak hours. Under 2025 build conditions the critical movements at this unsignalized operates at LOS F during the weekday morning peak hours and at LOS B during weekday evening peak hours.

Main Street at Hopkins Street

Under 2018 Existing and 2025 no-build the critical movements at this unsignalized intersection operate at LOS F during the weekday morning peak hours and at LOS E during the weekday evening peak hours. Under 2025 build conditions the critical movements at this unsignalized operate at LOS F during the weekday morning and weekday evening peak hours. This is typical of a Main Street unsignalized location. The project impact on queues will be less than one vehicle.

Hopkins Street at Brook Street/Layton Avenue

The critical movements at this unsignalized intersection operate at LOS C during the weekday morning peak hours and at LOS B during the weekday evening peak hours, under all conditions.

Main Street at I-95 Southbound Ramps

Under 2018 existing conditions the critical movements at this unsignalized intersection operate at LOS E during the weekday morning peak hours and LOS D during weekday evening peak hours. Under 2025 no-build conditions the critical movements at this unsignalized operate at LOS F during the weekday morning peak hours and at LOS D during weekday evening peak hours. Under 2025 build conditions the

critical movements at this unsignalized operate at LOS F during the weekday morning peak hours and at LOS E during weekday evening peak hours. The project impact on queues will be less than one vehicle.

Hopkins Street at Site North Driveway

Under future conditions, the critical movements at this unsignalized intersection operate at LOS A during the weekday morning and evening peak hours

Hopkins Street at Site South Driveway Exit only

Under future conditions, the critical movements at this unsignalized intersection (turns from Site Drive) operate at LOS B during the weekday morning and evening peak hours

Table 10
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

	2018 Existing				2025 No-Build				2025 Build			
Signalized Intersection/Peak Hour	V/C[a]	Delay[b]	LOS[c]	Queues	V/C	Delay	LOS	Queues	V/C	Delay	LOS	Queues
Main Street (Route 28) at South Street												
Weekday Morning:												
South Street EB LT TH RT	0.33	18.4	B	58/116	0.34	18.9	B	62/125	0.34	18.8	B	69/126
South Street WB LT TH RT	1.45	>80.0	F	480/713	1.60	>80.0	F	560/762	1.72	>80.0	F	620/836
Main Street NB LT TH RT	0.49	13.8	B	189/268	0.51	16.9	B	206/291	0.52	16.9	B	215/304
Main Street SB LT TH RT	0.81	27.0	C	358/446	0.81	26.2	C	379/472	0.81	26.2	C	393/489
Overall	**1.45**	**65.4**	**E**	--	**1.60**	**78.0**	**E**	--	**1.72**	**90.8**	**F**	--
Weekday Evening:												
South Street EB LT TH RT	0.76	41.4	D	192/281	0.74	39.8	D	197/302	0.67	36.1	D	197/302
South Street WB LT TH RT	0.70	49.2	D	89/160	0.69	47.6	D	94/170	0.72	48.9	D	112/217
Main Street NB LT TH RT	0.81	19.5	B	444/639	0.81	20.0	B	480/725	0.87	25.8	C	544/835
Main Street SB LT TH RT	0.46	15.5	B	154/223	0.49	16.6	B	178/238	0.56	19.3	B	191/251
Overall	**0.81**	**22.9**	**C**	--	**0.81**	**23.2**	**C**	--	**0.87**	**26.3**	**C**	--

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

Table 11
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2018 Existing				2025 No-Build				2025 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue 95th Percentile	Demand	Delay	LOS	Queue 95th Percentile	Demand	Delay	LOS	Queue 95th Percentile
Hopkins Street at Tarrant Lane/South Street												
Weekday Morning:												
South Street EB LT TH RT	38	17.3	C	0.5	41	20	C	0.6	52	38.7	E	1.7
Tarrant Lane WB LT TH RT	--	--	--	--	--	--	--	--	35	>50.0	F	2.3
Hopkins Street NW LT	436	8.9	A	1.5	467	9.1	A	1.7	472	9.1	A	1.7
Hopkins Street SE LT	--	--	--	--	--	--	--	--	2	7.5	A	0.0
Weekday Evening:												
South Street EB LT TH RT	161	11.3	B	1	173	11.7	B	1.1	207	13.7	B	1.7
Tarrant Lane WB LT TH RT	1	14.8	B	0	1	15.6	C	0	23	14.6	B	0.2
Hopkins Street NW LT	99	7.7	A	0.3	106	7.7	A	0.3	109	7.7	A	0.3
Hopkins Street SE LT	--	--	--	--	--	--	--	--	5	7.5	A	0.0
Main Street at Hopkins Street												
Weekday Morning:												
Hopkins Street EB LT TH	155	17.4	C	2.0	166	19.6	C	2.5	166	19.6	C	2.5
Hopkins Street WB RT TH	139	>50.0	F	8.4	149	>50.0	F	12.2	156	>50.0	F	12.9
Main Street NB LT	65	10.8	B	0.3	70	11.3	B	0.4	70	11.3	B	0.4
Main Street SB LT	42	8.5	A	0.1	45	8.6	A	0.1	48	8.6	A	0.2
Weekday Evening:												
Hopkins Street EB RT TH	86	14.8	B	0.9	92	16.1	C	1.1	92	16.4	C	1.1
Hopkins Street WB RT TH	94	35	E	2.2	100	49.9	E	3.2	106	>50.0	F	3.4
Main Street NB LT	112	9.2	A	0.4	120	9.4	A	0.5	120	9.4	A	0.5
Main Street SB LT	50	9.4	A	0.2	54	9.6	A	0.2	41	9.7	A	0.3
Hopkins Street at Brook Street/Layton Avenue												
Weekday Morning:												
Brook Street NB LT TH RT	56	16.9	C	0.7	60	18.4	C	0.9	60	18.8	C	0.9
Hopkins Street NW LT	2	7.4	A	0.0	2	7.4	A	0.0	2	7.5	A	0.0
Hopkins Street SE LT	2	8.5	A	0.0	2	8.6	A	0.0	2	8.6	A	0.0
Brook Street SB LT TH RT	12	13	B	0.1	13	13.4	B	0.1	13	13.6	B	0.1
Layton Avenue SW LT TH RT	5	11.7	B	0.0	5	12.1	B	0.0	5	12.1	B	0.0
Weekday Evening:												
Brook Street NB LT TH RT	81	12	B	0.6	88	12.4	B	0.7	88	12.7	B	0.7
Hopkins Street NW LT	2	7.6	A	0.0	2	7.7	A	0.0	2	7.7	A	0.0
Hopkins Street SE LT	4	7.5	A	0.0	4	7.5	A	0.0	4	7.5	A	0.0
Brook Street SB LT TH RT	6	11.1	B	0.0	6	11.2	B	0.0	6	11.4	B	0.0
Layton Avenue SW LT TH RT	5	10.9	B	0.0	5	11	B	0.0	5	11.2	B	0.0

See notes at the end of table.

Table 11 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2018 Existing				2025 No-Build				2025 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue 95th Percentile	Demand	Delay	LOS	Queue 95th Percentile	Demand	Delay	LOS	Queue 95th Percentile
Main Street at I-95 Southbound Ramps												
Weekday Morning:												
I-95 Southbound Ramps EB RT	171	48	E	5.9	183	>50.0	F	8.1	183	>50.0	F	8.5
I-95 Southbound Ramps WB RT	64	16.8	C	0.7	69	18.3	C	0.8	72	18.6	C	0.9
Weekday Evening:												
I-95 Southbound Ramps EB RT	342	26.2	D	5.5	367	34.1	D	7.2	367	36	E	7.6
I-95 Southbound Ramps WB RT	169	21.9	C	2.7	181	3.4	D	3.4	189	27.9	D	3.8
Hopkins Street at Site north Driveway												
Weekday Morning:												
Hopkins Street SE LT	--	--	--	--	--	--	--	--	1	7.5	A	0.0
Site North Driveway SW LT RT	--	--	--	--	--	--	--	--	2	9.1	A	0.0
Weekday Evening:												
Hopkins Street SE LT	--	--	--	--	--	--	--	--	2	7.6	A	0.0
Site North Driveway SW LT RT	--	--	--	--	--	--	--	--	2	9.1	A	0.0
Hopkins Street at Site south Driveway Exit only												
Weekday Morning: Site South Driveway SW LT RT	--	--	--	--	--	--	--	--	13	13.8	B	0.1
Weekday Evening: Site South Driveway SW LT RT	--	--	--	--	--	--	--	--	8	10.3	B	0.0

[a] Demand in vehicles per hour.
[b] Control (signal) delay per vehicle in seconds.
[c] Level-of-Service.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; SW=southwest; SE= southeast; NW=northwest; NE= northeast; LT = left-turning movements; TH = through movements; RT = right-turning movements.

FOUR-WAY WARRANT ANALYSIS

Hopkins Street at Tarrant Lane/South Street

A Multi-Way Stop Warrant Analysis was conducted to determine if the Hopkins Street at Tarrant Lane and South Street intersection will meet the warrant for a four-way stop control. This analysis was conducted in accordance with methodology and procedures outlined in *A Policy on Geometric Design of Highways and Streets,* written by the American Association of State Highway and Transportation Officials (AASHTO)[4]. The warrant must be used as a guide in order to justify the installation of multi-way stop control; however, the decision is based on an engineering judgment in order to improve the overall safety and/or operation of the intersection.

Based upon field inspection and engineer study the South Street approach to Tarrant Lane does not have adequate sight distances. Table 12 presents the measured sight distances at the South Street intersection with Hopkins Street.

Table 12
SIGHT DISTANCE MEASUREMENTS
OFF SITE IMPROVEMENTS

Intersection/Sight Distance	Required Minimum (Feet) [a] 25 mph	30 mph	Measured (Feet)
South Street at Hopkins Street			
Existing Sight Distance:			
Looking north	155	200	151
Looking south	155	200	319

As can be seen in Table 12, the available lines of sight looking at north for motorists exiting onto Hopkins Street from South Street does not have the recommended minimum sight distance to function in a safe manner based on the appropriate approach speed on Hopkins Street. Hopkins Street does not have a posted speed; however, the 85th percentile speed of 26 and 29 mph for the street was used in calculations. Based upon analysis, the intersection should be placed under four-way stop control in order to improve safety conditions.

Analysis Results – Level-Of-Service

Table 13 summarizes the level-of-service for the Hopkins Street and South Street intersection under all-way stop control conditions.

The analysis shows that under 2025 build mitigated the critical movement at this unsignalized operate at LOS D during the weekday morning peak hours and at LOS B during weekday evening peak hours.

[4] Ibid 3.

Table 13
MITIGATED UNSIGNALIZED INTERSECTION
LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2025 Build Mitigated			
	Demand	Delay	LOS	Queue 95th Percentile
Hopkins Street at Tarrant Lane/South Street				
Weekday Morning:				
South Street EB LT TH RT	52	9.3	A	0.3
Tarrant Lane WB LT TH RT	35	9.6	A	0.3
Hopkins Street NW LT TH RT	608	27.7	D	10.0
Hopkins Street SE LT TH RT	146	9.3	A	1.0
Weekday Evening:				
South Street EB LT TH RT	207	9.6	A	1.3
Tarrant Lane WB LT TH RT	23	8.5	A	0.1
Hopkins Street NW LT TH RT	220	8.9	B	1.5
Hopkins Street SE LT TH RT	107	10.4	A	0.7

[a] Demand in vehicles per hour.
[b] Control (signal) delay per vehicle in seconds.
[c] Level-of-Service.
EB = eastbound; WB = westbound; SE= southeast; NW=northwest;
LT = left-turning movements; TH = through movements; RT = right-turning movements.

CONCLUSIONS AND RECOMMENDATIONS

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to evaluate the potential traffic impacts associated with the proposed residential development to be located off Tarrant Lane in Wakefield, Massachusetts (the "Project"). The Project will consist of the development of 190 multifamily housing units with a total of approximately 299 parking spaces. Currently, the project site consists of 12-units single family homes, which will be demolished as a part of the proposed project. Access to the Project will be provided by way of four driveways onto Hopkins Street: two driveways (entrances only/exit only) to access the underground parking area; two driveways to access the surface parking.

This study was prepared in consultation with the Town of Wakefield and in accordance with the Massachusetts Department of Transportation (MassDOT) Guidelines for *Transportation Impact Assessment (TIA) Guideline*; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning Professions for the preparation of such reports. Based on the results of this study, the following can be concluded:

- The Project will add 68 new vehicle trips (18 entering and 50 exiting) during the weekday morning peak hour, and 84 new vehicle trips (51 entering and 33 exiting) during the weekday evening peak hour.

- Project-related traffic increases in the area are expected to be between 0.6 to 5.1 percent during the peak hours;

- 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.

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

RECOMMENDATIONS

The following improvements have been recommended, as part of this evaluation, to provide safe and efficient access to the Project.

Project Access

Access to the Project will be provided by way of four driveways onto Hopkins Street: two driveways (entrances only/exit only) to access the underground parking area; two driveways to access the surface parking. It is recommended that the site access driveways, be placed under STOP-sign control, with illumination provided. Appropriate signs ("One-Way", "Do Not Enter", etc.) and pavement markings should be provided to regulate the Enter only and Exit only driveways. Signs and landscaping adjacent to the Project driveway and within the Project site should be designed and maintained so as not to restrict lines of sight. All signs and other pavement markings to be installed should conform to the specifications of the Manual on Uniform Traffic Devices (MUTCD).[5]

Off-Site Improvements

Independent of the proposed project the Town of Wakefield should consider to the following:

Hopkins Street at Tarrant Lane/South Street

In order to improve the overall safety and operations of the intersection, it is recommended that this intersection should be placed under four-way stop control. This traffic control addresses the deficient sight distance on South Street and will improve safety conditions.

Layton Avenue

Layton Avenue is a residential street that intersects with Hopkins Avenue and Brook Street. Currently, the approach operates without stop sign control at the intersection. In order to improve the overall safety and operation of the intersection, it is recommended that a STOP-sign be placed at Layton Avenue and installed in conformance to the specifications of the Manual on Uniform Traffic Devices (MUTCD).

[5] *Ibid 1*

Travel Demand Management (TDM) Plan

Reducing the amount of traffic generated by the Project is an important component of the development plan. The goal of the TDM plan is to reduce the use of Single Occupant Vehicles by encouraging car/vanpooling, bicycle commuting, the use of public transportation and pedestrian travel. The following measures will be implemented as part of the proposed project management team in an effort to reduce the number of vehicle trips generated:

- In order to encourage the use of public transportation, the property management team will make available public transportation schedules, which will be posted in a centralized location for residents.
- In order to encourage car/vanpooling, the property management team will identify car/vanpool resources that may be available to residents of the proposed project. This information will be posted in a centralized location for the residents.
- Information on car services such as Uber and Lyft will also be posted at a centralized location.
- The property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the project site. This information will be posted in a centralized location.
- Bicycle racks will be provided on-site.

The above strategies will encourage non-auto travel by the residents.

CONCLUSIONS

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

APPENDIX

TURNING MOVEMENT COUNTS
AUTOMATIC TRAFFIC RECORDER
PUBLIC TRANSPORTATION SCHEDULES
MOTOR VEHICLE CRASH DATA
TRIP GENERATION
CAPACITY ANALYSIS

TURNING MOVEMENT COUNTS

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Hopkins St From North			Tarrant Ln From East			Hopkins St From South			South St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	13	17	0	1	0	96	17	0	4	0	4	152
07:15 AM	0	17	19	0	0	0	111	25	0	2	0	7	181
07:30 AM	0	18	26	0	0	0	117	20	0	1	0	7	189
07:45 AM	0	19	13	0	0	0	111	42	0	5	0	7	197
Total	0	67	75	0	1	0	435	104	0	12	0	25	719
08:00 AM	0	13	9	0	0	0	97	35	0	1	0	8	163
08:15 AM	0	11	12	0	0	0	87	21	0	1	0	8	140
08:30 AM	0	20	17	0	0	0	92	20	0	1	0	9	159
08:45 AM	0	9	13	0	0	0	79	13	0	0	0	5	119
Total	0	53	51	0	0	0	355	89	0	3	0	30	581
Grand Total	0	120	126	0	1	0	790	193	0	15	0	55	1300
Apprch %	0	48.8	51.2	0	100	0	80.4	19.6	0	21.4	0	78.6	
Total %	0	9.2	9.7	0	0.1	0	60.8	14.8	0	1.2	0	4.2	
Cars	0	116	126	0	1	0	786	190	0	15	0	54	1288
% Cars	0	96.7	100	0	100	0	99.5	98.4	0	100	0	98.2	99.1
Trucks	0	4	0	0	0	0	4	3	0	0	0	1	12
% Trucks	0	3.3	0	0	0	0	0.5	1.6	0	0	0	1.8	0.9

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 2

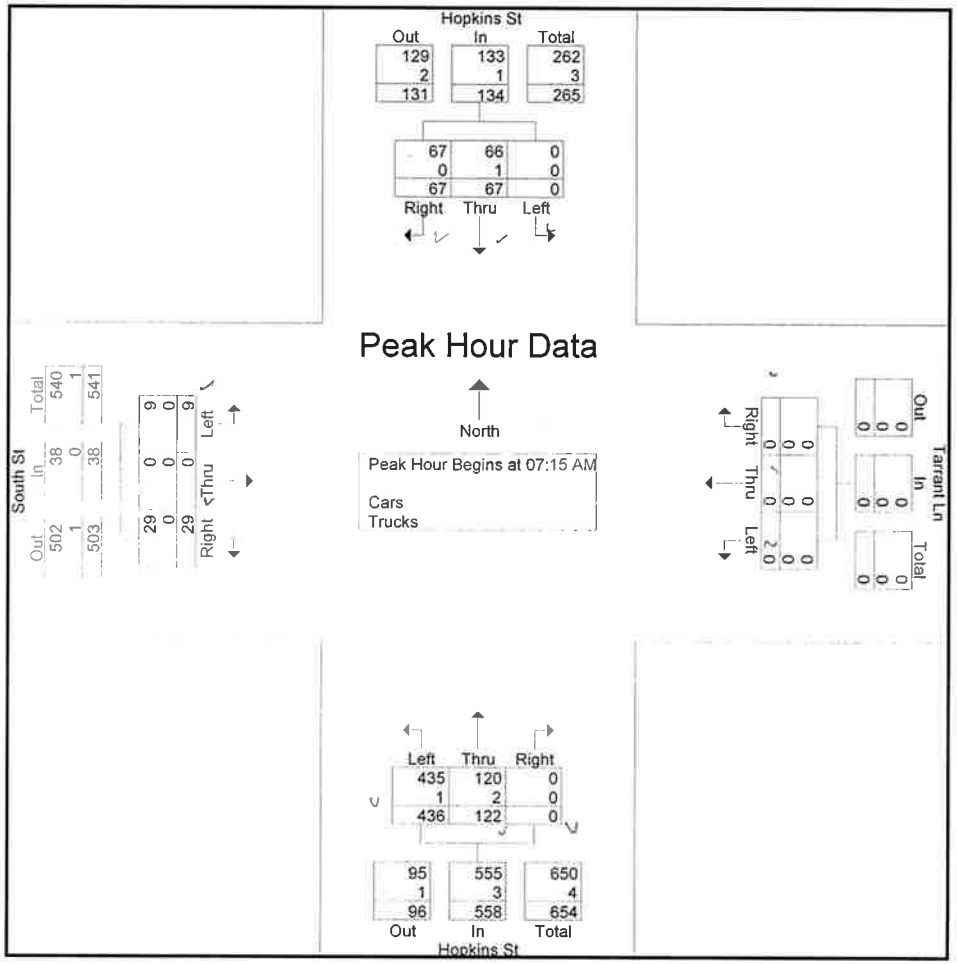
	Hopkins St From North				Tarrant Ln From East				Hopkins St From South				South St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	17	19	36	0	0	0	0	111	25	0	136	2	0	7	9	181
07:30 AM	0	18	**26**	**44**	0	0	0	0	**117**	20	0	137	1	0	7	8	189
07:45 AM	0	**19**	13	32	0	0	0	0	111	**42**	0	**153**	**5**	0	7	**12**	**197**
08:00 AM	0	13	9	22	0	0	0	0	97	35	0	132	1	0	**8**	9	163
Total Volume	0	67	67	134	0	0	0	0	436	122	0	558	9	0	29	38	730
% App. Total	0	50	50		0	0	0		78.1	21.9	0		23.7	0	76.3		
PHF	.000	.882	.644	.761	.000	.000	.000	.000	.932	.726	.000	.912	.450	.000	.906	.792	.926
Cars	0	66	67	133	0	0	0	0	435	120	0	555	9	0	29	38	726
% Cars	0	98.5	100	99.3	0	0	0	0	99.8	98.4	0	99.5	100	0	100	100	99.5
Trucks	0	1	0	1	0	0	0	0	1	2	0	3	0	0	0	0	4
% Trucks	0	1.5	0	0.7	0	0	0	0	0.2	1.6	0	0.5	0	0	0	0	0.5

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				07:45 AM			
+0 mins.	0	13	17	30	0	**1**	0	**1**	111	25	0	136	**5**	0	7	**12**
+15 mins.	0	17	19	36	0	0	0	0	**117**	20	0	137	1	0	8	9
+30 mins.	0	18	**26**	**44**	0	0	0	0	111	**42**	0	**153**	1	0	8	9
+45 mins.	0	**19**	13	32	0	0	0	0	97	35	0	132	1	0	**9**	10
Total Volume	0	67	75	142	0	1	0	1	436	122	0	558	8	0	32	40
% App. Total	0	47.2	52.8		0	100	0		78.1	21.9	0		20	0	80	

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Hopkins St From North			Tarrant Ln From East			Hopkins St From South			South St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	19	6	0	0	0	20	23	0	11	0	22	101
04:15 PM	1	6	8	0	1	0	15	25	0	6	0	19	81
04:30 PM	0	21	3	0	0	0	11	21	0	9	0	27	92
04:45 PM	0	12	11	0	0	0	17	25	0	12	0	18	95
Total	1	58	28	0	1	0	63	94	0	38	0	86	369
05:00 PM	0	22	12	0	0	0	25	28	0	4	0	36	127
05:15 PM	0	15	9	0	0	0	28	30	0	11	0	36	129
05:30 PM	0	17	9	0	0	0	21	21	0	13	0	20	101
05:45 PM	0	20	10	1	0	0	25	18	1	13	0	28	116
Total	0	74	40	1	0	0	99	97	1	41	0	120	473
Grand Total	1	132	68	1	1	0	162	191	1	79	0	206	842
Apprch %	0.5	65.7	33.8	50	50	0	45.8	54	0.3	27.7	0	72.3	
Total %	0.1	15.7	8.1	0.1	0.1	0	19.2	22.7	0.1	9.4	0	24.5	
Cars	1	131	68	1	1	0	162	190	1	79	0	205	839
% Cars	100	99.2	100	100	100	0	100	99.5	100	100	0	99.5	99.6
Trucks	0	1	0	0	0	0	0	1	0	0	0	1	3
% Trucks	0	0.8	0	0	0	0	0	0.5	0	0	0	0.5	0.4

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 2

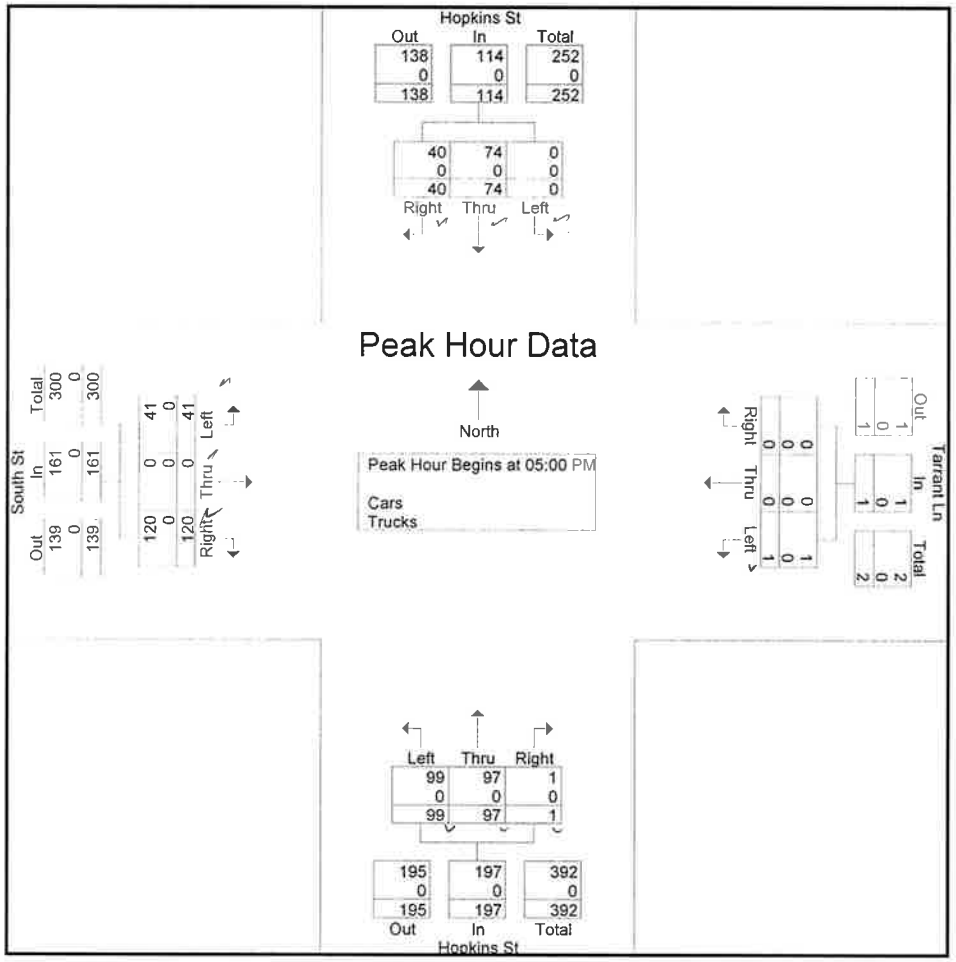
	Hopkins St From North				Tarrant Ln From East				Hopkins St From South				South St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**22**	**12**	**34**	0	0	0	0	25	28	0	53	**4**	0	**36**	40	127
05:15 PM	0	15	9	24	0	0	0	0	**28**	**30**	0	**58**	11	0	36	**47**	**129**
05:30 PM	0	17	9	26	0	0	0	0	21	21	0	42	**13**	0	20	33	101
05:45 PM	0	20	10	30	**1**	0	0	**1**	25	18	1	44	13	0	28	41	116
Total Volume	0	74	40	114	1	0	0	1	99	97	1	197	41	0	120	161	473
% App. Total	0	64.9	35.1		100	0	0		50.3	49.2	0.5		25.5	0	74.5		
PHF	.000	.841	.833	.838	.250	.000	.000	.250	.884	.808	.250	.849	.788	.000	.833	.856	.917
Cars	0	74	40	114	1	0	0	1	99	97	1	197	41	0	120	161	473
% Cars	0	100	100	100	100	0	0	100	100	100	100	100	100	0	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Hopkins Street
E/W Street: Tarrant Lane / South Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580001
Site Code : 79580001
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	**22**	**12**	**34**	0	0	0	0	25	28	0	53	4	0	**36**	40
+15 mins.	0	15	9	24	0	**1**	0	**1**	**28**	**30**	0	**58**	11	0	36	**47**
+30 mins.	0	17	9	26	0	0	0	0	21	21	0	42	**13**	0	20	33
+45 mins.	0	20	10	30	0	0	0	0	25	18	**1**	44	13	0	28	41
Total Volume	0	74	40	114	0	1	0	1	99	97	1	197	41	0	120	161
% App. Total	0	64.9	35.1		0	100	0		50.3	49.2	0.5		25.5	0	74.5	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Main St From North			Hopkins St From East			Main St From South			Hopkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	7	187	3	1	1	23	11	96	2	0	1	35	367
07:15 AM	9	228	1	2	5	22	7	84	6	0	1	24	389
07:30 AM	5	236	2	1	6	20	12	86	7	0	2	41	418
07:45 AM	9	253	3	5	13	31	12	116	5	0	1	36	484
Total	30	904	9	9	25	96	42	382	20	0	5	136	1658
08:00 AM	11	215	2	2	15	18	23	110	7	0	0	30	433
08:15 AM	7	239	5	0	4	28	17	117	3	0	0	52	472
08:30 AM	15	229	2	1	4	18	13	103	5	0	0	36	426
08:45 AM	6	174	3	2	5	10	10	121	8	0	0	29	368
Total	39	857	12	5	28	74	63	451	23	0	0	147	1699
Grand Total	69	1761	21	14	53	170	105	833	43	0	5	283	3357
Apprch %	3.7	95.1	1.1	5.9	22.4	71.7	10.7	84.9	4.4	0	1.7	98.3	
Total %	2.1	52.5	0.6	0.4	1.6	5.1	3.1	24.8	1.3	0	0.1	8.4	
Cars	69	1749	21	13	53	170	105	822	42	0	5	283	3332
% Cars	100	99.3	100	92.9	100	100	100	98.7	97.7	0	100	100	99.3
Trucks	0	12	0	1	0	0	0	11	1	0	0	0	25
% Trucks	0	0.7	0	7.1	0	0	0	1.3	2.3	0	0	0	0.7

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 2

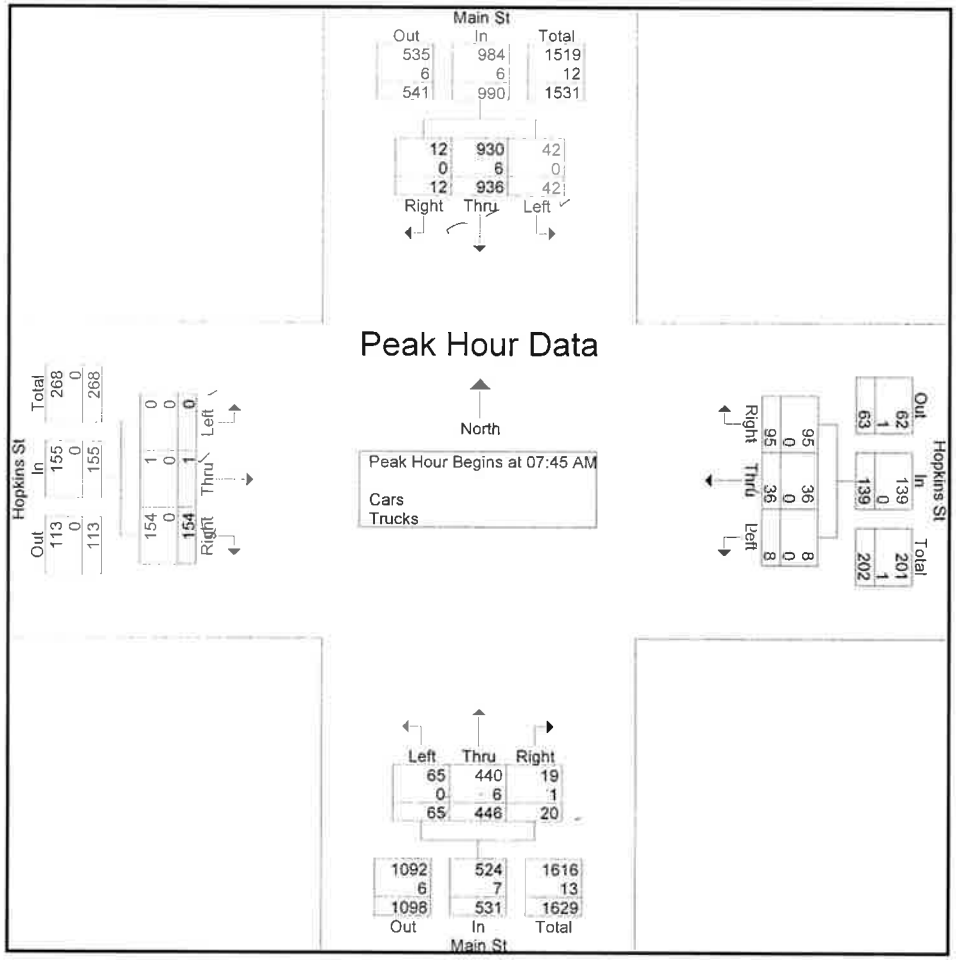
	Main St From North				Hopkins St From East				Main St From South				Hopkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	9	**253**	3	**265**	**5**	13	**31**	**49**	12	116	5	133	0	**1**	36	37	**484**
08:00 AM	11	215	2	228	2	**15**	18	35	**23**	110	**7**	**140**	0	0	30	30	433
08:15 AM	7	239	**5**	251	0	4	28	32	17	**117**	3	137	0	0	**52**	**52**	472
08:30 AM	**15**	229	2	246	1	4	18	23	13	103	5	121	0	0	36	36	426
Total Volume	42	936	12	990	8	36	95	139	65	446	20	531	0	1	154	155	1815
% App. Total	4.2	94.5	1.2		5.8	25.9	68.3		12.2	84	3.8		0	0.6	99.4		
PHF	.700	.925	.600	.934	.400	.600	.766	.709	.707	.953	.714	.948	.000	.250	.740	.745	.938
Cars	42	930	12	984	8	36	95	139	65	440	19	524	0	1	154	155	1802
% Cars	100	99.4	100	99.4	100	100	100	100	100	98.7	95.0	98.7	0	100	100	100	99.3
Trucks	0	6	0	6	0	0	0	0	0	6	1	7	0	0	0	0	13
% Trucks	0	0.6	0	0.6	0	0	0	0	0	1.3	5.0	1.3	0	0	0	0	0.7

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 3



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				07:30 AM				08:00 AM				07:30 AM			
+0 mins.	9	**253**	3	**265**	1	6	20	27	**23**	110	7	**140**	0	**2**	41	43
+15 mins.	11	215	2	228	**5**	13	**31**	**49**	17	117	3	137	0	1	36	37
+30 mins.	7	239	**5**	251	2	**15**	18	35	13	103	5	121	0	0	30	30
+45 mins.	**15**	229	2	246	0	4	28	32	10	**121**	**8**	139	0	**0**	**52**	**52**
Total Volume	42	936	12	990	8	38	97	143	63	451	23	537	0	3	159	162
% App. Total	4.2	94.5	1.2		5.6	26.6	67.8		11.7	84	4.3		0	1.9	98.1	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Main St From North Left	Main St From North Thru	Main St From North Right	Hopkins St From East Left	Hopkins St From East Thru	Hopkins St From East Right	Main St From South Left	Main St From South Thru	Main St From South Right	Hopkins St From West Left	Hopkins St From West Thru	Hopkins St From West Right	Int. Total
04:00 PM	11	158	0	0	5	19	23	165	8	0	1	21	411
04:15 PM	11	145	2	1	5	15	30	171	10	0	0	17	407
04:30 PM	16	151	2	3	5	17	32	174	7	0	3	28	438
04:45 PM	12	129	2	0	3	21	27	174	13	0	0	16	397
Total	50	583	6	4	18	72	112	684	38	0	4	82	1653
05:00 PM	14	141	1	4	2	20	33	143	12	1	2	31	404
05:15 PM	13	116	2	2	4	17	35	182	10	0	1	29	411
05:30 PM	9	130	2	3	1	17	35	197	9	0	2	34	439
05:45 PM	17	124	5	0	1	15	34	154	6	0	1	22	379
Total	53	511	10	9	8	69	137	676	37	1	6	116	1633
Grand Total	103	1094	16	13	26	141	249	1360	75	1	10	198	3286
Apprch %	8.5	90.2	1.3	7.2	14.4	78.3	14.8	80.8	4.5	0.5	4.8	94.7	
Total %	3.1	33.3	0.5	0.4	0.8	4.3	7.6	41.4	2.3	0	0.3	6	
Cars	103	1093	16	13	26	141	249	1359	75	1	10	198	3284
% Cars	100	99.9	100	100	100	100	100	99.9	100	100	100	100	99.9
Trucks	0	1	0	0	0	0	0	1	0	0	0	0	2
% Trucks	0	0.1	0	0	0	0	0	0.1	0	0	0	0	0.1

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 2

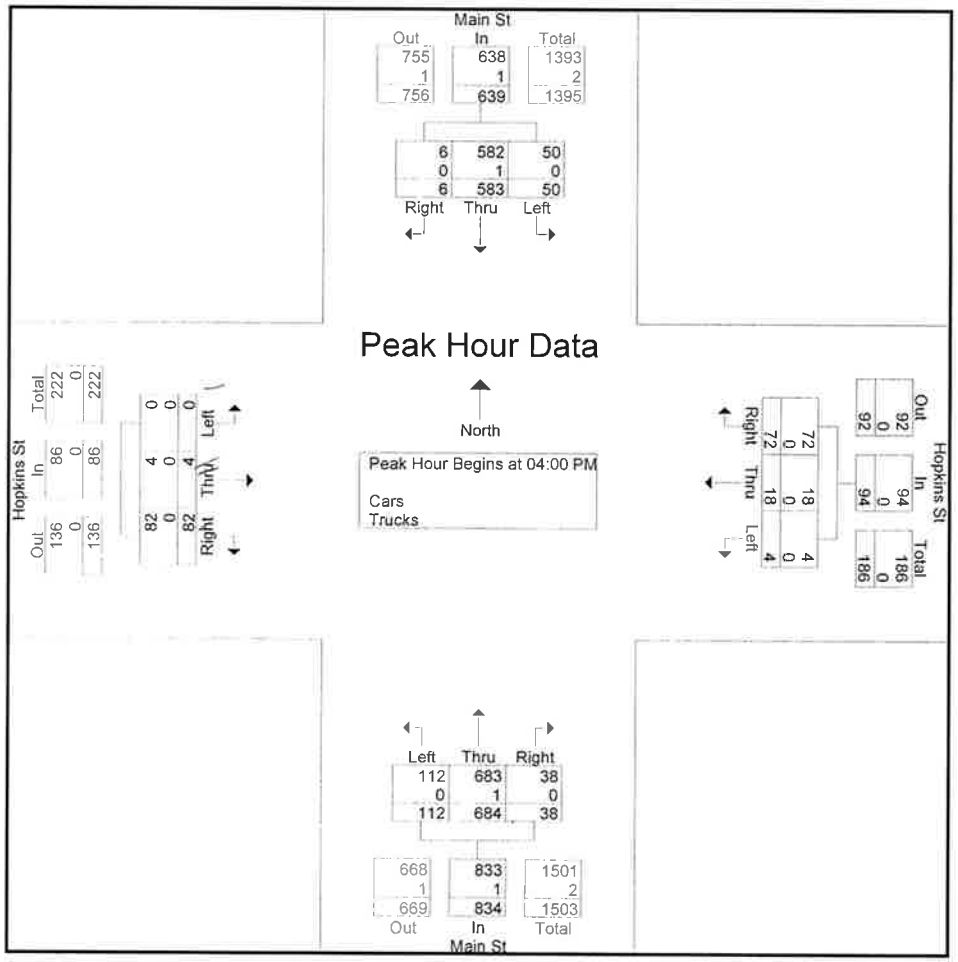
	Main St From North				Hopkins St From East				Main St From South				Hopkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	11	**158**	0	**169**	0	**5**	19	24	23	165	8	196	0	1	21	22	411
04:15 PM	11	145	**2**	158	1	5	15	21	30	171	10	211	0	0	17	17	407
04:30 PM	**16**	151	2	169	**3**	5	17	**25**	**32**	**174**	7	213	0	**3**	**28**	**31**	**438**
04:45 PM	12	129	2	143	0	3	**21**	24	27	174	**13**	**214**	0	0	16	16	397
Total Volume	50	583	6	639	4	18	72	94	112	684	38	834	0	4	82	86	1653
% App. Total	7.8	91.2	0.9		4.3	19.1	76.6		13.4	82	4.6		0	4.7	95.3		
PHF	.781	.922	.750	.945	.333	.900	.857	.940	.875	.983	.731	.974	.000	.333	.732	.694	.943
Cars	50	582	6	638	4	18	72	94	112	683	38	833	0	4	82	86	1651
% Cars	100	99.8	100	99.8	100	100	100	100	100	99.9	100	99.9	0	100	100	100	99.9
Trucks	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% Trucks	0	0.2	0	0.2	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0.1

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Hopkins Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580002
Site Code : 79580002
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	11	**158**	**0**	**169**	3	**5**	17	25	27	174	**13**	214	**1**	**2**	31	34
+15 mins.	11	145	**2**	158	0	3	**21**	24	33	143	12	188	0	1	29	30
+30 mins.	**16**	151	2	169	**4**	2	20	**26**	**35**	182	10	227	0	2	**34**	**36**
+45 mins.	12	129	2	143	2	4	17	23	35	**197**	9	**241**	0	1	22	23
Total Volume	50	583	6	639	9	14	75	98	130	696	44	870	1	6	116	123
% App. Total	7.8	91.2	0.9		9.2	14.3	76.5		14.9	80	5.1		0.8	4.9	94.3	

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Brook St From North				Layton Ave From Northeast				Hopkins St From East				Brook St From South				Hopkins St From West				
Start Time	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Left	BrLt	Thru	Right	Int. Total
07:00 AM	0	1	2	2	0	0	1	0	1	101	2	0	7	0	0	0	0	0	9	11	137
07:15 AM	0	0	0	1	0	0	1	0	0	125	0	0	10	0	0	0	0	0	13	12	162
07:30 AM	0	0	1	1	0	0	2	0	0	122	1	0	10	0	0	0	0	1	9	15	162
07:45 AM	0	0	2	3	0	0	2	0	2	134	0	0	16	0	0	0	2	0	10	17	188
Total	0	1	5	7	0	0	6	0	3	482	3	0	43	0	0	0	2	1	41	55	649
08:00 AM	0	1	1	2	0	0	0	0	0	107	0	0	20	0	0	0	0	0	11	10	152
08:15 AM	0	0	3	1	0	0	3	0	0	88	0	0	15	0	0	0	1	0	11	10	132
08:30 AM	0	0	3	0	0	0	0	0	0	96	1	0	13	0	0	0	0	0	12	16	141
08:45 AM	0	1	1	0	0	0	0	0	0	78	0	0	11	1	0	0	0	0	5	10	107
Total	0	2	8	3	0	0	3	0	0	369	1	0	59	1	0	0	1	0	39	46	532
Grand Total	0	3	13	10	0	0	9	0	3	851	4	0	102	1	0	0	3	1	80	101	1181
Apprch %	0	11.5	50	38.5	0	0	100	0	0.3	99.2	0.5	0	99	1	0	0	1.6	0.5	43.2	54.6	
Total %	0	0.3	1.1	0.8	0	0	0.8	0	0.3	72.1	0.3	0	8.6	0.1	0	0	0.3	0.1	6.8	8.6	
Cars	0	3	13	10	0	0	9	0	3	850	4	0	100	1	0	0	3	1	80	98	1175
% Cars	0	100	100	100	0	0	100	0	100	99.9	100	0	98	100	0	0	100	100	100	97	99.5
Trucks	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3	6
% Trucks	0	0	0	0	0	0	0	0	0	0.1	0	0	2	0	0	0	0	0	0	3	0.5

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 2

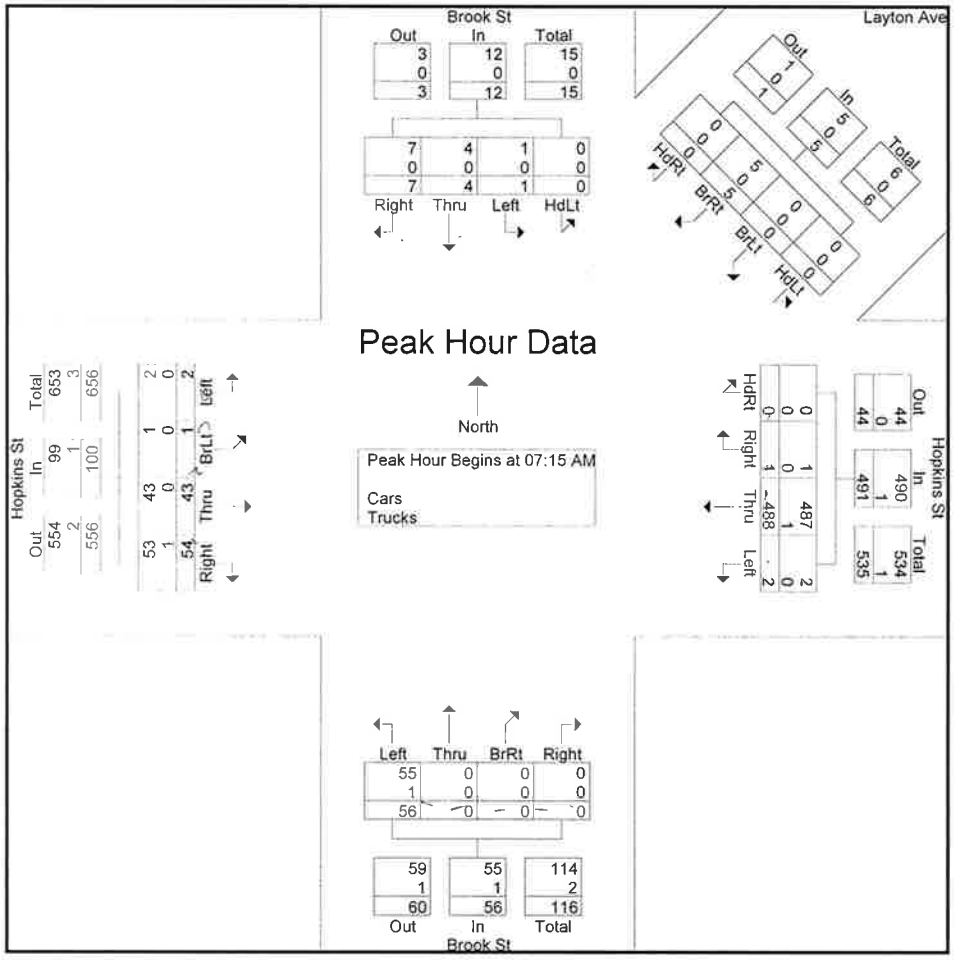
	Brook St From North					Layton Ave From Northeast					Hopkins St From East					Brook St From South					Hopkins St From West					
Start Time	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	0	0	1	1	0	0	1	0	1	0	125	0	0	125	10	0	0	0	10	0	0	13	12	25	162
07:30 AM	0	0	1	1	2	0	0	2	0	2	0	122	1	0	123	10	0	0	0	10	0	1	9	15	25	162
07:45 AM	0	0	2	3	5	0	0	2	0	2	2	134	0	0	136	16	0	0	0	16	2	0	10	17	29	188
08:00 AM	0	1	1	2	4	0	0	0	0	0	0	107	0	0	107	20	0	0	0	20	0	0	11	10	21	152
Total Volume	0	1	4	7	12	0	0	5	0	5	2	488	1	0	491	56	0	0	0	56	2	1	43	54	100	664
% App. Total	0	8.3	33.3	58.3		0	0	100	0		0.4	99.4	0.2	0		100	0	0	0		2	1	43	54		
PHF	.000	.250	.500	.583	.600	.000	.000	.625	.000	.625	.250	.910	.250	.000	.903	.700	.000	.000	.000	.700	.250	.250	.827	.794	.862	.883
Cars	0	1	4	7	12	0	0	5	0	5	2	487	1	0	490	55	0	0	0	55	2	1	43	53	99	661
% Cars	0	100	100	100	100	0	0	100	0	100	100	99.8	100	0	99.8	98.2	0	0	0	98.2	100	100	100	98.1	99.0	99.5
Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	1	1	3
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0.2	1.8	0	0	0	1.8	0	0	0	1.9	1.0	0.5

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 3



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					07:30 AM					07:15 AM					07:45 AM					07:15 AM				
+0 mins.	0	0	2	**3**	**5**	0	0	2	**0**	2	0	125	0	0	125	16	0	0	0	16	0	0	**13**	12	25
+15 mins.	0	**1**	1	2	4	0	0	2	0	2	0	122	**1**	0	123	**20**	0	0	0	**20**	0	**1**	9	15	25
+30 mins.	0	0	**3**	1	4	0	0	0	0	0	**2**	**134**	0	0	**136**	15	0	0	0	15	**2**	0	10	**17**	**29**
+45 mins.	0	0	3	0	3	0	0	**3**	**0**	**3**	0	107	0	0	107	13	0	0	0	13	0	0	11	10	21
Total Volume	0	1	9	6	16	0	0	7	0	7	2	488	1	0	491	64	0	0	0	64	2	1	43	54	100
% App. Total	0	6.2	56.2	37.5		0	0	100	0		0.4	99.4	0.2	0		100	0	0	0		2	1	43	54	

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Brook St From North				Layton Ave From Northeast				Hopkins St From East				Brook St From South				Hopkins St From West				
Start Time	HdLt	Left	Thru	Right	HdLt	BrLt	BrRt	HdRt	Left	Thru	Right	HdRt	Left	Thru	BrRt	Right	Left	BrLt	Thru	Right	Int. Total
04:00 PM	0	0	1	1	0	0	0	0	0	30	2	0	16	0	0	0	2	1	21	14	88
04:15 PM	0	0	2	0	0	0	0	0	0	28	0	1	15	3	0	1	3	0	20	7	80
04:30 PM	0	1	2	0	0	1	0	0	0	21	2	0	11	0	0	0	1	2	32	10	83
04:45 PM	0	1	1	1	0	0	0	0	2	21	1	0	16	3	1	1	1	0	24	8	81
Total	0	2	6	2	0	1	0	0	2	100	5	1	58	6	1	2	7	3	97	39	332
05:00 PM	1	0	2	0	0	2	1	0	0	29	1	0	17	1	0	1	1	1	38	12	107
05:15 PM	0	0	1	0	1	0	0	0	0	36	1	0	24	2	2	1	2	0	42	10	122
05:30 PM	0	0	0	0	0	0	0	0	1	26	2	0	16	2	0	0	0	1	33	9	90
05:45 PM	0	0	2	1	0	1	0	0	1	26	0	0	14	2	0	1	1	1	38	8	96
Total	1	0	5	1	1	3	1	0	2	117	4	0	71	7	2	3	4	3	151	39	415
Grand Total	1	2	11	3	1	4	1	0	4	217	9	1	129	13	3	5	11	6	248	78	747
Apprch %	5.9	11.8	64.7	17.6	16.7	66.7	16.7	0	1.7	93.9	3.9	0.4	86	8.7	2	3.3	3.2	1.7	72.3	22.7	
Total %	0.1	0.3	1.5	0.4	0.1	0.5	0.1	0	0.5	29	1.2	0.1	17.3	1.7	0.4	0.7	1.5	0.8	33.2	10.4	
Cars	1	2	10	3	1	4	1	0	4	217	9	1	129	13	3	5	11	6	247	77	744
% Cars	100	100	90.9	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	99.6	98.7	99.6
Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
% Trucks	0	0	9.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1.3	0.4

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 2

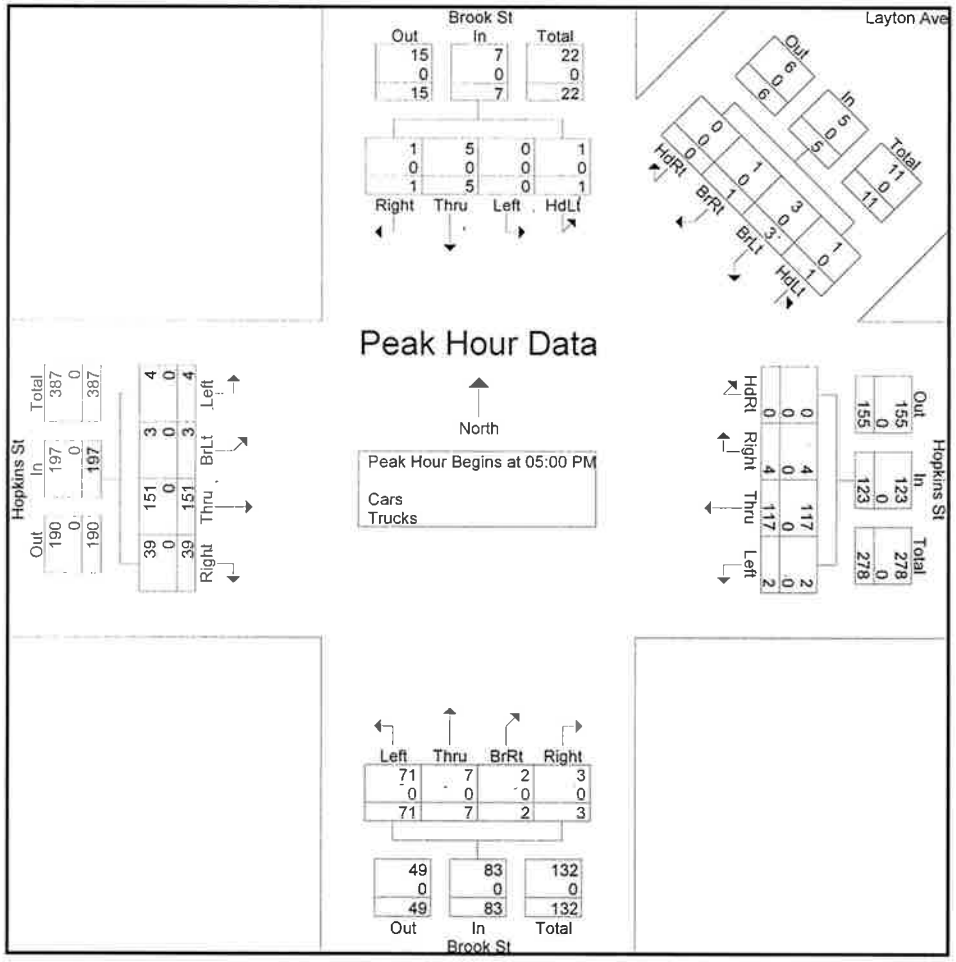
	Brook St From North					Layton Ave From Northeast					Hopkins St From East					Brook St From South					Hopkins St From West					
Start Time	HdLt	Left	Thru	Right	App. Total	HdLt	BrLt	BrRt	HdRt	App. Total	Left	Thru	Right	HdRt	App. Total	Left	Thru	BrRt	Right	App. Total	Left	BrLt	Thru	Right	App. Total	Int. 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**	0	**2**	0	**3**	0	**2**	**1**	0	**3**	0	29	1	0	30	17	1	0	**1**	19	1	**1**	38	**12**	52	107
05:15 PM	0	0	1	0	1	**1**	0	0	0	1	0	**36**	1	0	**37**	**24**	**2**	**2**	1	**29**	**2**	0	**42**	10	**54**	**122**
05:30 PM	0	0	0	0	0	0	0	0	0	0	**1**	26	**2**	0	29	16	2	0	0	18	0	1	33	9	43	90
05:45 PM	0	0	2	**1**	3	0	1	0	0	1	1	26	0	0	27	14	2	0	1	17	1	1	38	8	48	96
Total Volume	1	0	5	1	7	1	3	1	0	5	2	117	4	0	123	71	7	2	3	83	4	3	151	39	197	415
% App. Total	14.3	0	71.4	14.3		20	60	20	0		1.6	95.1	3.3	0		85.5	8.4	2.4	3.6		2	1.5	76.6	19.8		
PHF	.250	.000	.625	.250	.583	.250	.375	.250	.000	.417	.500	.813	.500	.000	.831	.740	.875	.250	.750	.716	.500	.750	.899	.813	.912	.850
Cars	1	0	5	1	7	1	3	1	0	5	2	117	4	0	123	71	7	2	3	83	4	3	151	39	197	415
% Cars	100	0	100	100	100	100	100	100	0	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Brook St / Layton Ave
E/W Street : Hopkins Street
City/State : Wakefield, MA
Weather : Cloudy

File Name : 79580003
Site Code : 79580003
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	04:15 PM					04:30 PM					05:00 PM					04:45 PM					05:00 PM				
+0 mins.	0	0	**2**	0	2	0	1	0	0	1	0	29	1	0	30	16	**3**	1	**1**	21	1	**1**	38	**12**	52
+15 mins.	0	**1**	2	0	**3**	0	0	0	0	0	**0**	**36**	1	0	**37**	17	1	0	1	19	**2**	0	**42**	10	**54**
+30 mins.	0	1	1	**1**	3	0	**2**	**1**	0	**3**	**1**	26	**2**	0	29	**24**	2	**2**	1	**29**	0	1	33	9	43
+45 mins.	**1**	0	2	0	3	**1**	0	0	0	1	1	26	0	0	27	16	2	0	0	18	1	1	38	8	48
Total Volume	1	2	7	1	11	1	3	1	0	5	2	117	4	0	123	73	8	3	3	87	4	3	151	39	197
% App. Total	9.1	18.2	63.6	9.1		20	60	20	0		1.6	95.1	3.3	0		83.9	9.2	3.4	3.4		2	1.5	76.6	19.8	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Main St From North			South St From East			Main St From South				South St From West			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
07:00 AM	0	227	15	86	19	8	10	80	4	0	13	5	36	503
07:15 AM	1	234	13	105	28	6	18	86	2	1	12	8	27	541
07:30 AM	3	265	11	95	21	5	21	100	5	2	10	1	39	578
07:45 AM	1	304	21	92	33	5	29	135	3	1	13	4	23	664
Total	5	1030	60	378	101	24	78	401	14	4	48	18	125	2286
08:00 AM	1	259	5	97	14	10	12	142	3	2	8	6	34	593
08:15 AM	4	282	11	75	19	7	20	131	3	0	9	3	22	586
08:30 AM	5	259	13	82	20	7	19	107	2	2	8	2	29	555
08:45 AM	1	211	10	70	20	10	16	141	3	1	5	2	34	524
Total	11	1011	39	324	73	34	67	521	11	5	30	13	119	2258
Grand Total	16	2041	99	702	174	58	145	922	25	9	78	31	244	4544
Apprch %	0.7	94.7	4.6	75.2	18.6	6.2	13.2	83.7	2.3	0.8	22.1	8.8	69.1	
Total %	0.4	44.9	2.2	15.4	3.8	1.3	3.2	20.3	0.6	0.2	1.7	0.7	5.4	
Cars	16	2030	99	700	174	58	144	911	25	9	78	31	244	4519
% Cars	100	99.5	100	99.7	100	100	99.3	98.8	100	100	100	100	100	99.4
Trucks	0	11	0	2	0	0	1	11	0	0	0	0	0	25
% Trucks	0	0.5	0	0.3	0	0	0.7	1.2	0	0	0	0	0	0.6

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 2

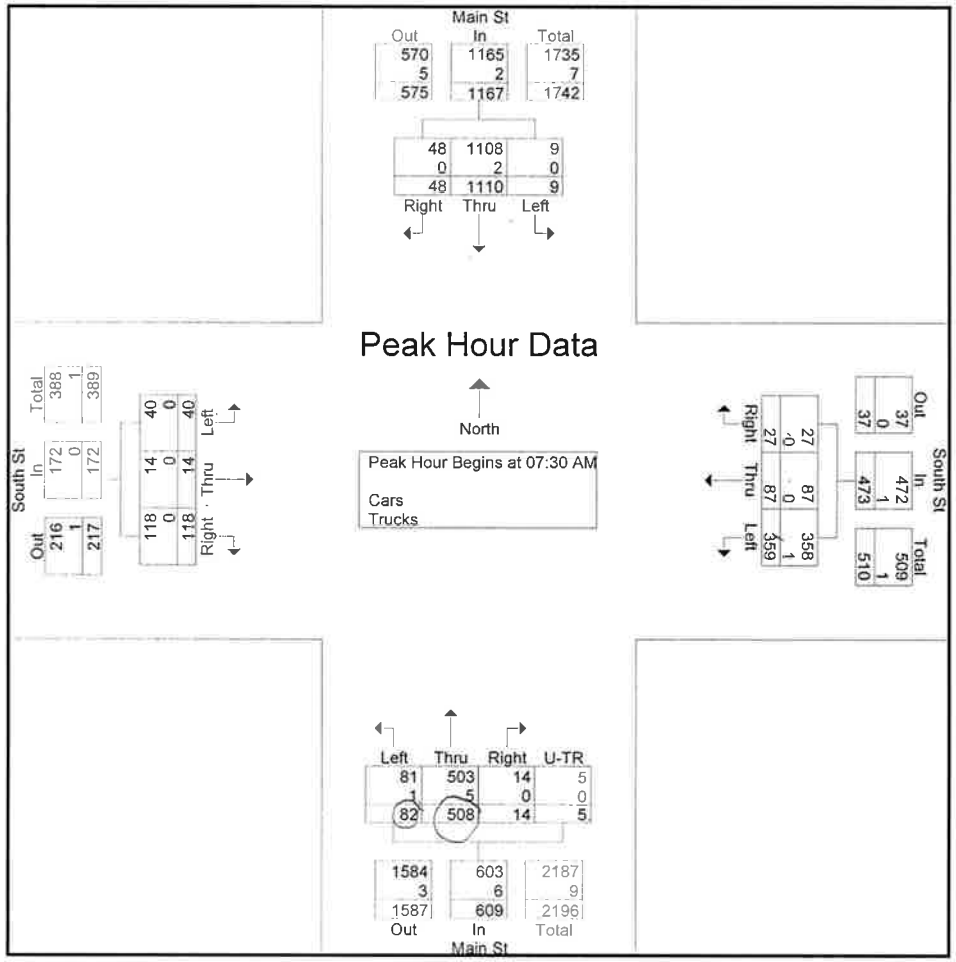
	Main St From North				South St From East				Main St From South					South St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:30 AM																		
07:30 AM	3	265	11	279	95	21	5	121	21	100	**5**	**2**	128	10	1	**39**	**50**	578
07:45 AM	1	**304**	**21**	**326**	92	**33**	5	**130**	**29**	135	3	1	**168**	**13**	4	23	40	**664**
08:00 AM	1	259	5	265	**97**	14	**10**	121	12	**142**	3	2	159	8	**6**	34	48	593
08:15 AM	**4**	282	11	297	75	19	7	101	20	131	3	0	154	9	3	22	34	586
Total Volume	9	1110	48	1167	359	87	27	473	82	508	14	5	609	40	14	118	172	2421
% App. Total	0.8	95.1	4.1		75.9	18.4	5.7		13.5	83.4	2.3	0.8		23.3	8.1	68.6		
PHF	.563	.913	.571	.895	.925	.659	.675	.910	.707	.894	.700	.625	.906	.769	.583	.756	.860	.912
Cars	9	1108	48	1165	358	87	27	472	81	503	14	5	603	40	14	118	172	2412
% Cars	100	99.8	100	99.8	99.7	100	100	99.8	98.8	99.0	100	100	99.0	100	100	100	100	99.6
Trucks	0	2	0	2	1	0	0	1	1	5	0	0	6	0	0	0	0	9
% Trucks	0	0.2	0	0.2	0.3	0	0	0.2	1.2	1.0	0	0	1.0	0	0	0	0	0.4

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:45 AM				07:00 AM			
+0 mins.	3	265	11	279	**105**	28	6	**139**	**29**	135	3	1	**168**	**13**	5	36	**54**
+15 mins.	1	**304**	**21**	**326**	95	21	5	121	12	**142**	3	**2**	159	12	**8**	27	47
+30 mins.	1	259	5	265	92	**33**	5	130	20	131	3	0	154	10	1	**39**	50
+45 mins.	**4**	282	11	297	97	14	**10**	121	19	107	2	2	130	13	**4**	23	40
Total Volume	9	1110	48	1167	389	96	26	511	80	515	11	5	**611**	48	18	125	191
% App. Total	0.8	95.1	4.1		76.1	18.8	5.1		13.1	84.3	1.8	0.8		25.1	9.4	65.4	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Main St From North			South St From East			Main St From South				South St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
04:00 PM	8	169	15	13	6	6	24	183	18	1	9	12	30	494
04:15 PM	4	155	17	20	4	4	33	212	9	0	10	16	39	523
04:30 PM	4	184	9	12	6	3	30	210	16	0	10	19	30	533
04:45 PM	3	135	7	20	6	5	24	204	15	0	8	14	33	474
Total	19	643	48	65	22	18	111	809	58	1	37	61	132	2024
05:00 PM	2	175	13	25	7	5	20	187	11	0	12	29	37	523
05:15 PM	6	134	16	21	8	11	27	208	18	0	17	24	48	538
05:30 PM	6	157	16	13	8	7	31	243	17	0	20	13	40	571
05:45 PM	3	130	19	19	14	6	18	182	19	0	14	21	35	480
Total	17	596	64	78	37	29	96	820	65	0	63	87	160	2112
Grand Total	36	1239	112	143	59	47	207	1629	123	1	100	148	292	4136
Apprch %	2.6	89.3	8.1	57.4	23.7	18.9	10.6	83.1	6.3	0.1	18.5	27.4	54.1	
Total %	0.9	30	2.7	3.5	1.4	1.1	5	39.4	3	0	2.4	3.6	7.1	
Cars	36	1239	112	143	59	47	207	1627	123	1	100	147	291	4132
% Cars	100	100	100	100	100	100	100	99.9	100	100	100	99.3	99.7	99.9
Trucks	0	0	0	0	0	0	0	2	0	0	0	1	1	4
% Trucks	0	0	0	0	0	0	0	0.1	0	0	0	0.7	0.3	0.1

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 2

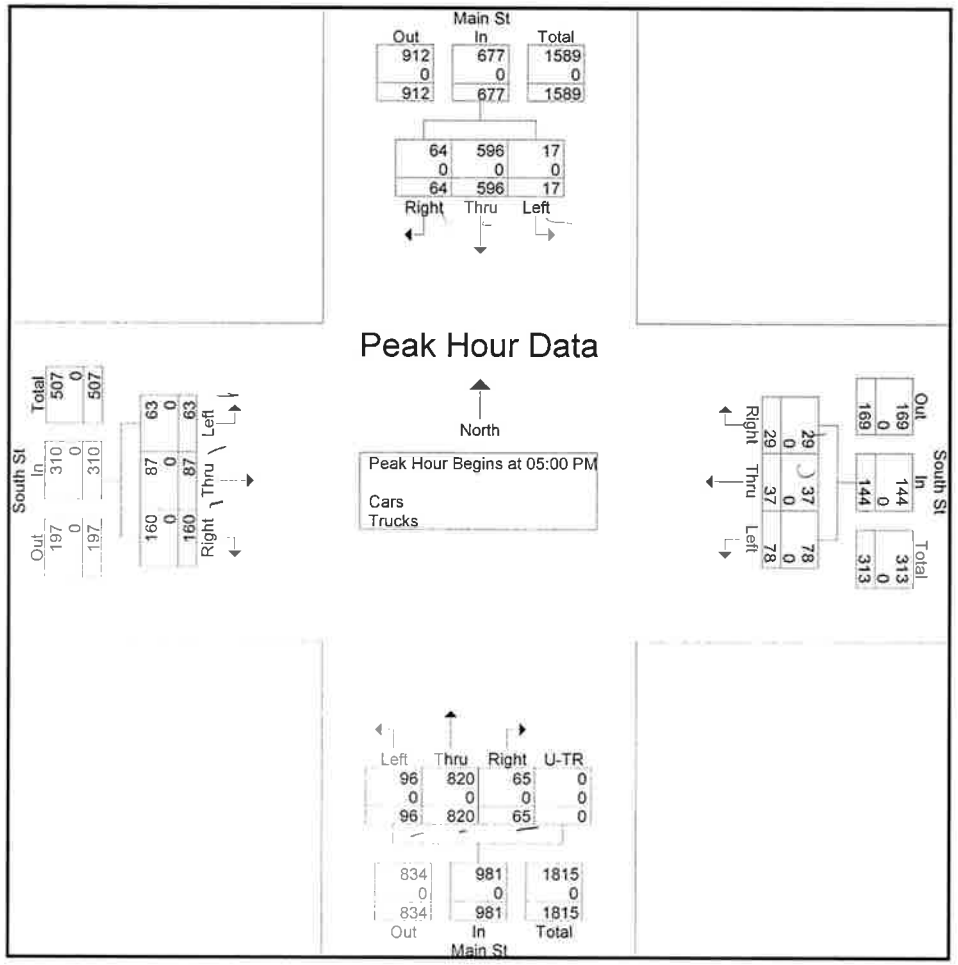
	Main St From North				South St From East				Main St From South					South St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-TR	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 05:00 PM																		
05:00 PM	2	**175**	13	**190**	**25**	7	5	37	20	187	11	0	218	12	**29**	37	78	523
05:15 PM	**6**	134	16	156	21	8	**11**	**40**	27	208	18	0	253	17	24	**48**	**89**	538
05:30 PM	6	157	16	179	13	8	7	28	**31**	**243**	17	0	**291**	**20**	13	40	73	**571**
05:45 PM	3	130	**19**	152	19	**14**	6	39	18	182	**19**	0	219	14	21	35	70	480
Total Volume	17	596	64	677	78	37	29	144	96	820	65	0	981	63	87	160	310	2112
% App. Total	2.5	88	9.5		54.2	25.7	20.1		9.8	83.6	6.6	0		20.3	28.1	51.6		
PHF	.708	.851	.842	.891	.780	.661	.659	.900	.774	.844	.855	.000	.843	.788	.750	.833	.871	.925
Cars	17	596	64	677	78	37	29	144	96	820	65	0	981	63	87	160	310	2112
% Cars	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: South Street
City/State : Reading, MA
Weather : Cloudy

File Name : 79580004
Site Code : 79580004
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:45 PM					05:00 PM			
+0 mins.	**8**	169	15	192	**25**	7	5	37	24	204	15	0	243	12	**29**	37	78
+15 mins.	4	155	**17**	176	21	8	**11**	**40**	20	187	11	0	218	17	24	**48**	**89**
+30 mins.	4	**184**	9	**197**	13	8	7	28	27	208	**18**	0	253	**20**	13	40	73
+45 mins.	3	135	7	145	19	**14**	6	39	**31**	**243**	17	0	**291**	14	21	35	70
Total Volume	19	643	48	710	78	37	29	144	102	842	61	0	1005	63	87	160	310
% App. Total	2.7	90.6	6.8		54.2	25.7	20.1		10.1	83.8	6.1	0		20.3	28.1	51.6	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Main St From North			Route 95 SB Ramp From East			Main St From South			Route 95 SB Ramp From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	188	166	0	0	18	0	78	180	0	0	52	682
07:15 AM	0	186	181	0	0	12	0	95	194	0	0	20	688
07:30 AM	0	229	164	0	0	13	0	103	169	0	0	47	725
07:45 AM	0	224	189	0	0	17	0	156	172	0	0	32	790
Total	0	827	700	0	0	60	0	432	715	0	0	151	2885
08:00 AM	0	181	217	0	0	12	0	140	179	0	0	37	766
08:15 AM	0	204	170	0	0	17	0	147	199	0	0	45	782
08:30 AM	0	208	166	0	0	18	0	109	177	0	0	57	735
08:45 AM	0	181	136	0	0	18	0	142	161	0	0	61	699
Total	0	774	689	0	0	65	0	538	716	0	0	200	2982
Grand Total	0	1601	1389	0	0	125	0	970	1431	0	0	351	5867
Apprch %	0	53.5	46.5	0	0	100	0	40.4	59.6	0	0	100	
Total %	0	27.3	23.7	0	0	2.1	0	16.5	24.4	0	0	6	
Cars	0	1596	1380	0	0	121	0	962	1405	0	0	333	5797
% Cars	0	99.7	99.4	0	0	96.8	0	99.2	98.2	0	0	94.9	98.8
Trucks	0	5	9	0	0	4	0	8	26	0	0	18	70
% Trucks	0	0.3	0.6	0	0	3.2	0	0.8	1.8	0	0	5.1	1.2

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 2

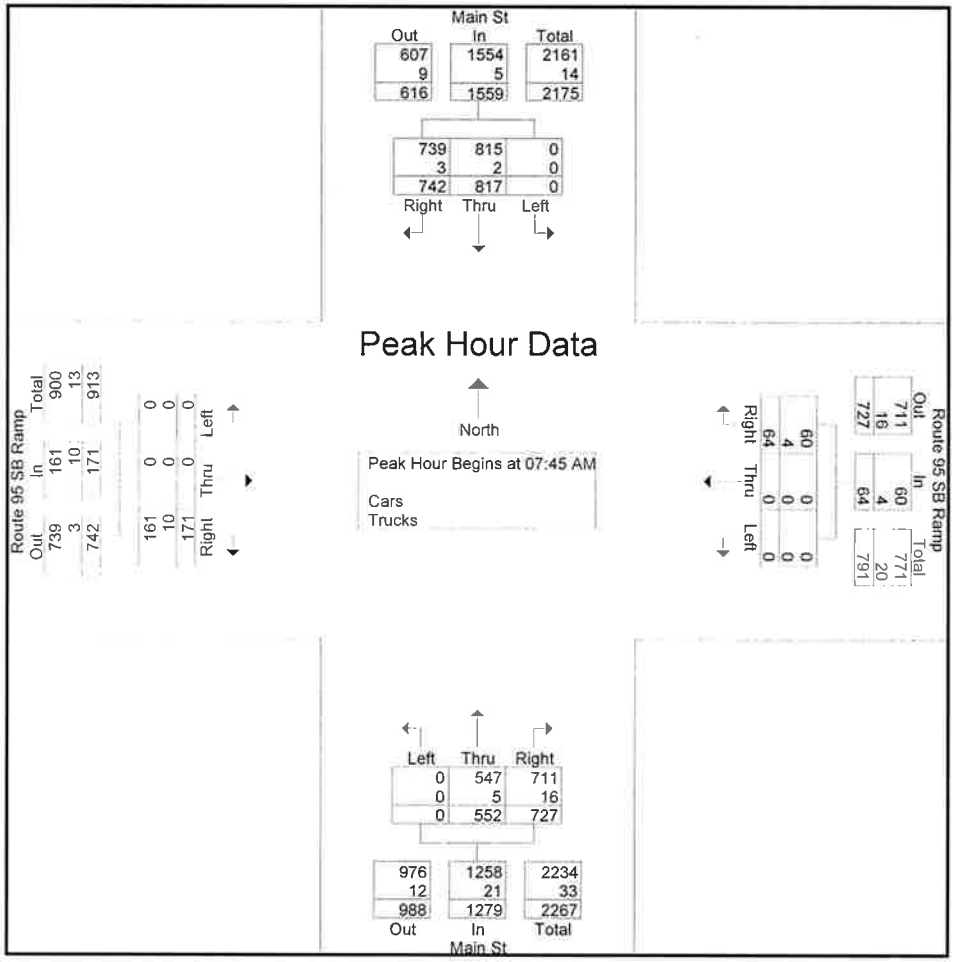
	Main St From North				Route 95 SB Ramp From East				Main St From South				Route 95 SB Ramp From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	**224**	189	**413**	0	0	17	17	**0**	**156**	172	328	0	0	32	32	**790**
08:00 AM	0	181	**217**	398	0	0	12	12	**0**	140	179	319	0	0	37	37	766
08:15 AM	0	204	170	374	0	0	17	17	0	147	**199**	**346**	0	0	45	45	782
08:30 AM	0	208	166	374	0	0	**18**	**18**	0	109	177	286	0	0	**57**	**57**	735
Total Volume	0	817	742	1559	0	0	64	64	**0**	552	727	1279	0	0	171	171	3073
% App. Total	0	52.4	47.6		0	0	100		**0**	43.2	56.8		0	0	100		
PHF	.000	.912	.855	.944	.000	.000	.889	.889	.000	.885	.913	.924	.000	.000	.750	.750	.972
Cars	0	815	739	1554	0	0	60	60	0	547	711	1258	0	0	161	161	3033
% Cars	0	99.8	99.6	99.7	0	0	93.8	93.8	0	99.1	97.8	98.4	0	0	94.2	94.2	98.7
Trucks	0	2	3	**5**	0	**0**	4	4	0	5	16	21	0	0	10	10	40
% Trucks	0	0.2	0.4	0.3	0	0	6.3	6.3	0	0.9	2.2	1.6	0	0	5.8	5.8	1.3

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				07:45 AM				08:00 AM			
+0 mins.	0	**229**	164	393	0	0	12	12	0	**156**	172	328	0	0	37	37
+15 mins.	0	224	189	**413**	0	0	17	17	0	140	179	319	0	0	45	45
+30 mins.	0	181	**217**	398	0	0	**18**	**18**	0	147	**199**	**346**	0	0	57	57
+45 mins.	0	204	170	374	0	0	18	18	0	109	177	286	0	0	**61**	**61**
Total Volume	0	838	740	1578	0	0	65	65	0	552	727	1279	0	0	200	200
% App. Total	0	53.1	46.9		0	0	100		0	43.2	56.8		0	0	100	

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 1

Groups Printed- Cars - Trucks

	Main St From North			Route 95 SB Ramp From East			Main St From South			Route 95 SB Ramp From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	141	67	0	0	39	0	191	91	0	0	69	598
04:15 PM	0	136	83	0	0	51	0	198	111	0	0	78	657
04:30 PM	0	152	71	0	0	39	0	223	88	0	0	80	653
04:45 PM	0	147	44	0	0	40	0	199	100	0	0	92	622
Total	0	576	265	0	0	169	0	811	390	0	0	319	2530
05:00 PM	0	175	63	0	0	38	0	185	81	0	0	92	634
05:15 PM	0	150	53	0	0	47	0	202	88	0	0	86	626
05:30 PM	0	124	80	0	0	47	0	252	89	0	0	78	670
05:45 PM	0	132	57	0	0	34	0	181	85	0	0	82	571
Total	0	581	253	0	0	166	0	820	343	0	0	338	2501
Grand Total	0	1157	518	0	0	335	0	1631	733	0	0	657	5031
Apprch %	0	69.1	30.9	0	0	100	0	69	31	0	0	100	
Total %	0	23	10.3	0	0	6.7	0	32.4	14.6	0	0	13.1	
Cars	0	1156	516	0	0	334	0	1630	729	0	0	656	5021
% Cars	0	99.9	99.6	0	0	99.7	0	99.9	99.5	0	0	99.8	99.8
Trucks	0	1	2	0	0	1	0	1	4	0	0	1	10
% Trucks	0	0.1	0.4	0	0	0.3	0	0.1	0.5	0	0	0.2	0.2

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

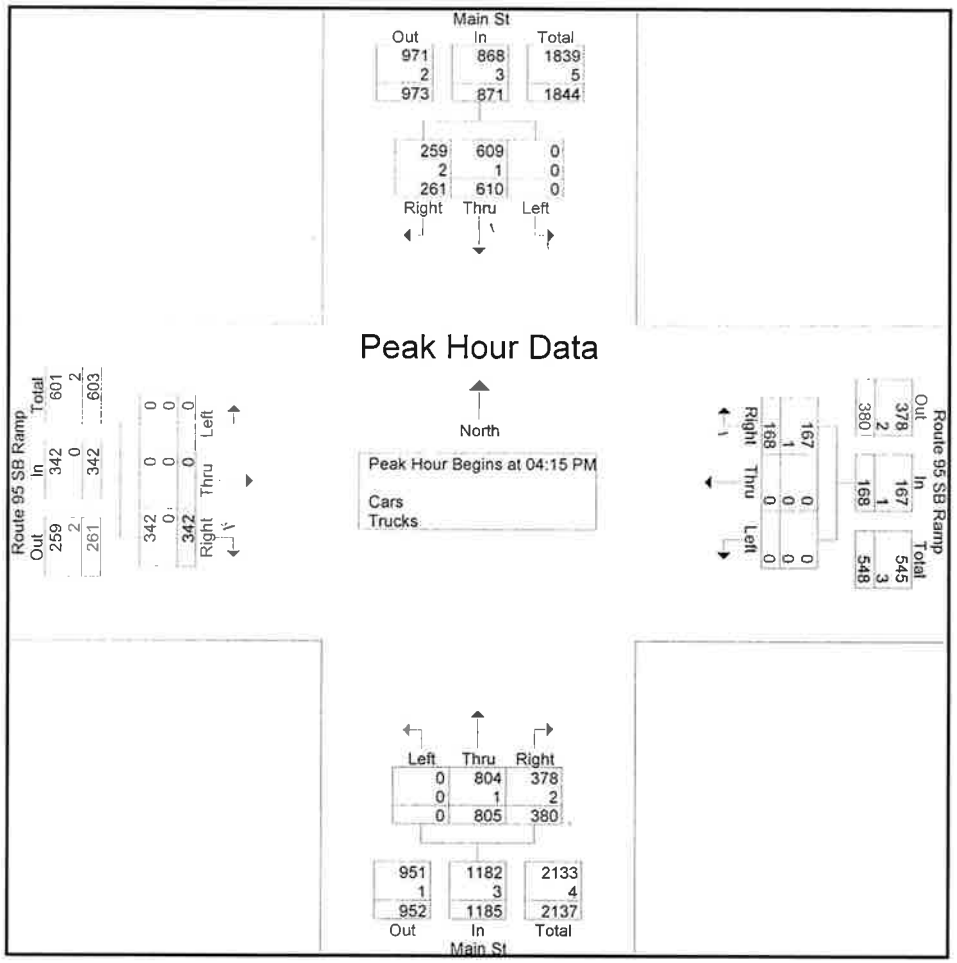
File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 2

	Main St From North				Route 95 SB Ramp From East				Main St From South				Route 95 SB Ramp 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 04:15 PM																	
04:15 PM	0	136	**83**	219	0	0	**51**	**51**	0	198	**111**	309	0	0	78	78	**657**
04:30 PM	0	152	71	223	0	0	39	39	0	**223**	88	**311**	0	0	80	80	653
04:45 PM	0	147	44	191	0	0	40	40	0	199	100	299	0	0	**92**	**92**	622
05:00 PM	0	**175**	63	**238**	0	0	38	38	0	185	81	266	0	0	92	92	634
Total Volume	0	610	261	871	0	0	168	168	0	805	380	1185	0	0	342	342	2566
% App. Total	0	70	30		0	0	100		0	67.9	32.1		0	0	100		
PHF	.000	.871	.786	.915	.000	.000	.824	.824	.000	.902	.856	.953	.000	.000	.929	.929	.976
Cars	0	609	259	868	0	0	167	167	0	804	378	1182	0	0	342	342	2559
% Cars	0	99.8	99.2	99.7	0	0	99.4	99.4	0	99.9	99.5	99.7	0	0	100	100	99.7
Trucks	0	1	2	3	0	0	1	1	0	1	2	3	0	0	0	0	7
% Trucks	0	0.2	0.8	0.3	0	0	0.6	0.6	0	0.1	0.5	0.3	0	0	0	0	0.3

Accurate Counts
978-664-2565

N/S Street : Main Street
E/W Street: Route 95 SB Ramps
City/State : Reading, MA
Weather : Cloudy

File Name : 79580005
Site Code : 79580005
Start Date : 6/6/2018
Page No : 3



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

Peak Hour for Each Approach Begins at:

	04:15 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	0	136	**83**	219	0	0	40	40	0	191	91	282	0	0	80	80
+15 mins.	0	152	71	223	0	0	38	38	0	198	**111**	309	0	0	**92**	**92**
+30 mins.	0	147	44	191	0	0	**47**	**47**	0	**223**	88	**311**	0	0	92	92
+45 mins.	0	**175**	63	**238**	0	0	47	47	0	199	100	299	0	0	86	86
Total Volume	0	610	261	871	0	0	172	172	0	811	390	1201	0	0	350	350
% App. Total	0	70	30		0	0	100		0	67.5	32.5		0	0	100	

AUTOMATIC TRAFFIC RECORDER

Accurate Counts

978-664-2565

Location : Hopkins Street
Location : North of Tarrant Lane
City/State: Wakefield, MA

7958VOL1

Start	6/6/2018	SB		Hour Totals		NB		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	22			1	20				
12:15		2	22			5	23				
12:30		1	14			3	20				
12:45		1	22	6	80	1	20	10	83	16	163
01:00		3	13			2	23				
01:15		0	22			0	18				
01:30		1	18			1	18				
01:45		1	27	5	80	0	32	3	91	8	171
02:00		0	19			0	17				
02:15		0	19			0	25				
02:30		0	30			1	22				
02:45		0	27	0	95	2	34	3	98	3	193
03:00		0	18			0	30				
03:15		0	23			1	31				
03:30		0	26			0	29				
03:45		1	18	1	85	0	35	1	125	2	210
04:00		1	25			1	36				
04:15		0	17			0	28				
04:30		1	24			0	33				
04:45		4	24	6	90	2	38	3	135	9	225
05:00		6	33			2	31				
05:15		6	24			2	43				
05:30		10	25			3	33				
05:45		15	31	37	113	7	32	14	139	51	252
06:00		13	24			3	40				
06:15		20	23			7	32				
06:30		33	20			8	29				
06:45		29	26	95	93	9	17	27	118	122	211
07:00		29	18			21	19				
07:15		36	14			24	31				
07:30		43	17			21	29				
07:45		32	21	140	70	41	20	107	99	247	169
08:00		23	18			38	15				
08:15		22	10			23	20				
08:30		35	8			22	13				
08:45		25	9	105	45	12	18	95	66	200	111
09:00		24	9			14	12				
09:15		19	8			17	18				
09:30		22	2			19	7				
09:45		20	4	85	23	11	14	61	51	146	74
10:00		15	5			17	9				
10:15		19	2			14	12				
10:30		20	10			13	12				
10:45		24	5	78	22	14	4	58	37	136	59
11:00		20	0			12	3				
11:15		16	3			15	4				
11:30		23	2			6	4				
11:45		15	3	74	8	23	7	56	18	130	26
Total		632	804			438	1060			1070	1864
Percent		44.0%	56.0%			29.2%	70.8%			36.5%	63.5%
Grand Total		632	804			438	1060			1070	1864
Percent		44.0%	56.0%			29.2%	70.8%			36.5%	63.5%
ADT		ADT 2,934		AADT 2,934							

Accurate Counts

978-664-2565

Location : Hopkins Street
Location : North of Tarrant Lane
City/State: Wakefield, MA

7958VOL1

Start Time	6/6/2018 Wed	SB	NB							Total
12:00 AM		6	10							16
01:00		5	3							8
02:00		0	3							3
03:00		1	1							2
04:00		6	3							9
05:00		37	14							51
06:00		95	27							122
07:00		**140**	**107**							**247**
08:00		105	95							200
09:00		85	61							146
10:00		78	58							136
11:00		74	56							130
12:00 PM		80	83							163
01:00		80	91							171
02:00		95	98							193
03:00		85	125							210
04:00		90	135							225
05:00		**113**	**139**							**252**
06:00		93	118							211
07:00		70	99							169
08:00		45	66							111
09:00		23	51							74
10:00		22	37							59
11:00		8	18							26
Total		1436	1498							2934
Percent		48.9%	51.1%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	140	107	-	-	-	-	-	-	247
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	113	139	-	-	-	-	-	-	252
Grand Total		1436	1498							2934
Percent		48.9%	51.1%							

ADT ADT 2,934 AADT 2,934

Accurate Counts

978-664-2565

Location : Hopkins Street
Location : North of Tarrant Lane
City/State: Wakefield, MA

7958SPD1

SB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
06/06/18	0	0	0	0	0	1	1	3	1	0	0	0	0	0	6
01:00	0	0	0	0	1	1	0	1	1	0	0	1	0	0	5
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
04:00	0	0	0	0	1	3	2	0	0	0	0	0	0	0	6
05:00	0	0	0	0	0	8	11	13	3	1	1	0	0	0	37
06:00	0	0	0	0	4	19	20	24	12	9	6	0	0	1	95
07:00	2	0	0	0	4	28	42	24	22	12	3	3	0	0	140
08:00	0	0	0	0	6	20	21	22	19	10	7	0	0	0	105
09:00	0	0	0	0	5	23	20	12	16	7	2	0	0	0	85
10:00	1	0	0	1	2	14	17	18	18	7	0	0	0	0	78
11:00	1	0	0	2	10	12	16	10	12	8	3	0	0	0	74
12 PM	0	0	0	0	7	14	17	16	12	11	2	1	0	0	80
13:00	1	0	0	2	3	9	16	17	20	8	4	0	0	0	80
14:00	1	0	0	1	3	10	24	20	21	11	2	1	1	0	95
15:00	1	0	0	1	2	12	19	14	20	10	6	0	0	0	85
16:00	2	0	0	2	2	19	21	19	13	8	4	0	0	0	90
17:00	1	1	0	1	1	17	24	31	21	13	3	0	0	0	113
18:00	3	0	0	0	2	19	19	20	23	6	0	1	0	0	93
19:00	2	0	0	0	3	14	14	13	14	6	4	0	0	0	70
20:00	0	0	0	0	1	8	12	10	6	5	2	1	0	0	45
21:00	1	0	0	1	2	2	4	6	4	1	1	1	0	0	23
22:00	1	1	1	1	1	4	7	3	2	1	0	0	0	0	22
23:00	0	0	0	0	1	2	3	0	1	1	0	0	0	0	8
Total	17	2	1	12	61	259	330	296	262	135	50	9	1	1	1436

Daily

15th Percentile :	16 MPH
50th Percentile :	21 MPH
85th Percentile :	26 MPH
95th Percentile :	29 MPH
Mean Speed(Average) :	22 MPH
10 MPH Pace Speed :	18-27 MPH
Number in Pace :	974
Percent in Pace :	67.8%
Number of Vehicles > 25 MPH :	371
Percent of Vehicles > 25 MPH :	25.8%

Grand Total	17	2	1	12	61	259	330	296	262	135	50	9	1	1	1436

Overall

15th Percentile :	16 MPH
50th Percentile :	21 MPH
85th Percentile :	26 MPH
95th Percentile :	29 MPH
Mean Speed(Average) :	22 MPH
10 MPH Pace Speed :	18-27 MPH
Number in Pace :	974
Percent in Pace :	67.8%
Number of Vehicles > 25 MPH :	371
Percent of Vehicles > 25 MPH :	25.8%

Accurate Counts

978-664-2565

Location : Hopkins Street
Location : North of Tarrant Lane
City/State: Wakefield, MA

7958SPD1

NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
06/06/18	1	0	0	0	2	4	0	1	0	2	0	0	0	0	10
01:00	0	0	0	0	0	2	1	0	0	0	0	0	0	0	3
02:00	1	0	0	1	0	1	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	3
05:00	0	0	0	0	1	2	1	2	2	3	2	0	1	0	14
06:00	0	0	0	0	0	2	2	2	2	11	5	2	0	1	27
07:00	4	0	0	1	0	6	9	11	28	26	15	5	2	0	107
08:00	0	0	0	1	1	4	7	8	20	32	13	7	2	0	95
09:00	1	0	0	0	1	8	6	10	10	17	7	0	1	0	61
10:00	0	0	0	1	1	13	12	5	11	11	3	0	1	0	58
11:00	0	0	0	2	3	9	12	9	7	8	5	1	0	0	56
12 PM	4	0	0	0	4	8	14	11	27	9	5	1	0	0	83
13:00	1	0	2	0	10	16	19	10	10	13	6	4	0	0	91
14:00	0	0	0	0	5	9	20	21	20	12	9	2	0	0	98
15:00	2	0	0	0	6	11	27	16	26	29	6	1	1	0	125
16:00	2	0	0	1	8	14	28	21	22	26	8	4	1	0	135
17:00	2	0	0	1	1	28	33	24	29	14	6	1	0	0	139
18:00	3	0	1	0	1	22	22	25	27	10	7	0	0	0	118
19:00	4	0	0	0	5	10	37	17	14	8	3	1	0	0	99
20:00	1	0	0	0	6	14	17	12	6	6	3	1	0	0	66
21:00	2	0	0	0	5	15	13	6	6	2	1	1	0	0	51
22:00	2	0	0	1	6	8	10	3	3	2	2	0	0	0	37
23:00	0	0	0	0	1	6	5	3	2	1	0	0	0	0	18
Total	31	0	3	9	68	213	296	217	272	242	106	31	9	1	1498

Daily

15th Percentile :	16 MPH
50th Percentile :	22 MPH
85th Percentile :	29 MPH
95th Percentile :	32 MPH
Mean Speed(Average) :	23 MPH
10 MPH Pace Speed :	19-28 MPH
Number in Pace :	866
Percent in Pace :	57.8%
Number of Vehicles > 25 MPH :	570
Percent of Vehicles > 25 MPH :	38.1%

Grand Total	31	0	3	9	68	213	296	217	272	242	106	31	9	1	1498

Overall

15th Percentile :	16 MPH
50th Percentile :	22 MPH
85th Percentile :	29 MPH
95th Percentile :	32 MPH
Mean Speed(Average) :	23 MPH
10 MPH Pace Speed :	19-28 MPH
Number in Pace :	866
Percent in Pace :	57.8%
Number of Vehicles > 25 MPH :	570
Percent of Vehicles > 25 MPH :	38.1%

Accurate Counts

978-664-2565

Location : Hopkins Street
Location : North of Tarrant Lane
City/State: Wakefield, MA

7958SPD1

SB, NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
06/06/18	1	0	0	0	2	5	1	4	1	2	0	0	0	0	16
01:00	0	0	0	0	1	3	1	1	1	0	0	1	0	0	8
02:00	1	0	0	1	0	1	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
04:00	1	0	0	0	1	4	3	0	0	0	0	0	0	0	9
05:00	0	0	0	0	1	10	12	15	5	4	3	0	1	0	51
06:00	0	0	0	0	4	21	22	26	14	20	11	2	0	2	122
07:00	6	0	0	1	4	34	51	35	50	38	18	8	2	0	247
08:00	0	0	0	1	7	24	28	30	39	42	20	7	2	0	200
09:00	1	0	0	0	6	31	26	22	26	24	9	0	1	0	146
10:00	1	0	0	2	3	27	29	23	29	18	3	0	1	0	136
11:00	1	0	0	4	13	21	28	19	19	16	8	1	0	0	130
12 PM	4	0	0	0	11	22	31	27	39	20	7	2	0	0	163
13:00	2	0	2	2	13	25	35	27	30	21	10	4	0	0	171
14:00	1	0	0	1	8	19	44	41	41	23	11	3	1	0	193
15:00	3	0	0	1	8	23	46	30	46	39	12	1	1	0	210
16:00	4	0	0	3	10	33	49	40	35	34	12	4	1	0	225
17:00	3	1	0	2	2	45	57	55	50	27	9	1	0	0	252
18:00	6	0	1	0	3	41	41	45	50	16	7	1	0	0	211
19:00	6	0	0	0	8	24	51	30	28	14	7	1	0	0	169
20:00	1	0	0	0	7	22	29	22	12	11	5	2	0	0	111
21:00	3	0	0	1	7	17	17	12	10	3	2	2	0	0	74
22:00	3	1	1	2	7	12	17	6	5	3	2	0	0	0	59
23:00	0	0	0	0	2	8	8	3	3	2	0	0	0	0	26
Total	48	2	4	21	129	472	626	513	534	377	156	40	10	2	2934

Daily

15th Percentile :	16 MPH
50th Percentile :	21 MPH
85th Percentile :	28 MPH
95th Percentile :	31 MPH
Mean Speed(Average) :	23 MPH
10 MPH Pace Speed :	18-27 MPH
Number in Pace :	1830
Percent in Pace :	62.4%
Number of Vehicles > 25 MPH :	941
Percent of Vehicles > 25 MPH :	32.1%

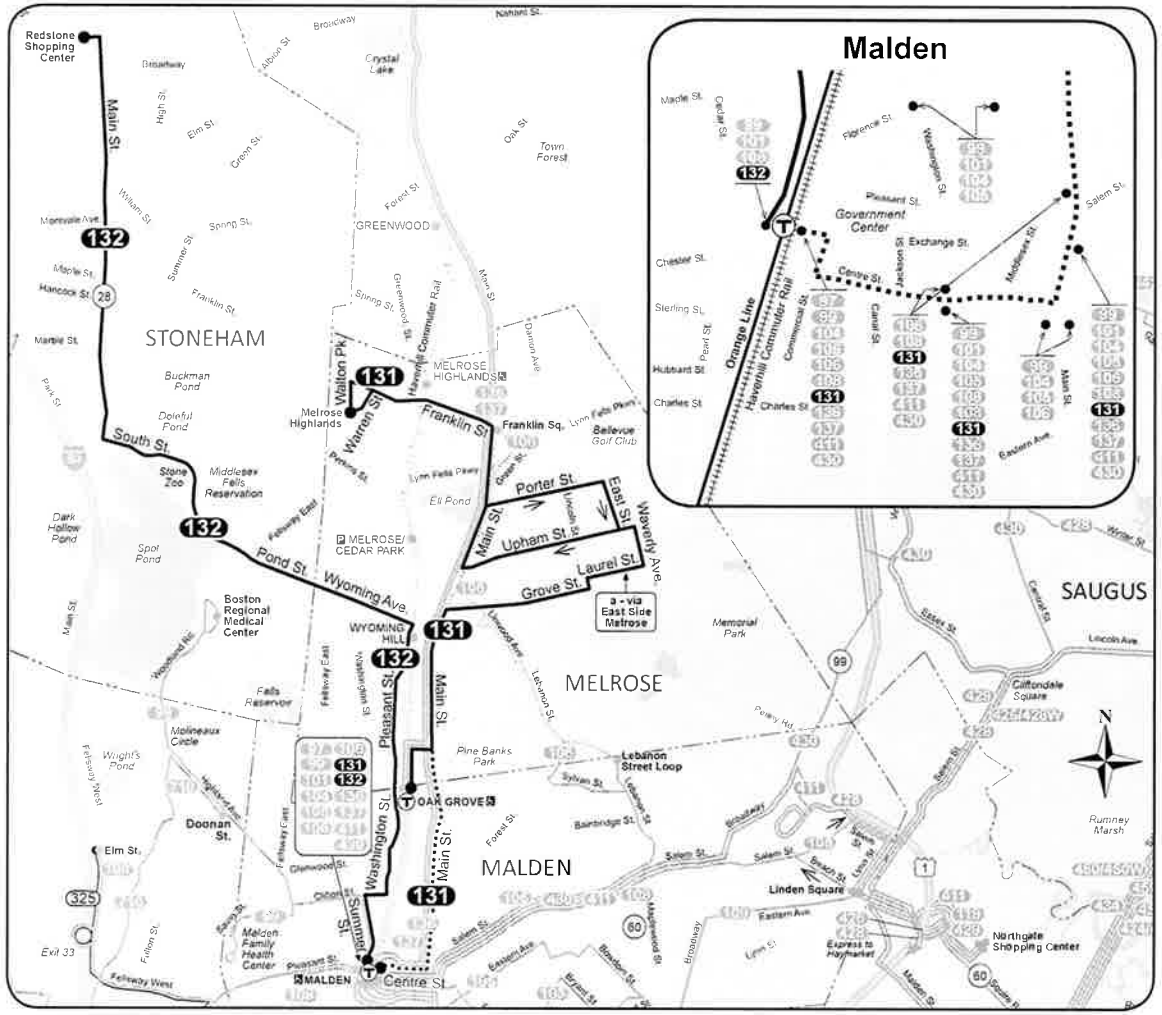
Grand Total	48	2	4	21	129	472	626	513	534	377	156	40	10	2	2934

Overall

15th Percentile :	16 MPH
50th Percentile :	21 MPH
85th Percentile :	28 MPH
95th Percentile :	31 MPH
Mean Speed(Average) :	23 MPH
10 MPH Pace Speed :	18-27 MPH
Number in Pace :	1830
Percent in Pace :	62.4%
Number of Vehicles > 25 MPH :	941
Percent of Vehicles > 25 MPH :	32.1%

PUBLIC TRANSPORTATION SCHEDULES

Route 131 Melrose Highlands - Oak Grove or Malden Station
Route 132 Redstone Shopping Center - Malden Station



131•132

Summer June 24, 2018 - September 1, 2018

131 Melrose Highlands - Oak Grove or Malden Station

132 Redstone Shopping Center - Malden Station

Serving

- Wyoming Square
- Melrose East Side
- Oak Grove Station
- Malden Square
- Orange Line
- Haverhill Commuter Rail

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

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

131 Weekday

Inbound			Outbound		
Leave Franklin at Warren	Arrive Oak Grove Station	Arrive Malden Station	Leave Malden Station	Lv/Arrive Oak Grove Station	Arrive Franklin at Warren
a 6:25A	6:44A	.....	6:00A	.....	6:20P
a 6:45	7:04	.....	6:20	.....	6:40
a 7:05	7:27	.....	.....	6:48P	7:00
a 7:25	7:47	.....	.....	a 7:05	7:24
a 7:40	8:03	.....	.....	7:23	7:36
a 8:05	8:25	.....	.....	7:49	8:03
a 8:25	8:43	.....	.....	8:08	8:22
a 8:45	9:03	.....	.....	8:28	8:42
a 9:05	9:23	.....	.....	8:48	9:02
a 9:45	10:02	.....	.....	a 9:25	9:43
			a 11:45	11:53	**12:14P**
a 12:18P	.....	**12:40P**			
a 1:20	.....	**1:43**	**a 12:45P**	**12:53P**	**1:12P**
a 2:20	.....	**2:43**	**a 1:45**	**1:53**	**2:13**
3:20	**3:33P**	.....	**a 2:45**	**2:54**	**3:15**
4:15	**4:27**	.....	.....	**a 3:45**	**4:03**
4:38	**4:50**	.....	.....	**a 4:14**	**4:36**
4:58	**5:10**	.....	.....	**a 4:34**	**4:56**
5:18	**5:30**	.....	.....	**a 4:54**	**5:16**
5:38	**5:50**	.....	.....	**a 5:14**	**5:36**
5:58	**6:10**	.....	.....	**a 5:34**	**5:57**
6:18	**6:30**	.....	.....	**a 5:54**	**6:17**
6:38	**6:50**	.....	.....	**a 6:14**	**6:37**
6:57	.....	**7:14**	.....	**a 6:34**	**6:56**
7:17	.....	**7:34**	.....	**a 6:54**	**7:16**

a - Via East Side Melrose

No Route 131 service on Saturday or Sunday

Route 131
Melrose Highlands-Malden Ctr. Station

132 Weekday

Inbound			Outbound		
Leave Redstone Shopping Center	Arrive Wyoming Square	Arrive Malden Station	Leave Malden Station	Arrive Wyoming Square	Arrive Redstone Shopping Center
6:00A	6:14A	6:26A	5:30A	5:35A	5:48A
6:30	6:44	6:56	6:00	6:05	6:18
6:50	7:06	7:19	6:52	6:57	7:12
7:15	7:33	7:46	7:30	7:37	7:55
7:35	7:53	8:06	8:30	8:36	8:52
8:00	8:18	8:31	9:30	9:36	9:52
8:32	8:47	8:58	10:30	10:36	10:52
9:00	9:14	9:25	11:30	11:36	11:52
10:00	10:13	10:24			
11:00	11:13	11:24	**12:30P**	**12:36P**	**12:52P**
			1:30	**1:36**	**1:52**
12:00N	**12:13P**	**12:24P**	**2:30**	**2:36**	**2:55**
1:00P	**1:15**	**1:26**	**3:15**	**3:21**	**3:39**
2:00	**2:15**	**2:26**	**4:00**	**4:08**	**4:26**
3:00	**3:15**	**3:26**	**4:45**	**4:53**	**5:11**
3:45	**3:59**	**4:10**	**5:20**	**5:28**	**5:45**
4:30	**4:45**	**4:55**	**5:50**	**6:00**	**6:16**
5:15	**5:30**	**5:40**	**6:20**	**6:27**	**6:43**
6:00	**6:15**	**6:25**	**7:00**	**7:07**	**7:23**
6:55	**7:08**	**7:17**	**8:00**	**8:07**	**8:23**
7:30	**7:42**	**7:49**	**9:00**	**9:07**	**9:23**
8:30	**8:42**	**8:49**	**10:00**	**10:07**	**10:23**
9:30	**9:42**	**9:49**	**11:00**	**11:05**	**11:20**
10:30	**10:42**	**10:49**			
11:30	**11:42**	**11:49**			

132 Saturday

Inbound			Outbound		
Leave Redstone Shopping Center	Arrive Wyoming Square	Arrive Malden Station	Leave Malden Station	Arrive Wyoming Square	Arrive Redstone Shopping Center
8:00A	8:05A	8:20A	8:30A	8:36A	8:55A
9:00	9:05	9:20	9:30	9:36	9:56
10:00	10:13	10:27	10:30	10:36	10:56
11:00	11:13	11:27	11:30	11:36	11:56
12:00N	**12:13P**	**12:27P**	**12:30P**	**12:36P**	**12:56P**
1:00P	**1:13**	**1:27**	**1:30**	**1:36**	**1:56**
2:00	**2:13**	**2:30**	**2:30**	**2:36**	**2:56**
3:00	**3:13**	**3:30**	**3:30**	**3:36**	**3:53**
4:00	**4:13**	**4:30**	**4:30**	**4:36**	**4:53**
5:00	**5:13**	**5:28**	**5:30**	**5:36**	**5:53**
6:00	**6:13**	**6:26**	**7:00**	**7:06**	**7:22**
7:30	**7:43**	**7:49**			

Route 132
Redstone Shopping Ctr.- Malden Ctr. Station

No route 132 service on Sunday

Stoneham - Rt. 325 Inner Express
Departs Redstone Shopping Center at 7:05am,
arrives Haymarket at 7:53am.
Departs Haymarket at 5:20pm,
arrives Redstone Shopping Center at 6:01pm.
See Rt. 325 schedule card for details.

NOTE: All Route 132 trips travel via Oak Grove Station (West Side)

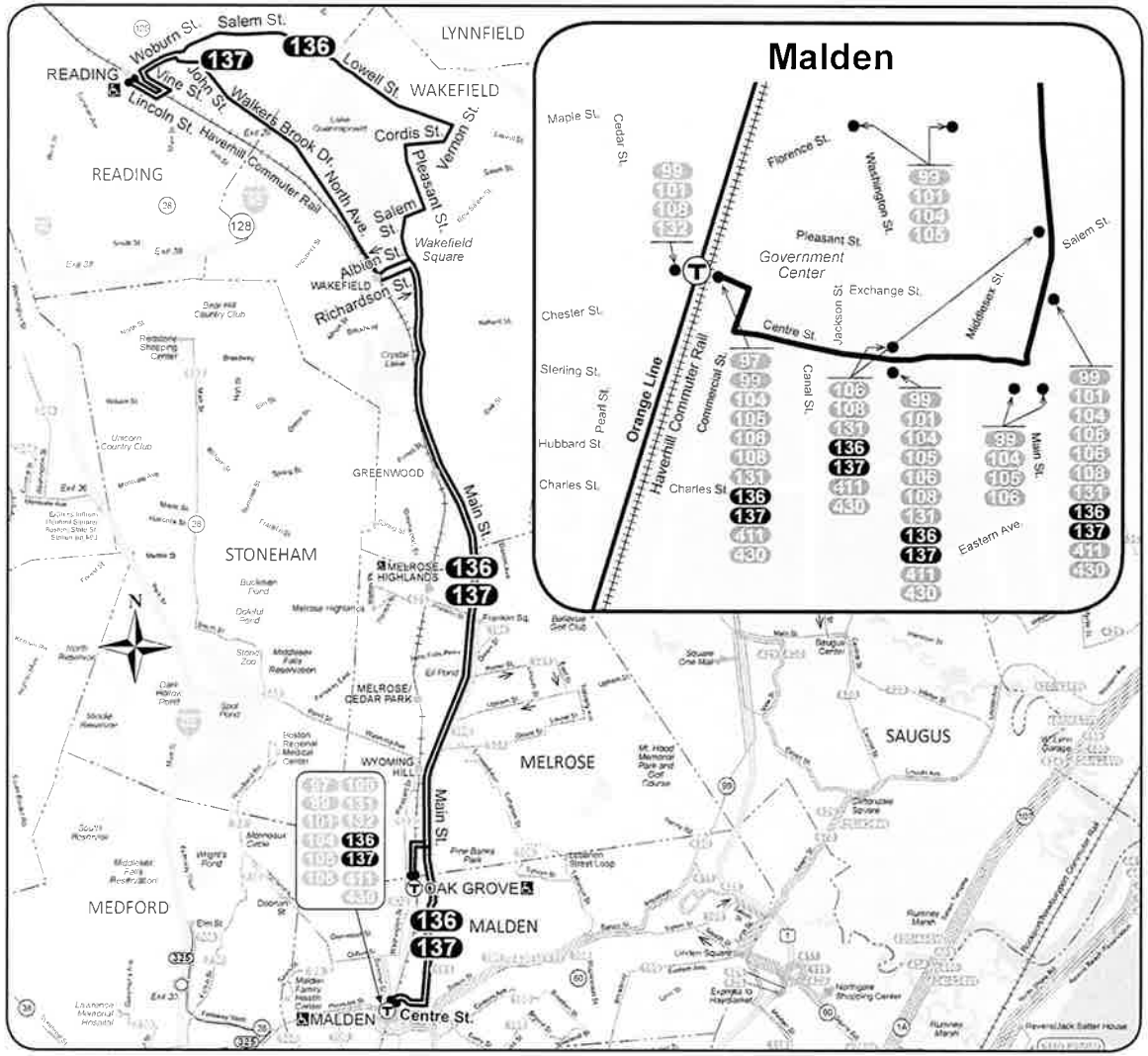
All buses are accessible to persons with disabilities

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

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

Summer 2018 Holidays
July 4: see Sunday **September 3: see Sunday**

Route 136/137 Reading Depot - Malden Center Station



136•137

Summer June 24, 2018 - September 1, 2018

Reading Depot- Malden Center Station

Serving

- Wakefield Square
- Greenwood Station
- Oak Grove Station
- Malden Square
- Franklin Square, Melrose
- Orange Line
- Haverhill Commuter Rail

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

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

136/137 Weekday

Inbound					Outbound				
Leave Reading Depot	Lv/Arrive Wakefield Square	Arrive Franklin Square	Arrive Oak Grove Station	Arrive Malden Station	Leave Malden Station	Lv/Arrive Oak Grove Station	Arrive Franklin Square	Arrive Wakefield Square	Arrive Reading Depot
.....	5:40A	5:50A	6:02A	6:14A	4:55	5:09A	5:25A	5:36A	.....
.....	6:10	6:20	6:32	6:44	5:25	5:39	5:55	6:06	.....
6:15A	6:26	6:36	6:48	7:00	6:00	6:07	6:17	6:24	6:44A
6:30	6:44	6:54	7:08	7:20	6:15	6:22	6:32	6:39	6:59
6:50	7:01	7:12	7:32	7:44	6:35	6:42	6:52	6:59	7:17
.....	7:10	7:21	7:41	.....	6:50	6:57	7:06	7:16	7:34
7:05	7:19	7:30	7:50	8:03	7:05	7:16	7:25	7:35	7:53
.....	7:30	7:41	8:01	8:15	7:25	7:36	7:45	7:55	8:13
7:25	7:38	7:49	8:08	8:22	7:40	7:51	8:00	8:10	8:28
7:40	7:54	8:05	8:21	8:35	7:55	8:06	8:15	8:25	8:43
.....	8:00	8:10	8:26	8:40	8:10	8:21	8:30	8:40	8:58
7:58	8:09	8:19	8:35	8:49	8:25	8:36	8:45	8:55	9:13
8:15	8:28	8:38	8:54	9:09	8:55	9:06	9:15	9:25	9:43
8:35	8:46	8:56	9:09	9:24	9:20	9:31	9:40	9:50	10:08
8:50	9:03	9:11	9:24	9:39	9:55	10:06	10:15	10:25	10:43
9:05	9:16	9:24	9:37	9:52	10:30	10:41	10:50	11:00	11:18
9:20	9:32	9:40	9:53	10:08	11:05	11:16	11:25	11:35	11:53
9:50	10:01	10:09	10:22	10:37	11:40	11:51	12:00N	12:10P	12:28P
10:15	10:27	10:35	10:48	11:03					
10:50	11:01	11:09	11:22	11:37	12:15P	12:26P	12:35P	12:45P	1:03P
11:25	11:37	11:45	11:58	12:13P	12:50	1:01	1:10	1:20	1:38
					1:25	1:36	1:45	1:55	2:15
12:00N	12:11P	12:19P	12:32P	12:46P	1:55	2:07	2:20	2:29	2:49
12:35P	12:46	12:54	1:07	1:21	2:30	2:42	2:55	3:05	3:23
1:10	1:22	1:30	1:43	1:57	3:00	3:14	3:30	3:41	3:59
1:45	1:56	2:05	2:19	2:34	3:30	3:44	4:00	4:11	4:29
2:20	2:32	2:41	2:55	3:10	4:01	4:15	4:31	4:42	5:00
2:55	3:07	3:16	3:30	3:45	4:30	4:44	5:00	5:11	5:29
3:30	3:42	3:51	4:05	4:22	.....	5:00	5:16	5:27	5:45
4:05	4:20	4:29	4:43	5:00	.....	5:15	5:31	5:42	6:00
4:35	4:48	4:57	5:11	5:28	5:15	5:29	5:45	5:56	6:11
5:05	5:20	5:29	5:43	6:00	.....	5:50	6:06	6:15	6:29
5:50	6:04	6:12	6:23	6:37	6:00	6:13	6:29	6:38	6:52
6:16	6:28	6:36	6:47	7:01	6:30	6:43	6:59	7:08	7:23
6:50	7:02	7:08	7:19	7:32	7:05	7:17	7:28	7:37	7:52
7:25	7:35	7:41	7:52	8:05	8:10	8:19	8:30	8:37	8:52
8:55	9:06	9:12	9:23	9:36	9:40	9:49	10:00	10:07	10:22
10:25	10:35	10:41	10:52	11:05					

Route 137 indicated by shaded areas

Route 136/137
Reading Depot-Malden Station

136/137 Saturday

Inbound					Outbound				
Leave Reading Depot	Lv/Arrive Wakefield Square	Arrive Franklin Square	Arrive Oak Grove Station	Arrive Malden Station	Leave Malden Station	Arrive Oak Grove Station	Arrive Franklin Square	Arrive Wakefield Square	Arrive Reading Depot
6:00A	6:10A	6:17A	6:25A	6:34A	6:00A	6:07A	6:16A	6:22A	6:33A
6:45	6:55	7:02	7:10	7:19	6:45	6:52	7:00	7:07	7:19
7:30	7:43	7:49	7:58	8:05	7:30	7:37	7:46	7:53	8:05
8:15	8:25	8:34	8:43	8:51	8:15	8:22	8:32	8:40	8:55
9:00	9:13	9:19	9:32	9:39	9:00	9:08	9:18	9:26	9:40
9:45	9:55	10:04	10:13	10:21	9:45	9:54	10:05	10:14	10:28
10:35	10:48	10:54	11:07	11:14	10:30	10:38	10:51	11:00	11:15
11:20	11:30	11:38	11:52	12:02P	11:20	11:28	11:42	11:52	12:05P
12:10P	12:23P	12:29P	12:42P	12:49P	12:10P	12:18P	12:31P	12:40P	12:55P
1:00	1:14	1:22	1:36	1:46	1:00	1:09	1:20	1:29	1:43
1:50	2:03	2:12	2:23	2:34	1:50	1:59	2:10	2:19	2:33
2:40	2:54	3:02	3:16	3:26	2:40	2:49	3:00	3:09	3:23
3:30	3:43	3:52	4:03	4:14	3:30	3:39	3:50	3:59	4:13
4:20	4:34	4:42	4:56	5:06	4:20	4:29	4:39	4:48	5:00
5:10	5:21	5:28	5:39	5:48	5:10	5:19	5:30	5:38	5:49
6:00	6:11	6:17	6:27	6:36	6:00	6:10	6:20	6:29	6:41
6:45	6:56	7:03	7:14	7:23	6:50	6:59	7:10	7:18	7:29
7:45	7:56	8:02	8:12	8:21	8:30	8:38	8:47	8:54	.....
.....	9:00	9:06	9:14	9:22					

136/137 Sunday

Inbound					Outbound				
Leave Reading Depot	Arrive Wakefield Square	Arrive Franklin Square	Arrive Oak Grove Station	Arrive Malden Station	Leave Malden Station	Arrive Oak Grove Station	Arrive Franklin Square	Arrive Wakefield Square	Arrive Reading Depot
8:00A	8:08A	8:14A	8:26A	8:33A	8:45A	8:52A	9:01A	9:09A	9:22A
9:30	9:38	9:45	9:57	10:05	10:15	10:23	10:33	10:41	10:55
11:00	11:09	11:17	11:28	11:38	11:45	11:53	12:03P	12:12P	12:25P
12:30P	12:40P	12:48P	1:00P	1:11P	1:15P	1:24P	1:33P	1:42P	1:55P
2:00	2:10	2:18	2:28	2:38	2:45	2:53	3:03	3:11	3:24
3:30	3:39	3:46	3:56	4:06	4:15	4:24	4:35	4:42	4:53
5:00	5:09	5:16	5:26	5:36					

Saturday and Sunday trips are circular in Wakefield, so that a passenger can always use either Route 136 or 137. If necessary, just stay on the bus through the Reading end of the line if you need to board or alight from a stop which is only on Route 136 or 137.

Summer 2018 Holidays
July 4: see Sunday September 3: see Sunday

All buses are accessible to persons with disabilities

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

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

LOWELL LINE effective May 21, 2018

Massachusetts Bay Transportation Authority

KEOLIS

Monday to Friday

Inbound to Boston

ZONE	STATION	TRAIN #	300	302	304	306	308	310	208	312	314	316	318	320	322	324	326	328	330	332	334	336	338	340	342	344	346	348
	Bikes Allowed																											
6	Lowell	♿	5:35	6:10	6:35	7:00	7:20	7:40	VIA	8:15	8:45	9:15	10:15	11:15	12:15	1:18	2:15	3:14	4:00	4:47	5:17	5:47	6:15	6:52	7:32	8:45	9:55	11:05
5	North Billerica	♿	5:43	6:18	6:43	7:08	7:28	7:48	HAV	8:23	8:53	9:23	10:23	11:23	12:23	1:26	2:23	3:22	4:08	4:55	5:25	5:55	6:23	7:00	7:40	8:53	10:03	11:13
3	Wilmington	♿	5:51	6:26	6:51	7:16	7:36	7:56	-	8:31	9:01	9:31	10:31	11:31	12:31	1:34	2:31	3:30	4:16	5:03	5:33	6:03	6:31	7:08	7:48	9:01	10:11	11:21
2	Anderson/Woburn	♿	5:56	6:31	6:56	7:21	7:41	8:01	8:12	8:36	9:06	9:36	10:36	11:36	12:36	1:39	2:36	3:35	4:21	5:08	5:38	6:08	6:36	7:13	7:53	9:06	10:16	11:26
2	Mishawum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	f 4:22	-	f 5:39	f 6:09	-	-	-	-	-	-
1	Winchester Center		6:03	6:38	7:03	7:28	7:48	-	8:19	8:43	9:13	f 9:43	f 10:43	f 11:43	f 12:43	f 1:46	f 2:43	-	f 4:28	f 5:15	f 5:45	f 6:15	f 6:43	f 7:20	f 8:00	f 9:13	f 10:23	f 11:33
1	Wedgemere	♿	6:05	6:40	7:05	7:30	7:50	-	8:21	8:44	9:14	f 9:44	f 10:44	f 11:44	f 12:44	f 1:47	f 2:44	-	f 4:29	f 5:16	f 5:46	f 6:16	f 6:44	f 7:21	f 8:01	f 9:14	f 10:24	f 11:34
1A	West Medford		6:09	6:43	7:09	7:34	7:53	-	8:25	8:48	9:18	f 9:47	f 10:47	f 11:47	f 12:47	f 1:50	f 2:47	-	f 4:32	f 5:19	f 5:49	f 6:19	f 6:47	f 7:24	f 8:04	f 9:17	f 10:27	f 11:37
1A	North Station	♿	6:22	6:56	7:22	7:47	8:06	8:21	8:38	9:01	9:32	10:01	11:01	12:01	1:01	2:04	3:01	3:56	4:45	5:32	6:02	6:32	7:00	7:37	8:17	9:30	10:40	11:50

Trains in purple box indicate peak period trains.

Monday to Friday

Outbound from Boston

ZONE	STATION	TRAIN #	301	303	305	307	391	309	311	313	315	317	319	321	323	325	327	329	331	333	335	337	221	339	341	343	345	347
	Bikes Allowed																											
1A	North Station	♿	5:35	6:15	6:37	7:16	7:55	8:16	9:12	10:12	11:12	12:12	1:15	2:12	3:00	3:40	4:15	4:45	5:10	5:35	5:50	6:30	6:55	7:25	8:35	9:45	10:55	12:15
1A	West Medford		f 5:46	-	f 6:48	f 7:27	-	f 8:27	f 9:24	f 10:24	f 11:24	f 12:24	f 1:27	f 2:24	f 3:12	3:52	4:26	4:56	5:21	-	6:01	6:41	7:06	f 7:36	f 8:46	f 9:56	f 11:06	f 12:26
1	Wedgemere	♿	f 5:50	-	f 6:52	f 7:31	-	f 8:31	f 9:28	f 10:28	f 11:28	f 12:28	f 1:31	f 2:28	f 3:16	3:57	4:31	5:01	5:26	-	6:06	6:46	7:11	f 7:40	f 8:50	f 10:00	f 11:10	f 12:30
1	Winchester Center		f 5:52	-	f 6:54	f 7:33	-	f 8:33	f 9:30	f 10:30	f 11:30	f 12:30	f 1:33	f 2:30	f 3:18	3:59	4:33	5:03	5:28	-	6:08	6:48	7:13	f 7:42	f 8:52	f 10:02	f 11:12	f 12:32
2	Mishawum		-	-	L 7:00	L 7:39	-	L 8:39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Anderson/Woburn	♿	5:59	6:34	7:01	7:40	8:15	8:40	9:37	10:37	11:37	12:37	1:40	2:37	3:25	4:06	4:40	5:10	5:35	5:54	6:15	6:55	7:20	7:49	8:59	10:09	11:19	12:39
3	Wilmington	♿	6:02	6:37	7:04	7:43	-	8:43	9:40	10:40	11:40	12:40	1:43	2:40	3:28	4:10	4:44	5:14	5:39	5:58	6:19	6:59	7:24	7:52	9:02	10:12	11:22	12:42
5	North Billerica	♿	6:12	6:47	7:14	7:53	-	8:53	9:50	10:50	11:50	12:50	1:53	2:50	3:38	4:20	4:54	5:24	5:49	6:08	6:29	7:09	VIA	8:02	9:12	10:22	11:32	12:52
6	Lowell	♿	6:19	6:54	7:21	8:00	8:30	9:00	9:58	10:58	11:58	12:58	2:01	2:58	3:46	4:29	5:02	5:32	5:57	6:16	6:37	7:17	HAV	8:09	9:19	10:29	11:39	12:59

Trains in purple box indicate peak period trains.

Saturday & Sunday

Inbound to Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	1300 / 2300	1302 / 2302	1304 / 2304	1306 / 2306	1308 / 2308	1310 / 2310	1312 / 2312	1314 / 2314
	Bikes Allowed									
6	Lowell	♿	7:00	9:00	11:00	1:00	3:00	5:00	7:00	9:00
5	North Billerica	♿	7:08	9:08	11:08	f 1:08	f 3:08	f 5:08	f 7:08	f 9:08
3	Wilmington	♿	7:16	9:16	11:16	1:16	3:16	5:16	7:16	9:16
2	Anderson/Woburn	♿	7:20	9:20	11:20	1:20	3:20	5:20	7:20	9:20
1	Winchester Center		7:27	9:27	11:27	1:27	3:27	5:27	7:27	9:27
1	Wedgemere	♿	f 7:29	f 9:29	f 11:29	f 1:29	f 3:29	f 5:29	f 7:29	f 9:29
1A	West Medford		f 7:33	f 9:33	f 11:33	f 1:33	f 3:33	f 5:33	f 7:33	f 9:33
1A	North Station	♿	7:44	9:44	11:44	1:44	3:44	5:44	7:44	9:44

Saturday & Sunday

Outbound from Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	1301 / 2301	1303 / 2303	1305 / 2305	1307 / 2307	1309 / 2309	1311 / 2311	1313 / 2313	1315 / 2315
	Bikes Allowed									
1A	North Station	♿	8:00	10:00	12:00	2:00	4:00	6:00	8:00	11:30
1A	West Medford		f 8:11	f 10:11	f 12:11	f 2:11	f 4:11	f 6:11	f 8:11	f 11:41
1	Wedgemere	♿	f 8:15	f 10:15	f 12:15	f 2:15	f 4:15	f 6:15	f 8:15	f 11:45
1	Winchester Center		8:17	10:17	12:17	2:17	4:17	6:17	8:17	11:47
2	Anderson/Woburn	♿	8:24	10:24	12:24	2:24	4:24	6:24	8:24	11:54
3	Wilmington	♿	8:28	10:28	12:28	2:28	4:28	6:28	8:28	11:58
5	North Billerica	♿	f 8:37	f 10:37	f 12:37	2:37	4:37	6:37	8:37	12:07
6	Lowell	♿	8:44	10:44	12:44	2:44	4:44	6:44	8:44	12:14

Keep in Mind:

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

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

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

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

VIA HAV: Operates via the Haverhill Line between Wilmington and Haverhill stations. See the Haverhill Line schedule for all stops.

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

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

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

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

HAVERHILL LINE effective May 21, 2018

Massachusetts Bay Transportation Authority — KEOLIS

Monday to Friday

Inbound to Boston

ZONE	STATION	TRAIN #	AM 200	202	204	206	286	288	208	290	PM 210	212	214	216	218	292	220	294	296	222	298	224	226	228
	Trips Allowed																							
7	Haverhill	♿	5:05	5:40	6:10	6:40	-	-	7:35	-	9:05	10:49	12:05	2:00	3:25	-	4:47	-	-	6:25	-	7:45	9:10	10:50
7	Bradford	♿	5:07	5:42	6:12	6:42	-	-	7:37	-	f 9:07	f 10:52	f 12:07	f 2:02	f 3:27	-	f 4:49	-	-	f 6:28	-	f 7:47	f 9:12	f 10:52
6	Lawrence	♿	5:16	5:51	6:21	6:52	-	-	7:46	-	9:15	10:59	12:15	2:10	3:35	-	4:57	-	-	6:39	-	7:55	9:20	11:00
5	Andover	♿	5:23	5:58	6:28	6:59	-	-	7:53	-	f 9:22	f 11:06	f 12:22	f 2:17	f 3:42	-	f 5:04	-	-	f 6:46	-	f 8:02	f 9:27	f 11:07
4	Ballardvale	♿	5:29	6:04	6:34	7:04	-	-	7:59	-	f 9:27	f 11:11	f 12:27	f 2:22	f 3:47	-	f 5:09	-	-	f 6:51	-	f 8:07	f 9:32	f 11:12
3	North Wilmington		5:36	6:11	6:41	-	-	-	-	-	f 9:34	f 11:18	f 12:34	f 2:29	-	-	-	-	-	-	-	-	f 9:39	f 11:19
2	Reading	♿	5:43	6:18	6:48	-	7:30	8:00	-	8:30	9:41	11:25	12:41	2:36	-	4:50	-	5:37	6:55	-	8:07	-	9:46	11:26
2	Wakefield		5:49	6:24	6:54	-	7:36	8:06	VIA	8:36	f 9:46	f 11:30	f 12:46	f 2:41	-	f 4:55	-	f 5:42	f 7:00	-	f 8:12	-	f 9:51	f 11:31
2	Greenwood		5:52	6:27	6:57	-	7:39	8:09	LOWELL	8:39	f 9:49	f 11:33	f 12:49	f 2:44	-	f 4:58	-	f 5:45	f 7:03	-	f 8:15	-	f 9:54	f 11:34
1	Melrose Highlands	♿	5:54	6:29	6:59	-	7:41	8:11	LINE	8:41	f 9:51	f 11:35	f 12:51	f 2:46	-	f 5:00	-	f 5:47	f 7:05	-	f 8:17	-	f 9:56	f 11:36
1	Melrose/Cedar Park		5:56	6:31	7:01	-	7:43	8:13	-	8:43	f 9:53	f 11:37	f 12:53	f 2:48	-	f 5:01	-	f 5:48	f 7:06	-	f 8:18	-	f 9:58	f 11:38
1	Wyoming Hill		5:58	6:33	7:03	-	7:45	8:15	-	8:45	f 9:55	f 11:39	f 12:55	f 2:50	-	f 5:03	-	f 5:51	f 7:08	-	f 8:20	-	f 10:00	f 11:40
1A	Malden Center	♿	L 6:02	L 6:37	L 7:07	-	L 7:51	L 8:19	-	L 8:49	L 9:58	L 11:43	L 12:58	L 2:54	-	L 5:06	-	L 5:54	L 7:11	-	L 8:23	-	L 10:03	L 11:43
1A	North Station	♿	6:15	6:50	7:20	7:38	8:02	8:30	8:38	9:00	10:10	11:55	1:10	3:06	4:23	5:17	5:45	6:05	7:22	7:25	8:34	8:43	10:15	11:55

Trains in purple box indicate peak period trains.

Monday to Friday

Outbound from Boston

ZONE	STATION	TRAIN #	AM 285	287	201	289	203	205	207	209	211	PM 291	213	293	215	217	295	219	221	297	223	225	227	AM 229
	Trips Allowed																							
1A	North Station	♿	6:43	7:10	7:35	7:55	9:20	10:30	12:20	1:44	3:15	3:50	4:30	4:48	5:15	5:35	6:05	6:25	6:55	7:20	7:40	9:20	11:00	12:10
1A	Malden Center	♿	f 6:54	f 7:21	f 7:45	-	f 9:31	f 10:41	f 12:31	f 1:55	3:26	4:01	4:41	4:59	5:26	5:46	6:16	6:36	-	f 7:31	f 7:51	f 9:31	f 11:11	f 12:21
1	Wyoming Hill		f 6:57	f 7:24	f 7:48	-	f 9:34	f 10:44	f 12:34	f 1:58	3:30	4:05	4:45	5:03	-	5:50	6:20	6:40	-	f 7:34	f 7:54	f 9:34	f 11:14	f 12:24
1	Melrose/Cedar Park		f 6:59	f 7:26	f 7:50	-	f 9:36	f 10:46	f 12:36	f 2:00	3:32	4:07	4:47	5:05	-	5:52	6:22	6:42	-	f 7:36	f 7:56	f 9:36	f 11:16	f 12:26
1	Melrose Highlands	♿	f 7:02	f 7:29	f 7:53	-	f 9:39	f 10:49	f 12:39	f 2:03	3:36	4:11	4:51	5:09	-	5:56	6:26	6:46	VIA	f 7:39	f 7:59	f 9:39	f 11:19	f 12:29
2	Greenwood		f 7:05	f 7:32	f 7:56	-	f 9:42	f 10:52	f 12:42	f 2:06	3:39	4:14	4:54	5:12	-	5:59	6:29	6:49	LOWELL	f 7:42	f 8:02	f 9:42	f 11:22	f 12:32
2	Wakefield		f 7:09	f 7:36	f 8:00	-	f 9:46	f 10:56	f 12:46	f 2:10	3:43	4:18	4:58	5:16	5:36	6:03	6:33	6:53	LINE	f 7:46	f 8:06	f 9:46	f 11:26	f 12:36
2	Reading	♿	7:15	7:42	8:06	8:17	9:52	11:02	12:52	2:16	3:49	4:24	5:04	5:22	5:42	6:09	6:39	6:59	-	7:52	8:12	9:52	11:32	12:42
3	North Wilmington		-	-	8:12	-	f 9:58	f 11:08	f 12:58	f 2:22	3:56	-	5:11	-	5:49	6:16	-	7:06	-	-	f 8:18	f 9:58	f 11:38	f 12:48
4	Ballardvale	♿	-	-	8:19	-	f 10:05	f 11:16	f 1:05	f 2:30	4:03	-	5:18	-	5:56	6:23	-	7:13	7:35	-	f 8:25	f 10:05	f 11:45	f 12:55
5	Andover	♿	-	-	8:24	-	f 10:10	f 11:21	f 1:10	f 2:35	4:09	-	5:24	-	6:02	6:29	-	7:19	7:41	-	f 8:30	f 10:10	f 11:50	f 1:00
6	Lawrence	♿	-	-	8:31	-	10:17	11:28	1:17	2:42	4:16	-	5:31	-	6:09	6:36	-	7:26	7:48	-	8:37	10:17	11:57	1:07
7	Bradford	♿	-	-	L 8:40	-	L 10:26	L 11:38	L 1:27	L 2:54	L 4:26	-	L 5:42	-	L 6:20	L 6:47	-	L 7:37	L 7:59	-	L 8:46	L 10:26	L 12:06	L 1:16
7	Haverhill	♿	-	-	8:43	-	10:29	11:41	1:30	2:57	4:29	-	5:45	-	6:23	6:50	-	7:40	8:02	-	8:49	10:29	12:09	1:19

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Saturday & Sunday

Inbound to Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	AM 1200 / 2200	1202 / 2202	1204 / 2204	1206 / 2206	PM 1208 / 2208	1210 / 2210
	Trips Allowed							
7	Haverhill	♿	7:15	10:20	1:15	4:15	7:10	10:10
7	Bradford	♿	7:18	10:23	1:18	4:18	7:13	10:13
6	Lawrence	♿	7:27	10:32	1:27	4:27	7:22	10:22
5	Andover	♿	7:32	10:37	1:33	4:32	7:28	10:28
4	Ballardvale	♿	f 7:37	f 10:42	f 1:37	f 4:37	f 7:32	f 10:32
3	North Wilmington		f 7:44	f 10:49	f 1:44	f 4:44	f 7:39	f 10:39
2	Reading	♿	7:50	10:56	1:50	4:50	7:45	10:45
2	Wakefield		7:55	11:01	1:55	4:55	7:50	10:50
2	Greenwood		f 7:59	f 11:05	f 1:59	f 4:59	f 7:54	f 10:54
1	Melrose Highlands	♿	8:02	11:08	2:02	5:02	7:57	10:57
1	Melrose/Cedar Park		f 8:04	f 11:10	f 2:04	f 5:04	f 7:59	f 10:59
1	Wyoming Hill		f 8:06	f 11:12	f 2:06	f 5:06	f 8:01	f 11:01
1A	Malden Center	♿	L 8:10	L 11:16	L 2:10	L 5:10	L 8:05	L 11:05
1A	North Station	♿	8:21	11:27	2:21	5:21	8:16	11:16

Saturday & Sunday

Outbound from Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	AM 1201 / 2201	1203 / 2203	1205 / 2205	PM 1207 / 2207	1209 / 2209	1211 / 2211
	Trips Allowed							
1A	North Station	♿	8:40	11:40	2:45	5:35	8:40	11:30
1A	Malden Center	♿	8:50	11:50	2:55	5:45	8:50	11:40
1	Wyoming Hill		f 8:54	f 11:54	f 2:59	f 5:49	f 8:54	f 11:44
1	Melrose/Cedar Park		f 8:56	f 11:56	f 3:01	f 5:51	f 8:56	f 11:46
1	Melrose Highlands	♿	8:59	11:59	3:04	5:54	8:59	11:49
2	Greenwood		f 9:02	f 12:02	f 3:07	f 5:57	f 9:02	f 11:52
2	Wakefield		9:05	12:05	3:10	6:00	9:05	11:55
2	Reading	♿	9:11	12:11	3:16	6:06	9:11	12:01
3	North Wilmington		f 9:17	f 12:17	f 3:22	f 6:12	f 9:17	f 12:07
4	Ballardvale	♿	f 9:23	f 12:23	f 3:28	f 6:18	f 9:23	f 12:13
5	Andover	♿	9:28	12:28	3:33	6:23	9:28	12:18
6	Lawrence	♿	9:35	12:35	3:40	6:30	9:35	12:25
7	Bradford	♿	L 9:45	L 12:45	L 3:50	L 6:40	L 9:45	L 12:35
7	Haverhill	♿	9:48	12:48	3:53	6:43	9:48	12:38

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

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

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

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

VIA LOWELL LINE: Operates via the Lowell Line between Wilmington and North Station. See the Lowell Line schedule for all stops.

MOTOR VEHICLE CRASH DATA

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Reading MA COUNT DATE : 2018

DISTRICT : 4 UNSIGNALIZED : Yes SIGNALIZED : No

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Main Street ST #

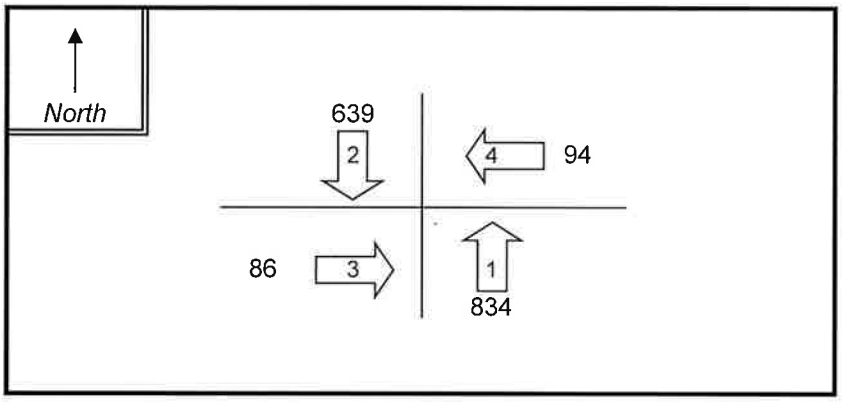
MINOR STREET(S) : Hopkins Street ST #

ST #

ST #

ST #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/**PM**) :	834	639	86	94		**1,653**

" K " FACTOR : **0.090** APPROACH ADT : **18,367** **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS :	29	# OF YEARS :	5	AVERAGE # OF ACCIDENTS (**A**) :	**5.80**

CRASH RATE CALCULATION : **0.87** RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Signalized intersections are significant if rate >0.73 crashes per million vehicles

Unsignalized intersections are significant if rate >0.57 crashes per million vehicles

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Wakefield / MA COUNT DATE : 2018

DISTRICT : 4 UNSIGNALIZED : Yes SIGNALIZED : No

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Tarrant Lane ST #

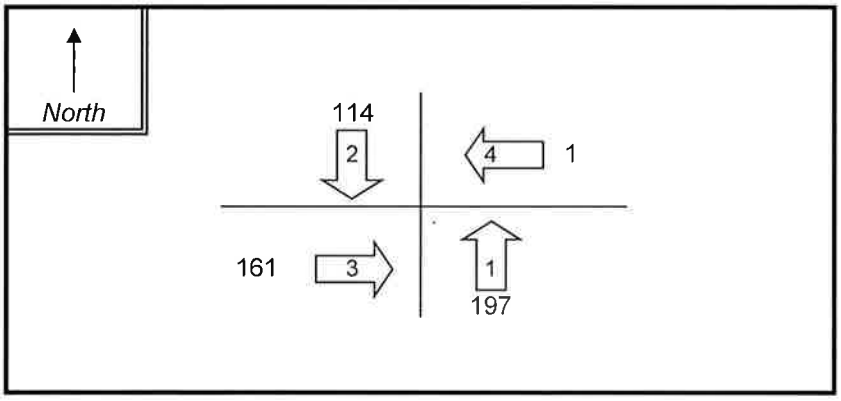
MINOR STREET(S) : Hopkins Street ST #

ST #

ST #

ST #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/**PM**) :	197	114	161	1		**473**

" K " FACTOR : **0.090** APPROACH ADT : **5,256** **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS :	# OF YEARS :	AVERAGE # OF ACCIDENTS (**A**) :
1	5	**0.20**

CRASH RATE CALCULATION : **0.10** RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Signalized intersections are significant if rate >0.73 crashes per million vehicles

Unsignalized intersections are significant if rate >0.57 crashes per million vehicles

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Wakefield MA COUNT DATE : 2018

DISTRICT : 4 UNSIGNALIZED : Yes SIGNALIZED : No

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Brook Street ST #

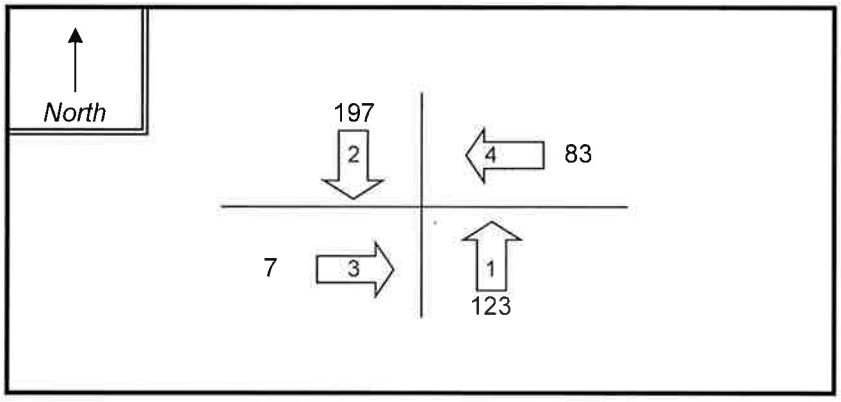
MINOR STREET(S) : Hopkins Street ST #

Layton Avenue ST #

ST #

ST #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/**PM**) :	123	197	7	83	5	**415**

" K " FACTOR : **0.090** APPROACH ADT : **4,611** **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 2 # OF YEARS : 5 AVERAGE # OF ACCIDENTS (**A**) : **0.40**

CRASH RATE CALCULATION : **0.24** RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Signalized intersections are significant if rate >0.73 crashes per million vehicles

Unsignalized intersections are significant if rate >0.57 crashes per million vehicles

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Reading MA COUNT DATE : 2018

DISTRICT : 4 UNSIGNALIZED : NO SIGNALIZED : Yes

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : South Street ST #

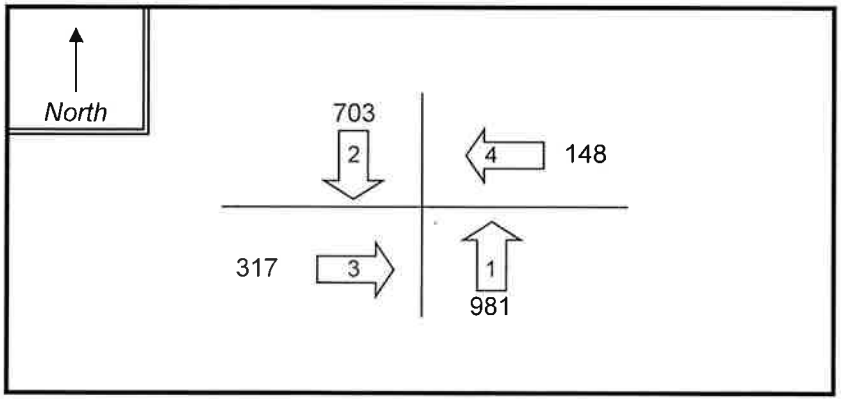
MINOR STREET(S) : Main Street ST #

ST #

ST #

ST #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/**PM**) :	981	703	317	148		**2,149**

" K " FACTOR : **0.090** APPROACH ADT : **23,878** **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 24 # OF YEARS : 5 AVERAGE # OF ACCIDENTS (**A**) : **4.80**

CRASH RATE CALCULATION : 0.55 RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Signalized intersections are significant if rate >0.73 crashes per million vehicles

Unsignalized intersections are significant if rate >0.57 crashes per million vehicles

MassDOT

CRASH RATE WORKSHEET

CITY/TOWN : Reading MA COUNT DATE : 2018

DISTRICT : 4 UNSIGNALIZED : Yes SIGNALIZED : No

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Main Street ST #

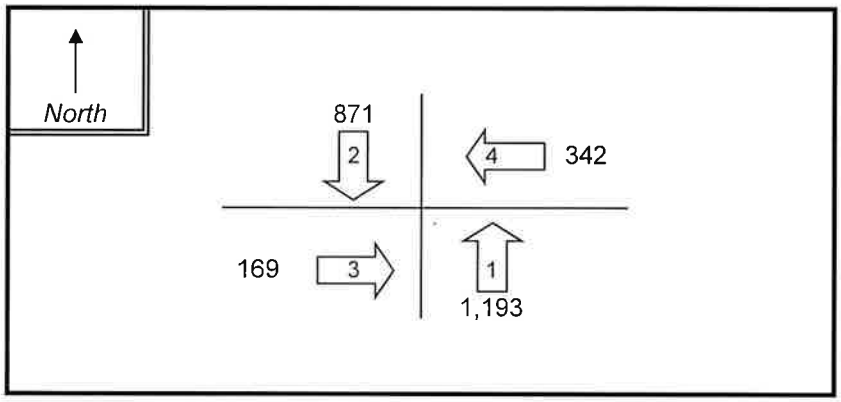
MINOR STREET(S) : Route 128 Southbound Ramps ST #

ST #

ST #

ST #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (AM/**PM**) :	1,193	871	169	342		**2,575**

" K " FACTOR : **0.090** APPROACH ADT : **28,611** **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 10 # OF YEARS : 5 AVERAGE # OF ACCIDENTS (**A**) : **2.00**

CRASH RATE CALCULATION : 0.19 RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Signalized intersections are significant if rate >0.73 crashes per million vehicles

Unsignalized intersections are significant if rate >0.57 crashes per million vehicles

TRIP GENERATION

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

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 190

AVERAGE WEEKDAY DAILY

T = 5.44 * (X)
T = 5.44 * 190
T = 1033.60
T = 1034.00
T = 1,034 vehicle trips
with 50% (517 vpd) entering and 50% (517 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.36 * (X)
T = 0.36 * 190
T = 68.40
T = 68 vehicle trips
with 26% (18 vph) entering and 74% (50 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.44 * (X)
T = 0.44 * 190
T = 83.60
T = 84.00
T = 84 vehicle trips
with 61% (51 vph) entering and 39% (33 vph) exiting.

AVERAGE SATURDAY

T = 4.91 * (X)
T = 4.91 * 190
T = 932.90
T = 932.00
T = 932 vehicle trips
with 50% (466 vpd) entering and 50% (466 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.44 * (X)
T = 0.44* 190
T = 83.60
T = 84 vehicle trips
with 49% (41 vph) entering and 51% (43 vph) exiting.

CAPACITY ANALYSIS

Hopkins Street at South Street/Tarrant Lane
Main Street (Route 28) at Hopkins Street
Hopkins Street at Brook Street and Layton Avenue
Main Street (Route 28) at South Street
Main Street (Route 28) at I-95 (Route 128) Southbound Ramps
Hopkins Street at Site North Driveway
Hopkins Street at Site South Driveway Exit Only

Hopkins Street at Tarrant Lane

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	0	29	0	0	0	0	67	67	436	122	0
Future Vol, veh/h	9	0	29	0	0	0	0	67	67	436	122	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	75	75	75	76	76	76	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	11	0	37	0	0	0	0	88	88	479	134	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1224	1224	132	1243	1268	134	134	0	0	176	0	0
Stage 1	132	132	-	1092	1092	-	-	-	-	-	-	-
Stage 2	1092	1092	-	151	176	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	157	181	923	153	170	920	1463	-	-	1412	-	-
Stage 1	876	791	-	262	293	-	-	-	-	-	-	-
Stage 2	262	293	-	856	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	112	115	923	105	108	920	1463	-	-	1412	-	-
Mov Cap-2 Maneuver	112	115	-	105	108	-	-	-	-	-	-	-
Stage 1	876	791	-	262	185	-	-	-	-	-	-	-
Stage 2	166	185	-	822	757	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	17.3	0	0	6.9
HCM LOS	C	A		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1412	-	-	340	-	1463	-	-
HCM Lane V/C Ratio	0.339	-	-	0.141	-	-	-	-
HCM Control Delay (s)	8.9	0	-	17.3	0	0	-	-
HCM Lane LOS	A	A	-	C	A	A	-	-
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-	0	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	0	120	1	0	0	0	74	40	99	97	1
Future Vol, veh/h	41	0	120	1	0	0	0	74	40	99	97	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	75	75	75	84	84	84	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	48	0	140	1	0	0	0	88	48	116	114	1

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	459	459	112	529	483	115	115	0	0	136	0	0
Stage 1	112	112	-	347	347	-	-	-	-	-	-	-
Stage 2	347	347	-	182	136	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	516	502	947	463	486	943	1487	-	-	1461	-	-
Stage 1	898	807	-	673	638	-	-	-	-	-	-	-
Stage 2	673	638	-	824	788	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	482	459	947	369	445	943	1487	-	-	1461	-	-
Mov Cap-2 Maneuver	482	459	-	369	445	-	-	-	-	-	-	-
Stage 1	898	807	-	673	584	-	-	-	-	-	-	-
Stage 2	616	584	-	703	788	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	11.3	14.8	0	3.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1461	-	-	760	369	1487	-	-
HCM Lane V/C Ratio	0.08	-	-	0.246	0.004	-	-	-
HCM Control Delay (s)	7.7	0	-	11.3	14.8	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1	0	0	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	31	0	0	0	0	72	72	467	131	0
Future Vol, veh/h	10	0	31	0	0	0	0	72	72	467	131	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	75	75	75	76	76	76	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	13	0	39	0	0	0	0	95	95	513	144	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1313	1313	143	1332	1360	144	144	0	0	190	0	0
Stage 1	143	143	-	1170	1170	-	-	-	-	-	-	-
Stage 2	1170	1170	-	162	190	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	137	160	910	133	150	909	1451	-	-	1396	-	-
Stage 1	865	782	-	237	269	-	-	-	-	-	-	-
Stage 2	237	269	-	845	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	94	96	910	88	90	909	1451	-	-	1396	-	-
Mov Cap-2 Maneuver	94	96	-	88	90	-	-	-	-	-	-	-
Stage 1	865	782	-	237	162	-	-	-	-	-	-	-
Stage 2	142	162	-	809	747	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	20	0	0	7.1
HCM LOS	C	A		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1396	-	-	292	-	1451	-	-
HCM Lane V/C Ratio	0.368	-	-	0.178	-	-	-	-
HCM Control Delay (s)	9.1	0	-	20	0	0	-	-
HCM Lane LOS	A	A	-	C	A	A	-	-
HCM 95th %tile Q(veh)	1.7	-	-	0.6	-	0	-	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↔		↰	↑	↱		↔			↔	
Traffic Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Future Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	75	75	75	84	84	84	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	51	30	159	4	24	3	6	94	51	128	125	6

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	530	519	120	610	541	128	131	0	0	145	0	0
Stage 1	132	132	-	384	384	-	-	-	-	-	-	-
Stage 2	398	387	-	226	157	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	463	464	937	409	451	927	1467	-	-	1450	-	-
Stage 1	876	791	-	643	615	-	-	-	-	-	-	-
Stage 2	632	613	-	781	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	408	418	937	297	406	927	1467	-	-	1450	-	-
Mov Cap-2 Maneuver	408	418	-	297	406	-	-	-	-	-	-	-
Stage 1	872	788	-	640	557	-	-	-	-	-	-	-
Stage 2	546	555	-	621	769	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	13.7	14.3	0.3	3.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	WBLn2	WBLn3	SEL	SET	SER
Capacity (veh/h)	1450	-	-	655	297	406	927	1467	-	-
HCM Lane V/C Ratio	0.088	-	-	0.367	0.013	0.059	0.003	0.004	-	-
HCM Control Delay (s)	7.7	0	-	13.7	17.3	14.4	8.9	7.5	0	-
HCM Lane LOS	A	A	-	B	C	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.7	0	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Future Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	75	75	75	84	84	84	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	51	30	159	4	24	3	6	94	51	128	125	6

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	530	519	120	610	541	128	131	0	0	145	0	0
Stage 1	132	132	-	384	384	-	-	-	-	-	-	-
Stage 2	398	387	-	226	157	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	463	464	937	409	451	927	1467	-	-	1450	-	-
Stage 1	876	791	-	643	615	-	-	-	-	-	-	-
Stage 2	632	613	-	781	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	408	418	937	297	406	927	1467	-	-	1450	-	-
Mov Cap-2 Maneuver	408	418	-	297	406	-	-	-	-	-	-	-
Stage 1	872	788	-	640	557	-	-	-	-	-	-	-
Stage 2	546	555	-	621	769	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	13.7	14.6	0.3	3.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1450	-	-	655	406	1467	-	-
HCM Lane V/C Ratio	0.088	-	-	0.367	0.076	0.004	-	-
HCM Control Delay (s)	7.7	0	-	13.7	14.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.7	0.2	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	0	129	1	0	0	0	79	43	106	104	0
Future Vol, veh/h	44	0	129	1	0	0	0	79	43	106	104	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	75	75	75	84	84	84	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	51	0	150	1	0	0	0	94	51	125	122	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	492	492	120	567	517	122	122	0	0	145	0	0
Stage 1	120	120	-	372	372	-	-	-	-	-	-	-
Stage 2	372	372	-	195	145	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	490	481	937	437	465	935	1478	-	-	1450	-	-
Stage 1	889	800	-	653	622	-	-	-	-	-	-	-
Stage 2	653	622	-	811	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	456	437	937	341	422	935	1478	-	-	1450	-	-
Mov Cap-2 Maneuver	456	437	-	341	422	-	-	-	-	-	-	-
Stage 1	889	800	-	653	565	-	-	-	-	-	-	-
Stage 2	593	565	-	681	781	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	11.7	15.6	0	3.9
HCM LOS	B	C		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1450	-	-	739	341	1478	-	-
HCM Lane V/C Ratio	0.086	-	-	0.272	0.004	-	-	-
HCM Control Delay (s)	7.7	0	-	11.7	15.6	0	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.1	0	0	-	-

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	9	33	5	28	2	2	72	72	472	134	2
Future Vol, veh/h	10	9	33	5	28	2	2	72	72	472	134	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	75	75	75	76	76	76	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	13	11	42	7	37	3	3	95	95	519	147	2

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1355	1336	143	1361	1382	148	149	0	0	190	0	0
Stage 1	149	149	-	1186	1186	-	-	-	-	-	-	-
Stage 2	1206	1187	-	175	196	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	128	155	910	127	145	904	1445	-	-	1396	-	-
Stage 1	858	778	-	232	265	-	-	-	-	-	-	-
Stage 2	226	264	-	832	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	59	92	910	75	86	904	1445	-	-	1396	-	-
Mov Cap-2 Maneuver	59	92	-	75	86	-	-	-	-	-	-	-
Stage 1	856	776	-	232	157	-	-	-	-	-	-	-
Stage 2	102	157	-	781	741	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	38.7	83.3	0.1	7.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	WBLn1	SEL	SET	SER
Capacity (veh/h)	1396	-	-	171	89	1445	-	-
HCM Lane V/C Ratio	0.372	-	-	0.385	0.524	0.002	-	-
HCM Control Delay (s)	9.1	0	-	38.7	83.3	7.5	0	-
HCM Lane LOS	A	A	-	E	F	A	A	-
HCM 95th %tile Q(veh)	1.7	-	-	1.7	2.3	0	-	-

Intersection	
Intersection Delay, s/veh	22
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	9	33	5	28	2	2	72	72	472	134	2
Future Vol, veh/h	10	9	33	5	28	2	2	72	72	472	134	2
Peak Hour Factor	0.79	0.79	0.79	0.75	0.75	0.75	0.76	0.76	0.76	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	13	11	42	7	37	3	3	95	95	519	147	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	SE	NW
Opposing Approach	WB	EB	NW	SE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SE	NW	WB	EB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NW	SE	EB	WB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	9.6	9.3	27.7
HCM LOS	A	A	A	D

Lane	NWLn1	EBLn1	WBLn1	SELn1
Vol Left, %	78%	19%	14%	1%
Vol Thru, %	22%	17%	80%	49%
Vol Right, %	0%	63%	6%	49%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	608	52	35	146
LT Vol	472	10	5	2
Through Vol	134	9	28	72
RT Vol	2	33	2	72
Lane Flow Rate	668	66	47	192
Geometry Grp	1	1	1	1
Degree of Util (X)	0.849	0.102	0.078	0.249
Departure Headway (Hd)	4.577	5.576	6.055	4.659
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	788	635	595	765
Service Time	2.63	3.675	4.055	2.731
HCM Lane V/C Ratio	0.848	0.104	0.079	0.251
HCM Control Delay	27.7	9.3	9.6	9.3
HCM Lane LOS	D	A	A	A
HCM 95th-tile Q	10	0.3	0.3	1

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Future Vol, veh/h	44	26	137	3	18	2	5	79	43	109	106	5
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.84	0.84	0.84	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	51	30	159	4	24	3	6	94	51	128	125	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	SE	NW
Opposing Approach	WB	EB	NW	SE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SE	NW	WB	EB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NW	SE	EB	WB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.6	8.5	8.9	10.4
HCM LOS	A	A	A	B

Lane	NWLn1	EBLn1	WBLn1	SELn1
Vol Left, %	50%	21%	13%	4%
Vol Thru, %	48%	13%	78%	62%
Vol Right, %	2%	66%	9%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	207	23	127
LT Vol	109	44	3	5
Through Vol	106	26	18	79
RT Vol	5	137	2	43
Lane Flow Rate	259	241	31	151
Geometry Grp	1	1	1	1
Degree of Util (X)	0.345	0.304	0.044	0.196
Departure Headway (Hd)	4.798	4.552	5.155	4.658
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	745	785	688	765
Service Time	2.854	2.606	3.232	2.72
HCM Lane V/C Ratio	0.348	0.307	0.045	0.197
HCM Control Delay	10.4	9.6	8.5	8.9
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.5	1.3	0.1	0.7

Main Street (Route 28) at Hopkins Street

Intersection	
Int Delay, s/veh	13.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑			↑↑	
Traffic Vol, veh/h	0	1	154	0	44	95	65	446	20	42	936	12
Future Vol, veh/h	0	1	154	0	44	95	65	446	20	42	936	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	95	95	95	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	1	5	0	1	0
Mvmt Flow	0	1	205	0	59	127	68	469	21	45	1006	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1729	510	-	1725	245	1019	0	0	490	0	0
Stage 1	-	1103	-	-	616	-	-	-	-	-	-	-
Stage 2	-	626	-	-	1109	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	89	514	0	90	762	689	-	-	1084	-	-
Stage 1	0	290	-	0	485	-	-	-	-	-	-	-
Stage 2	0	480	-	0	288	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	70	514	-	70	762	689	-	-	1084	-	-
Mov Cap-2 Maneuver	-	70	-	-	70	-	-	-	-	-	-	-
Stage 1	-	262	-	-	419	-	-	-	-	-	-	-
Stage 2	-	415	-	-	260	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	118.5	1.8	0.7
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	689	-	-	494	185	1084	-	-
HCM Lane V/C Ratio	0.099	-	-	0.418	1.002	0.042	-	-
HCM Control Delay (s)	10.8	0.6	-	17.4	118.5	8.5	0.4	-
HCM Lane LOS	B	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	2	8.4	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑			↑↑	
Traffic Vol, veh/h	0	4	82	0	22	72	112	684	38	50	583	6
Future Vol, veh/h	0	4	82	0	22	72	112	684	38	50	583	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	94	94	94	97	97	97	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	109	0	23	77	115	705	39	53	614	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1697	310	-	1681	372	620	0	0	744	0	0
Stage 1	-	723	-	-	955	-	-	-	-	-	-	-
Stage 2	-	974	-	-	726	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	93	692	0	96	631	970	-	-	873	-	-
Stage 1	0	434	-	0	339	-	-	-	-	-	-	-
Stage 2	0	333	-	0	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	67	692	-	69	631	970	-	-	873	-	-
Mov Cap-2 Maneuver	-	67	-	-	69	-	-	-	-	-	-	-
Stage 1	-	394	-	-	270	-	-	-	-	-	-	-
Stage 2	-	265	-	-	393	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	35	1.8	1.1
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	483	217	873	-	-
HCM Lane V/C Ratio	0.119	-	-	0.237	0.461	0.06	-	-
HCM Control Delay (s)	9.2	0.7	-	14.8	35	9.4	0.4	-
HCM Lane LOS	A	A	-	B	E	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.9	2.2	0.2	-	-

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↰↑↱			↰↑↱	
Traffic Vol, veh/h	0	1	165	0	47	102	70	478	21	45	1004	13
Future Vol, veh/h	0	1	165	0	47	102	70	478	21	45	1004	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	95	95	95	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	1	5	0	1	0
Mvmt Flow	0	1	220	0	63	136	74	503	22	48	1080	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1856	547	-	1852	263	1094	0	0	525	0	0
Stage 1	-	1183	-	-	662	-	-	-	-	-	-	-
Stage 2	-	673	-	-	1190	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	75	486	0	75	742	645	-	-	1052	-	-
Stage 1	0	265	-	0	462	-	-	-	-	-	-	-
Stage 2	0	457	-	0	263	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	55	486	-	~ 55	742	645	-	-	1052	-	-
Mov Cap-2 Maneuver	-	55	-	-	~ 55	-	-	-	-	-	-	-
Stage 1	-	234	-	-	387	-	-	-	-	-	-	-
Stage 2	-	383	-	-	232	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	242.1	2	0.8
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	645	-	-	464	150	1052	-	-
HCM Lane V/C Ratio	0.114	-	-	0.477	1.324	0.046	-	-
HCM Control Delay (s)	11.3	0.7	-	19.6	242.1	8.6	0.5	-
HCM Lane LOS	B	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	12.2	0.1	-	-

Notes

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

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↰↑↱			↰↑↱	
Traffic Vol, veh/h	0	4	88	0	23	77	120	733	41	54	625	6
Future Vol, veh/h	0	4	88	0	23	77	120	733	41	54	625	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	94	94	94	97	97	97	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	117	0	24	82	124	756	42	57	658	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1821	332	-	1803	399	664	0	0	798	0	0
Stage 1	-	775	-	-	1025	-	-	-	-	-	-	-
Stage 2	-	1046	-	-	778	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	78	670	0	80	606	935	-	-	833	-	-
Stage 1	0	411	-	0	315	-	-	-	-	-	-	-
Stage 2	0	308	-	0	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	53	670	-	54	606	935	-	-	833	-	-
Mov Cap-2 Maneuver	-	53	-	-	54	-	-	-	-	-	-	-
Stage 1	-	366	-	-	239	-	-	-	-	-	-	-
Stage 2	-	234	-	-	365	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	49.9	2	1.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	935	-	-	445	181	833	-	-
HCM Lane V/C Ratio	0.132	-	-	0.276	0.588	0.068	-	-
HCM Control Delay (s)	9.4	0.9	-	16.1	49.9	9.6	0.4	-
HCM Lane LOS	A	A	-	C	E	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	1.1	3.2	0.2	-	-

Intersection	
Int Delay, s/veh	27.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱↑			↱↑	
Traffic Vol, veh/h	0	1	165	0	47	109	70	478	21	48	1004	13
Future Vol, veh/h	0	1	165	0	47	109	70	478	21	48	1004	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	95	95	95	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	1	5	0	1	0
Mvmt Flow	0	1	220	0	63	145	74	503	22	52	1080	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1864	547	-	1860	263	1094	0	0	525	0	0
Stage 1	-	1191	-	-	662	-	-	-	-	-	-	-
Stage 2	-	673	-	-	1198	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	74	486	0	74	742	645	-	-	1052	-	-
Stage 1	0	263	-	0	462	-	-	-	-	-	-	-
Stage 2	0	457	-	0	261	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	54	486	-	~ 54	742	645	-	-	1052	-	-
Mov Cap-2 Maneuver	-	54	-	-	~ 54	-	-	-	-	-	-	-
Stage 1	-	230	-	-	387	-	-	-	-	-	-	-
Stage 2	-	383	-	-	228	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	254.1	2	0.9
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	645	-	-	464	153	1052	-	-
HCM Lane V/C Ratio	0.114	-	-	0.477	1.359	0.049	-	-
HCM Control Delay (s)	11.3	0.7	-	19.6	254.1	8.6	0.5	-
HCM Lane LOS	B	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	12.9	0.2	-	-

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

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱↑			↱↑	
Traffic Vol, veh/h	0	4	88	0	23	83	120	733	41	62	625	6
Future Vol, veh/h	0	4	88	0	23	83	120	733	41	62	625	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	94	94	94	97	97	97	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	117	0	24	88	124	756	42	65	658	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1837	332	-	1819	399	664	0	0	798	0	0
Stage 1	-	791	-	-	1025	-	-	-	-	-	-	-
Stage 2	-	1046	-	-	794	-	-	-	-	-	-	-
Critical Hdwy	-	6.5	6.9	-	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	4	3.3	-	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	77	670	0	79	606	935	-	-	833	-	-
Stage 1	0	404	-	0	315	-	-	-	-	-	-	-
Stage 2	0	308	-	0	403	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	51	670	-	53	606	935	-	-	833	-	-
Mov Cap-2 Maneuver	-	51	-	-	53	-	-	-	-	-	-	-
Stage 1	-	354	-	-	239	-	-	-	-	-	-	-
Stage 2	-	234	-	-	353	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	50.3	2	1.3
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	935	-	-	439	186	833	-	-
HCM Lane V/C Ratio	0.132	-	-	0.279	0.606	0.078	-	-
HCM Control Delay (s)	9.4	0.9	-	16.4	50.3	9.7	0.5	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	1.1	3.4	0.3	-	-

Hopkins Street at Brook Street and Layton Avenue

Intersection	
Int Delay, s/veh	2

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	56	0	0	1	4	7	2	43	54	2	488	1
Future Vol, veh/h	56	0	0	1	4	7	2	43	54	2	488	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	75	0	0	1	5	9	2	50	63	2	542	1

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	640	633	82	633	664	543	543	0	0	113	0	0
Stage 1	86	86	-	547	547	-	-	-	-	-	-	-
Stage 2	554	547	-	86	117	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	388	400	983	395	384	544	1036	-	-	1489	-	-
Stage 1	922	827	-	525	521	-	-	-	-	-	-	-
Stage 2	517	521	-	927	803	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	376	398	983	394	382	544	1036	-	-	1489	-	-
Mov Cap-2 Maneuver	376	398	-	394	382	-	-	-	-	-	-	-
Stage 1	920	825	-	524	520	-	-	-	-	-	-	-
Stage 2	502	520	-	925	801	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	16.9	13	0.2	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	376	1489	-	-	1036	-	-	464
HCM Lane V/C Ratio	0.199	0.001	-	-	0.002	-	-	0.034
HCM Control Delay (s)	16.9	7.4	0	-	8.5	0	-	13
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	1.8											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	56	0	0	0	0	5	1	43	54	2	488	0
Future Vol, veh/h	56	0	0	0	0	5	1	43	54	2	488	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	75	0	0	0	0	7	1	50	63	2	542	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	634	630	82	630	661	542	542	0	0	113	0	0
Stage 1	84	84	-	546	546	-	-	-	-	-	-	-
Stage 2	550	546	-	84	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	392	401	983	397	385	544	1037	-	-	1489	-	-
Stage 1	924	829	-	526	521	-	-	-	-	-	-	-
Stage 2	519	521	-	929	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	386	400	983	396	384	544	1037	-	-	1489	-	-
Mov Cap-2 Maneuver	386	400	-	396	384	-	-	-	-	-	-	-
Stage 1	923	828	-	525	520	-	-	-	-	-	-	-
Stage 2	512	520	-	928	803	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	16.6	11.7	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	386	1489	-	-	1037	-	-	544
HCM Lane V/C Ratio	0.193	0.001	-	-	0.001	-	-	0.012
HCM Control Delay (s)	16.6	7.4	0	-	8.5	0	-	11.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↱			↕	
Traffic Vol, veh/h	71	7	3	0	5	1	4	151	39	2	117	4
Future Vol, veh/h	71	7	3	0	5	1	4	151	39	2	117	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	95	9	4	0	7	1	4	166	43	2	141	5

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	348	346	188	348	365	144	146	0	0	209	0	0
Stage 1	196	196	-	148	148	-	-	-	-	-	-	-
Stage 2	152	150	-	200	217	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	610	580	859	610	566	909	1448	-	-	1374	-	-
Stage 1	810	742	-	859	779	-	-	-	-	-	-	-
Stage 2	855	777	-	806	727	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	601	577	859	597	563	909	1448	-	-	1374	-	-
Mov Cap-2 Maneuver	601	577	-	597	563	-	-	-	-	-	-	-
Stage 1	808	740	-	856	777	-	-	-	-	-	-	-
Stage 2	845	775	-	790	725	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12	11.1	0.2	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	622	1374	-	-	1448	-	-	601
HCM Lane V/C Ratio	0.174	0.002	-	-	0.003	-	-	0.013
HCM Control Delay (s)	12	7.6	0	-	7.5	-	-	11.1
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	71	7	2	1	3	1	3	151	39	2	117	0
Future Vol, veh/h	71	7	2	1	3	1	3	151	39	2	117	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	95	9	3	1	4	1	3	166	43	2	141	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	342	339	188	343	360	141	141	0	0	209	0	0
Stage 1	194	194	-	145	145	-	-	-	-	-	-	-
Stage 2	148	145	-	198	215	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	616	586	859	615	570	912	1455	-	-	1374	-	-
Stage 1	812	744	-	863	781	-	-	-	-	-	-	-
Stage 2	859	781	-	808	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	610	584	859	604	568	912	1455	-	-	1374	-	-
Mov Cap-2 Maneuver	610	584	-	604	568	-	-	-	-	-	-	-
Stage 1	810	743	-	861	779	-	-	-	-	-	-	-
Stage 2	852	779	-	794	728	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12	10.9	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	623	1374	-	-	1455	-	-	622
HCM Lane V/C Ratio	0.171	0.002	-	-	0.002	-	-	0.011
HCM Control Delay (s)	12	7.6	0	-	7.5	0	-	10.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	0	0	1	4	8	2	46	58	2	523	1
Future Vol, veh/h	60	0	0	1	4	8	2	46	58	2	523	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	80	0	0	1	5	11	2	53	67	2	581	1

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	685	677	87	677	710	582	582	0	0	120	0	0
Stage 1	91	91	-	586	586	-	-	-	-	-	-	-
Stage 2	594	586	-	91	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	362	377	977	369	361	517	1002	-	-	1480	-	-
Stage 1	916	823	-	500	500	-	-	-	-	-	-	-
Stage 2	491	500	-	921	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	349	375	977	368	360	517	1002	-	-	1480	-	-
Mov Cap-2 Maneuver	349	375	-	368	360	-	-	-	-	-	-	-
Stage 1	914	821	-	499	499	-	-	-	-	-	-	-
Stage 2	475	499	-	919	795	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	18.4	13.4	0.2	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	349	1480	-	-	1002	-	-	444
HCM Lane V/C Ratio	0.229	0.002	-	-	0.002	-	-	0.039
HCM Control Delay (s)	18.4	7.4	0	-	8.6	0	-	13.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	0	0	0	0	5	1	46	58	2	523	0
Future Vol, veh/h	60	0	0	0	0	5	1	46	58	2	523	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	80	0	0	0	0	7	1	53	67	2	581	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	678	674	87	674	707	581	581	0	0	120	0	0
Stage 1	89	89	-	585	585	-	-	-	-	-	-	-
Stage 2	589	585	-	89	122	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	366	379	977	371	363	517	1003	-	-	1480	-	-
Stage 1	918	825	-	501	501	-	-	-	-	-	-	-
Stage 2	494	501	-	923	799	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	361	378	977	370	362	517	1003	-	-	1480	-	-
Mov Cap-2 Maneuver	361	378	-	370	362	-	-	-	-	-	-	-
Stage 1	917	824	-	500	500	-	-	-	-	-	-	-
Stage 2	487	500	-	922	798	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	17.8	12.1	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	361	1480	-	-	1003	-	-	517
HCM Lane V/C Ratio	0.222	0.002	-	-	0.001	-	-	0.013
HCM Control Delay (s)	17.8	7.4	0	-	8.6	0	-	12.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↱			↕	
Traffic Vol, veh/h	78	7	3	0	5	1	4	162	42	2	124	4
Future Vol, veh/h	78	7	3	0	5	1	4	162	42	2	124	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	104	9	4	0	7	1	4	178	46	2	149	5

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	369	367	201	370	388	152	154	0	0	224	0	0
Stage 1	209	209	-	156	156	-	-	-	-	-	-	-
Stage 2	160	158	-	214	232	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	591	565	845	590	550	900	1439	-	-	1357	-	-
Stage 1	798	733	-	851	772	-	-	-	-	-	-	-
Stage 2	847	771	-	793	716	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	582	562	845	578	547	900	1439	-	-	1357	-	-
Mov Cap-2 Maneuver	582	562	-	578	547	-	-	-	-	-	-	-
Stage 1	796	731	-	848	770	-	-	-	-	-	-	-
Stage 2	837	769	-	777	714	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.4	11.2	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	601	1357	-	-	1439	-	-	585
HCM Lane V/C Ratio	0.195	0.002	-	-	0.003	-	-	0.014
HCM Control Delay (s)	12.4	7.7	0	-	7.5	-	-	11.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	8	2	1	3	1	3	162	42	2	124	0
Future Vol, veh/h	76	8	2	1	3	1	3	162	42	2	124	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	101	11	3	1	4	1	3	178	46	2	149	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	363	360	201	366	383	149	149	0	0	224	0	0
Stage 1	207	207	-	153	153	-	-	-	-	-	-	-
Stage 2	156	153	-	213	230	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	597	570	845	594	553	903	1445	-	-	1357	-	-
Stage 1	800	734	-	854	775	-	-	-	-	-	-	-
Stage 2	851	775	-	794	718	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	591	568	845	582	551	903	1445	-	-	1357	-	-
Mov Cap-2 Maneuver	591	568	-	582	551	-	-	-	-	-	-	-
Stage 1	798	733	-	852	773	-	-	-	-	-	-	-
Stage 2	844	773	-	778	717	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.4	11	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	603	1357	-	-	1445	-	-	605
HCM Lane V/C Ratio	0.19	0.002	-	-	0.002	-	-	0.011
HCM Control Delay (s)	12.4	7.7	0	-	7.5	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	0	0	1	4	8	2	56	58	2	527	1
Future Vol, veh/h	60	0	0	1	4	8	2	56	58	2	527	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	80	0	0	1	5	11	2	65	67	2	586	1

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	702	694	99	694	727	587	587	0	0	132	0	0
Stage 1	103	103	-	591	591	-	-	-	-	-	-	-
Stage 2	599	591	-	103	136	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	353	369	962	360	353	513	998	-	-	1466	-	-
Stage 1	903	814	-	497	498	-	-	-	-	-	-	-
Stage 2	488	498	-	908	788	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	341	368	962	359	352	513	998	-	-	1466	-	-
Mov Cap-2 Maneuver	341	368	-	359	352	-	-	-	-	-	-	-
Stage 1	901	812	-	496	497	-	-	-	-	-	-	-
Stage 2	472	497	-	906	786	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	18.8	13.6	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	341	1466	-	-	998	-	-	437
HCM Lane V/C Ratio	0.235	0.002	-	-	0.002	-	-	0.04
HCM Control Delay (s)	18.8	7.5	0	-	8.6	0	-	13.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	0	0	0	0	5	1	56	58	2	527	0
Future Vol, veh/h	60	0	0	0	0	5	1	56	58	2	527	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	86	86	86	90	90	90
Heavy Vehicles, %	2	0	0	0	0	0	0	0	2	0	0	0
Mvmt Flow	80	0	0	0	0	7	1	65	67	2	586	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	695	691	99	691	724	586	586	0	0	132	0	0
Stage 1	101	101	-	590	590	-	-	-	-	-	-	-
Stage 2	594	590	-	101	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	357	370	962	362	354	514	999	-	-	1466	-	-
Stage 1	905	815	-	497	498	-	-	-	-	-	-	-
Stage 2	491	498	-	910	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	352	369	962	361	353	514	999	-	-	1466	-	-
Mov Cap-2 Maneuver	352	369	-	361	353	-	-	-	-	-	-	-
Stage 1	904	814	-	497	497	-	-	-	-	-	-	-
Stage 2	484	497	-	909	788	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	18.2	12.1	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	352	1466	-	-	999	-	-	514
HCM Lane V/C Ratio	0.227	0.002	-	-	0.001	-	-	0.013
HCM Control Delay (s)	18.2	7.5	0	-	8.6	0	-	12.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↱			↕	
Traffic Vol, veh/h	78	7	3	0	5	1	4	167	42	2	134	4
Future Vol, veh/h	78	7	3	0	5	1	4	167	42	2	134	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	104	9	4	0	7	1	4	184	46	2	161	5

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	387	385	207	388	406	164	166	0	0	230	0	0
Stage 1	215	215	-	168	168	-	-	-	-	-	-	-
Stage 2	172	170	-	220	238	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	575	552	839	574	537	886	1424	-	-	1350	-	-
Stage 1	792	729	-	839	763	-	-	-	-	-	-	-
Stage 2	835	762	-	787	712	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	566	549	839	562	534	886	1424	-	-	1350	-	-
Mov Cap-2 Maneuver	566	549	-	562	534	-	-	-	-	-	-	-
Stage 1	790	727	-	836	761	-	-	-	-	-	-	-
Stage 2	825	760	-	771	710	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.7	11.4	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	584	1350	-	-	1424	-	-	572
HCM Lane V/C Ratio	0.201	0.002	-	-	0.003	-	-	0.014
HCM Control Delay (s)	12.7	7.7	0	-	7.5	-	-	11.4
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	8	2	1	3	1	3	167	42	2	134	0
Future Vol, veh/h	76	8	2	1	3	1	3	167	42	2	134	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	101	11	3	1	4	1	3	184	46	2	161	0

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	381	378	207	384	401	161	161	0	0	230	0	0
Stage 1	213	213	-	165	165	-	-	-	-	-	-	-
Stage 2	168	165	-	219	236	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	581	557	839	578	541	889	1430	-	-	1350	-	-
Stage 1	794	730	-	842	766	-	-	-	-	-	-	-
Stage 2	839	766	-	788	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	575	555	839	566	539	889	1430	-	-	1350	-	-
Mov Cap-2 Maneuver	575	555	-	566	539	-	-	-	-	-	-	-
Stage 1	792	729	-	840	764	-	-	-	-	-	-	-
Stage 2	832	764	-	772	712	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.6	11.2	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	587	1350	-	-	1430	-	-	591
HCM Lane V/C Ratio	0.195	0.002	-	-	0.002	-	-	0.011
HCM Control Delay (s)	12.6	7.7	0	-	7.5	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Main Street (Route 28) at South Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.908			0.992			0.996			0.994	
Flt Protected		0.988			0.963		0.950					
Satd. Flow (prot)	0	1932	0	0	1876	0	1787	1937	0	0	3588	0
Flt Permitted		0.893			0.590		0.085				0.950	
Satd. Flow (perm)	0	1746	0	0	1149	0	160	1937	0	0	3409	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			2			2			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

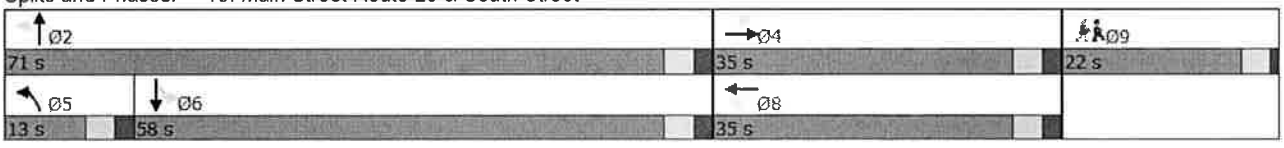
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	40	14	118	359	87	27	88	514	14	9	1110	48
Future Volume (vph)	40	14	118	359	87	27	88	514	14	9	1110	48
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	47	16	137	395	96	30	97	565	15	10	1233	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	521	0	97	580	0	0	1296	0
Intersection Summary												

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	40	14	359	87	88	514	9	1110	
Future Volume (vph)	40	14	359	87	88	514	9	1110	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		0.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		5.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		31.1		31.1	60.8	60.8		47.0	
Actuated g/C Ratio		0.31		0.31	0.61	0.61		0.47	
v/c Ratio		0.33		1.45	0.40	0.49		0.81	
Control Delay		18.4		247.7	13.8	12.4		27.0	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		18.4		247.7	13.8	12.4		27.0	
LOS		B		F	B	B		C	
Approach Delay		18.4		247.7		12.6		27.0	
Approach LOS		B		F		B		C	

Intersection Summary	
Cycle Length: 128	
Actuated Cycle Length: 100	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.45	
Intersection Signal Delay: 65.4	Intersection LOS: E
Intersection Capacity Utilization 110.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 15: Main Street Route 28 & South Street



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	200	521	97	580	1296
v/c Ratio	0.33	1.45	0.40	0.49	0.81
Control Delay	18.4	247.7	13.8	12.4	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	247.7	13.8	12.4	27.0
Queue Length 50th (ft)	58	~480	24	189	358
Queue Length 95th (ft)	116	#713	49	268	446
Internal Link Dist (ft)	359	1032		121	557
Turn Bay Length (ft)					
Base Capacity (vph)	599	359	244	1304	1816
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	0.33	1.45	0.40	0.44	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.929			0.974			0.989			0.986	
Flt Protected		0.990			0.973		0.950				0.999	
Satd. Flow (prot)	0	1980	0	0	1861	0	1805	1942	0	0	3556	0
Flt Permitted		0.900			0.476		0.271				0.891	
Satd. Flow (perm)	0	1800	0	0	910	0	515	1942	0	0	3171	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			9			5			10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

Intersection Summary	
Area Type:	Other

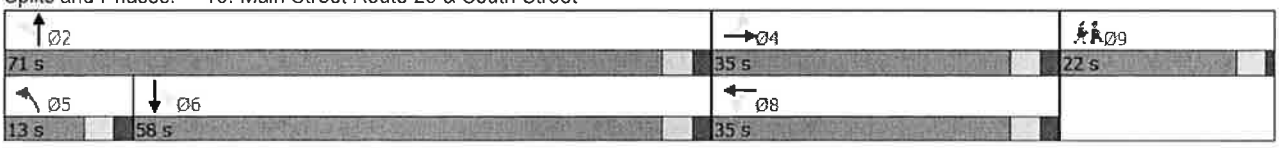
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	63	87	167	82	37	29	96	820	65	17	622	64
Future Volume (vph)	63	87	167	82	37	29	96	820	65	17	622	64
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.84	0.84	0.84	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	72	100	192	91	41	32	114	976	77	19	699	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	364	0	0	164	0	114	1053	0	0	790	0

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	63	87	82	37	96	820	17	622	
Future Volume (vph)	63	87	82	37	96	820	17	622	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		25.0		25.0	67.2	67.2		54.8	
Actuated g/C Ratio		0.25		0.25	0.67	0.67		0.55	
v/c Ratio		0.76		0.70	0.25	0.81		0.46	
Control Delay		41.4		49.2	8.2	19.5		15.5	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		41.4		49.2	8.2	19.5		15.5	
LOS		D		D	A	B		B	
Approach Delay		41.4		49.2		18.4		15.5	
Approach LOS		D		D		B		B	

Intersection Summary	
Cycle Length: 128	
Actuated Cycle Length: 100.3	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 96.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 15: Main Street Route 28 & South Street



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	364	164	114	1053	790
v/c Ratio	0.76	0.70	0.25	0.81	0.46
Control Delay	41.4	49.2	8.2	19.5	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	49.2	8.2	19.5	15.5
Queue Length 50th (ft)	192	89	24	444	154
Queue Length 95th (ft)	281	m160	46	639	223
Internal Link Dist (ft)	359	1032		121	557
Turn Bay Length (ft)					
Base Capacity (vph)	586	288	461	1303	1736
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	0.62	0.57	0.25	0.81	0.46

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.907			0.992			0.996			0.994	
Flt Protected		0.988			0.963		0.950					
Satd. Flow (prot)	0	1930	0	0	1876	0	1787	1937	0	0	3588	0
Flt Permitted		0.902			0.583		0.075				0.949	
Satd. Flow (perm)	0	1762	0	0	1135	0	141	1937	0	0	3405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			2			2			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	43	15	127	385	93	29	94	551	15	10	1190	51
Future Volume (vph)	43	15	127	385	93	29	94	551	15	10	1190	51
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	47	16	138	418	101	32	102	599	16	11	1293	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	201	0	0	551	0	102	615	0	0	1359	0

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	43	15	385	93	94	551	10	1190	
Future Volume (vph)	43	15	385	93	94	551	10	1190	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		31.1		31.1	63.7	63.7		50.9	
Actuated g/C Ratio		0.30		0.30	0.62	0.62		0.50	
v/c Ratio		0.34		1.60	0.45	0.51		0.81	
Control Delay		18.9		311.5	16.9	12.5		26.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		18.9		311.5	16.9	12.5		26.2	
LOS		B		F	B	B		C	
Approach Delay		18.9		311.5		13.2		26.2	
Approach LOS		B		F		B		C	

Intersection Summary

Cycle Length: 128
Actuated Cycle Length: 102.8
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.60
Intersection Signal Delay: 78.0 — Intersection LOS: E
Intersection Capacity Utilization 117.0% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 15: Main Street Route 28 & South Street

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	201	551	102	615	1359
v/c Ratio	0.34	1.60	0.45	0.51	0.81
Control Delay	18.9	311.5	16.9	12.5	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	311.5	16.9	12.5	26.2
Queue Length 50th (ft)	62	~550	25	206	379
Queue Length 95th (ft)	125	#762	63	291	472
Internal Link Dist (ft)	359	1032		121	557
Turn Bay Length (ft)					
Base Capacity (vph)	589	344	231	1267	1795
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	0.34	1.60	0.44	0.49	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.929			0.973			0.989			0.986	
Flt Protected		0.990			0.973		0.950				0.999	
Satd. Flow (prot)	0	1980	0	0	1859	0	1805	1942	0	0	3556	0
Flt Permitted		0.897			0.485		0.255				0.884	
Satd. Flow (perm)	0	1794	0	0	927	0	484	1942	0	0	3147	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			9			5			10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	68	93	179	88	40	31	103	879	70	18	667	69
Future Volume (vph)	68	93	179	88	40	31	103	879	70	18	667	69
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	74	101	195	96	43	34	112	955	76	20	725	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	370	0	0	173	0	112	1031	0	0	820	0

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	68	93	88	40	103	879	18	667	
Future Volume (vph)	68	93	88	40	103	879	18	667	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		26.4		26.4	66.3	66.3		53.9	
Actuated g/C Ratio		0.26		0.26	0.66	0.66		0.53	
v/c Ratio		0.74		0.69	0.26	0.81		0.49	
Control Delay		39.8		47.6	8.7	20.0		16.6	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		39.8		47.6	8.7	20.0		16.6	
LOS		D		D	A	B		B	
Approach Delay		39.8		47.6		18.9		16.6	
Approach LOS		D		D		B		B	

Intersection Summary	
Cycle Length: 128	
Actuated Cycle Length: 100.8	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 102.2%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 15: Main Street Route 28 & South Street

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	370	173	112	1031	820
v/c Ratio	0.74	0.69	0.26	0.81	0.49
Control Delay	39.8	47.6	8.7	20.0	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	47.6	8.7	20.0	16.6
Queue Length 50th (ft)	197	94	26	480	178
Queue Length 95th (ft)	302	m170	49	725	238
Internal Link Dist (ft)	359	1032		121	557
Turn Bay Length (ft)					
Base Capacity (vph)	582	292	437	1298	1703
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	0.64	0.59	0.26	0.79	0.48

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.907			0.993			0.993			0.994	
Flt Protected		0.988			0.963		0.950					
Satd. Flow (prot)	0	1930	0	0	1877	0	1787	1931	0	0	3588	0
Flt Permitted		0.911			0.578		0.075				0.949	
Satd. Flow (perm)	0	1779	0	0	1127	0	141	1931	0	0	3405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			2			3			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	43	15	127	418	93	29	94	551	26	10	1190	51
Future Volume (vph)	43	15	127	418	93	29	94	551	26	10	1190	51
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	47	16	138	454	101	32	102	599	28	11	1293	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	201	0	0	587	0	102	627	0	0	1359	0

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	43	15	418	93	94	551	10	1190	
Future Volume (vph)	43	15	418	93	94	551	10	1190	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		31.1		31.1	63.7	63.7		50.9	
Actuated g/C Ratio		0.30		0.30	0.62	0.62		0.50	
v/c Ratio		0.34		1.72	0.45	0.52		0.81	
Control Delay		18.8		361.1	16.9	12.7		26.2	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		18.8		361.1	16.9	12.7		26.2	
LOS		B		F	B	B		C	
Approach Delay		18.8		361.1		13.3		26.2	
Approach LOS		B		F		B		C	

Intersection Summary	
Cycle Length: 128	
Actuated Cycle Length: 102.8	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.72	
Intersection Signal Delay: 90.8	Intersection LOS: F
Intersection Capacity Utilization 119.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 15: Main Street Route 28 & South Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Maximum Green (s)	30.0	30.0	30.0	30.0	8.0	66.0	53.0	53.0	18.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	None	None
Walk Time (s)									7.0
Flash Dont Walk (s)									11.0
Pedestrian Calls (#/hr)									0
90th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	66.0	53.0	53.0	0.0
90th %ile Term Code	Hold	Hold	Max	Max	Max	Hold	Max	Max	Skip
70th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	66.0	53.0	53.0	0.0
70th %ile Term Code	Hold	Hold	Max	Max	Max	Hold	Max	Max	Skip
50th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	66.0	53.0	53.0	0.0
50th %ile Term Code	Hold	Hold	Max	Max	Max	Hold	Max	Max	Skip
30th %ile Green (s)	30.0	30.0	30.0	30.0	8.0	62.7	49.7	49.7	0.0
30th %ile Term Code	Hold	Hold	Max	Max	Max	Hold	Gap	Gap	Skip
10th %ile Green (s)	30.0	30.0	30.0	30.0	7.0	53.1	41.1	41.1	0.0
10th %ile Term Code	Hold	Hold	Max	Max	Gap	Hold	Gap	Gap	Skip

Intersection Summary
Cycle Length: 128
Actuated Cycle Length: 102.8
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 106
70th %ile Actuated Cycle: 106
50th %ile Actuated Cycle: 106
30th %ile Actuated Cycle: 102.7
10th %ile Actuated Cycle: 93.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	12	13	13	11	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.929			0.976			0.984			0.986	
Flt Protected		0.990			0.971		0.950				0.999	
Satd. Flow (prot)	0	1980	0	0	1861	0	1805	1932	0	0	3556	0
Flt Permitted		0.897			0.476		0.247				0.795	
Satd. Flow (perm)	0	1794	0	0	912	0	469	1932	0	0	2830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			8			7			10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		439			1112			201			637	
Travel Time (s)		10.0			25.3			4.6			14.5	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	68	93	179	109	40	31	103	879	104	18	667	69
Future Volume (vph)	68	93	179	109	40	31	103	879	104	18	667	69
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	74	101	195	118	43	34	112	955	113	20	725	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	370	0	0	195	0	112	1068	0	0	820	0

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	68	93	109	40	103	879	18	667	
Future Volume (vph)	68	93	109	40	103	879	18	667	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4		8	5	2		6	9
Permitted Phases	4		8		2		6		
Detector Phase	4	4	8	8	5	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)	23.0	23.0	23.0	23.0	10.0	23.0	10.0	10.0	22.0
Total Split (s)	35.0	35.0	35.0	35.0	13.0	71.0	58.0	58.0	22.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	10.2%	55.5%	45.3%	45.3%	17%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		-1.0		-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0		4.0	4.0	4.0		4.0	
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		31.0		31.0	67.0	67.0		54.5	
Actuated g/C Ratio		0.29		0.29	0.63	0.63		0.51	
v/c Ratio		0.67		0.72	0.28	0.87		0.56	
Control Delay		36.1		48.9	9.5	25.8		19.3	
Queue Delay		0.0		0.0	0.0	0.0		0.0	
Total Delay		36.1		48.9	9.5	25.8		19.3	
LOS		D		D	A	C		B	
Approach Delay		36.1		48.9		24.3		19.3	
Approach LOS		D		D		C		B	

Intersection Summary	
Cycle Length: 128	
Actuated Cycle Length: 106	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 108.6%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 15: Main Street Route 28 & South Street

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	370	195	112	1068	820
v/c Ratio	0.67	0.72	0.28	0.87	0.56
Control Delay	36.1	48.9	9.5	25.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	48.9	9.5	25.8	19.3
Queue Length 50th (ft)	197	112	27	544	191
Queue Length 95th (ft)	302	m#217	49	#835	251
Internal Link Dist (ft)	359	1032		121	557
Turn Bay Length (ft)					
Base Capacity (vph)	553	272	409	1223	1459
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	0.67	0.72	0.27	0.87	0.56

Intersection Summary

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

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

Main Street (Route 28) at I-95 (Route 128) Southbound Ramps

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	171	0	0	64	0	552	727	0	834	758
Future Vol, veh/h	0	0	171	0	0	64	0	552	727	0	834	758
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	92	92	92	94	94	94
Heavy Vehicles, %	0	0	6	0	0	6	0	1	2	0	0	0
Mvmt Flow	0	0	228	0	0	72	0	600	790	0	887	806

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	847	-	-	695	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	297	0	0	376	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	297	-	-	376	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48	16.8	0	0
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	297	376	-	-
HCM Lane V/C Ratio	-	-	0.768	0.191	-	-
HCM Control Delay (s)	-	-	48	16.8	-	-
HCM Lane LOS	-	-	E	C	-	-
HCM 95th %tile Q(veh)	-	-	5.9	0.7	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	342	0	0	169	0	812	380	0	610	261
Future Vol, veh/h	0	0	342	0	0	169	0	812	380	0	610	261
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	82	82	82	95	95	95	92	92	92
Heavy Vehicles, %	0	0	6	0	0	6	0	1	1	0	1	0
Mvmt Flow	0	0	368	0	0	206	0	855	400	0	663	284

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	474	-	-	628	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	526	0	0	416	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	526	-	-	416	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.2	21.9	0	0
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	526	416	-	-
HCM Lane V/C Ratio	-	-	0.699	0.495	-	-
HCM Control Delay (s)	-	-	26.2	21.9	-	-
HCM Lane LOS	-	-	D	C	-	-
HCM 95th %tile Q(veh)	-	-	5.5	2.7	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	183	0	0	69	0	592	779	0	894	813
Future Vol, veh/h	0	0	183	0	0	69	0	592	779	0	894	813
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	92	92	92	94	94	94
Heavy Vehicles, %	0	0	6	0	0	6	0	1	2	0	0	0
Mvmt Flow	0	0	244	0	0	78	0	643	847	0	951	865

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	908	-	-	745	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	270	0	0	348	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	270	-	-	348	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	73.4	18.3	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	270	348	-	-
HCM Lane V/C Ratio	-	-	0.904	0.223	-	-
HCM Control Delay (s)	-	-	73.4	18.3	-	-
HCM Lane LOS	-	-	F	C	-	-
HCM 95th %tile Q(veh)	-	-	8.1	0.8	-	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	367	0	0	181	0	871	407	0	654	280
Future Vol, veh/h	0	0	367	0	0	181	0	871	407	0	654	280
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	82	82	82	95	95	95	92	92	92
Heavy Vehicles, %	0	0	6	0	0	6	0	1	1	0	1	0
Mvmt Flow	0	0	395	0	0	221	0	917	428	0	711	304

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	508	-	-	673	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	500	0	0	388	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	500	-	-	388	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.1	25.8	0	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	500	388	-	-
HCM Lane V/C Ratio	-	-	0.789	0.569	-	-
HCM Control Delay (s)	-	-	34.1	25.8	-	-
HCM Lane LOS	-	-	D	D	-	-
HCM 95th %tile Q(veh)	-	-	7.2	3.4	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	183	0	0	72	0	600	779	0	917	823
Future Vol, veh/h	0	0	183	0	0	72	0	600	779	0	917	823
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	92	92	92	94	94	94
Heavy Vehicles, %	0	0	6	0	0	6	0	1	2	0	0	0
Mvmt Flow	0	0	244	0	0	81	0	652	847	0	976	876

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	926	-	-	750	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	263	0	0	345	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	263	-	-	345	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	79.8	18.6	0	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	263	345	-	-
HCM Lane V/C Ratio	-	-	0.928	0.234	-	-
HCM Control Delay (s)	-	-	79.8	18.6	-	-
HCM Lane LOS	-	-	F	C	-	-
HCM 95th %tile Q(veh)	-	-	8.5	0.9	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱			↱		↑↑↳			↑↑↳	
Traffic Vol, veh/h	0	0	367	0	0	189	0	897	407	0	668	287
Future Vol, veh/h	0	0	367	0	0	189	0	897	407	0	668	287
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	82	82	82	95	95	95	92	92	92
Heavy Vehicles, %	0	0	6	0	0	6	0	1	1	0	1	0
Mvmt Flow	0	0	395	0	0	230	0	944	428	0	726	312

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	519	-	-	686	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	-	-	7.02	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	-	-	3.36	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	491	0	0	381	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	491	-	-	381	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36	27.9	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	491	381	-	-
HCM Lane V/C Ratio	-	-	0.804	0.605	-	-
HCM Control Delay (s)	-	-	36	27.9	-	-
HCM Lane LOS	-	-	E	D	-	-
HCM 95th %tile Q(veh)	-	-	7.6	3.8	-	-

Hopkins Street at Site North Driveway

Intersection	
Int Delay, s/veh	0.1

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰	↱		⋔	
Traffic Vol, veh/h	1	146	146	0	0	2
Future Vol, veh/h	1	146	146	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	159	159	0	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	159	0	-	0	320	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	161	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1420	-	-	-	673	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	868	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1420	-	-	-	672	886
Mov Cap-2 Maneuver	-	-	-	-	672	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	868	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1420	-	886
HCM Lane V/C Ratio	-	-	0.001	-	0.002
HCM Control Delay (s)	-	-	7.5	0	9.1
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰	↱		↰↱	
Traffic Vol, veh/h	2	127	152	0	0	2
Future Vol, veh/h	2	127	152	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	138	165	0	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	165	0	-	0	307	165
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	142	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1413	-	-	-	685	879
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	885	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1413	-	-	-	684	879
Mov Cap-2 Maneuver	-	-	-	-	684	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	885	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1	
Capacity (veh/h)	-	-	1413	-	879
HCM Lane V/C Ratio	-	-	0.002	-	0.002
HCM Control Delay (s)	-	-	7.6	0	9.1
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0

Hopkins Street at Site South Driveway Exit Only

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑		⋔	
Traffic Vol, veh/h	0	110	600	0	5	8
Future Vol, veh/h	0	110	600	0	5	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	120	652	0	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	772	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	368	468
Stage 1	0	-	-	0	518	-
Stage 2	0	-	-	0	905	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	368	468
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	905	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 424
HCM Lane V/C Ratio	-	- 0.033
HCM Control Delay (s)	-	- 13.8
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.1

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations				↑	↑	
Traffic Vol, veh/h	3	5	0	219	215	0
Future Vol, veh/h	3	5	0	219	215	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	0	238	234	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	472	234	-	0	-	0
Stage 1	234	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	551	805	0	-	-	0
Stage 1	805	-	0	-	-	0
Stage 2	802	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	551	805	-	-	-	-
Mov Cap-2 Maneuver	551	-	-	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	SE	NW
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 686	-
HCM Lane V/C Ratio	- 0.013	-
HCM Control Delay (s)	- 10.3	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0	-