Transportation Impact Assessment

Proposed Mixed-Use Development
655 Washington Street (Route 53)
Weymouth, Massachusetts

Prepared for:

Trinity Green Development, LLC

Milton, Massachusetts

February 2021

Prepared by:

Vanasse & Associates inc
Transportation Engineers & Planners

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

Vanasse & Associates inc
Transportation Engineers & Planners

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

Dear Reviewer:

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

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk

Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner

CONTENTS

EXECUTIVE SUMMARY 1

Recommendations 2

INTRODUCTION 6

Project Description 6
Study Methodology 7

EXISTING CONDITIONS 8

Traffic Volumes 9
Pedestrian and Bicycle Facilities 11
Public Transportation 11
Spot Speed Measurements 11
Motor Vehicle Crash Data 12

FUTURE CONDITIONS 14

Future Traffic Growth 14
Project-Generated Traffic 16
Trip Distribution and Assignment 20
Future Traffic Volumes - Build Condition 20

TRAFFIC OPERATIONS ANALYSIS 22

Methodology 22
Analysis Results 25

SIGHT DISTANCE EVALUATION 31

CONCLUSIONS AND RECOMMENDATIONS 33

Conclusions 33
Recommendations 34

FIGURES

No.	Title
1	Site Location Map
2	Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities
3	2021 Existing Weekday Peak Hour Traffic Volumes
4	2021 Existing Saturday Peak Hour Traffic Volumes
5	2028 No Build Weekday Peak Hour Traffic Volumes
6	2028 No Build Saturday Peak Hour Traffic Volumes
7	Trip Distribution Map - Residential Component
8	Trip Distribution Map - Retail Component
9	Project Generated Weekday Peak Hour Traffic Volumes
10	Project Generated Saturday Peak Hour Traffic Volumes
11	2028 Build Weekday Peak Hour Traffic Volumes
12	2028 Build Saturday Peak Hour Traffic Volumes

TABLES

No.	Title
1	Study Area Intersection Description
2	2021 Existing Traffic Volumes
3	Vehicle Travel Speed Measurements
4	Motor Vehicle Crash Data Summary
5	Trip-Generation Summary
6	Traffic Volume Comparison
7	Peak-Hour Traffic-Volume Increases
8	Level-of-Service Criteria for Signalized Intersections
9	Level-of-Service Criteria for Unsignalized Intersections
10	Signalized Intersection Level-of-Service and Vehicle Queue Summary
11	Unsignalized Intersection Level-of-Service and Vehicle Queue Summary
12	Sight Distance Measurements

EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a mixed-use development to be located 655 Washington Street (Route 53) in Weymouth, Massachusetts (hereafter referred to as the Project). This assessment was prepared in consultation with the Town of Weymouth and the Massachusetts Department of Transportation (MassDOT), and was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. The Project will require the issuance of a State Highway Access Permit from MassDOT for access to Route 53 as the section of the roadway along which the Project site is located is a State Highway under the jurisdiction of MassDOT.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1] and after applying adjustments to account for internal trips and pass-by trips, and without consideration of the use of public transportation services, the Project is expected to generate approximately 944 new vehicle trips on an average weekday (two-way, 24-hour volume), with 58 new vehicle trips expected during the weekday morning peak hour, 73 new vehicle trips expected during the weekday evening peak hour and 78 new vehicle trips expected during the Saturday midday peak-hour;

2. In comparison to the motel that currently occupies the Project site, the Project is expected to generate approximately 832 additional vehicle trips on an average weekday (two-way, 24-hour volume), with 40 additional vehicle trips expected during the weekday morning peak-hour, 59 additional vehicle trips expected during the weekday evening peak-hour, and 60 additional vehicle trips expected during the Saturday midday peak-hour

3. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with overall operating conditions at the signalized study area intersections shown to be maintained at a level-of-service (LOS) D or better with the addition of Project-related traffic, where an LOS of "D" or better is defined as "acceptable" traffic operations;

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

4. Independent of the Project, it was noted that one or more movements at the Route 53/Middle Street intersection are predicted to operate at or over their design capacity (i.e. LOS "E" or "F") during the peak hours under 2028 No-Build conditions;

5. All movements at the Project site driveway intersection with Route 53 were shown to operate at LOS C or better during the peak hours with vehicle queues of up to one (1) vehicle predicted exiting the Project site (no material vehicle queuing is predicted to occur along Route 53 at the Project site driveway);

6. Independent of the Project, the Route 53/Route 18 and Middle Street/Winter Street intersections were found to have a motor vehicle crash rate that is above the MassDOT average crash rates for similar intersections. In addition, and also independent of the Project, the Route 53/Route 18 and Route 53/Middle Street intersections were included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash locations for 2015-2017. A Road Safety Audit (RSA) was completed in May 2018 for these intersections that included specific recommendations to improve safety.[2] The suggested improvements do not appear to have been advanced at this time; and

7. Lines of sight to and from the Project site driveway intersection with Route 53 were found to exceed the recommended minimum distance for safe and efficient operation based on the appropriate approach speed.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of a new driveway that will intersect the south side of Route 53 and parallel to the easterly property line of the Project site. The existing driveways that currently serve the Project site (two (2)) will be closed in conjunction with the Project, thereby reducing the number of conflict points, particularly for pedestrians and bicyclists. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the site plans:

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

[2] *Road Safety Audit;* Route 53/Route 18, Route 18/Winter Street, Route 53/Middle Street, and Pleasant Street/ Libbey Industrial Parkway, Town of Weymouth; Howard Stein Hudson; May 18, 2018.

- Where perpendicular parking is proposed, the drive aisle behind the parking should be a minimum of 23 feet in order to facilitate parking maneuvers.

- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[3]

- A sidewalk should be provided to link the proposed building to the sidewalk along Washington Street (Route 53).

- Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings internal to the Project site and for crossing the Project site driveway.

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

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

- Consideration should be given to providing electric vehicle (EV) charging stations for residents of the Project.

- Secure bicycle parking should be provided within the Project site.

Off Site

Route 53/Route 18

Independent of the Project, the intersection of Route 53 at Route 18 was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for a signalized intersection and the intersection is included on MassDOT's HSIP listing as a high crash cluster location for 2015-2017. As identified previously, an RSA was conducted in May 2018 that included this intersection and suggested a number of safety-related improvements. In an effort to improve safety at the Route 53/Route 18 intersection, the Project proponent will design and construct the short-term, low cost improvements that were recommended in the RSA, with exception of the suggested access modifications to the CVS/Pharmacy© driveway, to the extent that the aggregate cost to implement the improvements does not exceed $30,000. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Route 53/Middle Street

Independent of the Project, several movements at the intersection of Route 53 at Middle Street are predicated to operate at or over capacity (i.e., LOS "E" or "F") during the peak hours under 2028 No-Build conditions. In addition, this intersection was also included in the May 2018 RSA. In an effort to improve traffic operations and safety at the Route 53/Route 18 intersection, the

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

Project proponent will design and construct the short-term, low cost improvements that were recommended in the RSA, to the extent that the aggregate cost to implement the improvements does not exceed $25,000, and will design and implement an optimal traffic signal timing and phasing plan. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Middle Street/Winter Street

Independent of the Project, the intersection of Middle Street at Winter Street was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for a signalized intersection. In an effort to improve traffic operations and safety at the Middle Street/Winter Street intersection, the Project proponent will facilitate the completion of a RSA and will evaluate and update the yellow and all-red clearance intervals and the pedestrian phase timing to the extent necessary to ensure compliance with current safety standards. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Transportation Demand Management

Public transportation services are provided within the study area by the Massachusetts Bay Transportation Transit Authority (MBTA). MBTA bus Route 226, *Columbian Square - Braintree Station*, provides service along Route 53 with continued service to Braintree Station where connections can be made to the Red Line subway system, the Commuter Rail (Kingston/Plymouth Line and Middleborough/Lakeville Line with service to South Station in Boston) and other MBTA bus routes. The Route 226 Bus includes a stop along both sides of Route 53 at West Lake Drive that serve the Project site. In addition to fixed-route bus services, the MBTA operates The Ride paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive or mental disability in compliance with the ADA.

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

- A transportation coordinator will be designated for the Project to coordinate the elements of the TDM program;
- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents and employees of the Project;
- A "welcome packet" will be provided to residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options available;
- Work-at-home workspaces will be provided to support telecommuting by residents of the Project;
- Commercial tenants will be encouraged to offer specific amenities to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;

- Pedestrian accommodations will be incorporated into the Project site and consist of connections to existing sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings that are to be constructed or modified as a part of the Project;

- A mail drop will be provided within the building; and

- Secure bicycle parking will be provided within the Project site.

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

INTRODUCTION

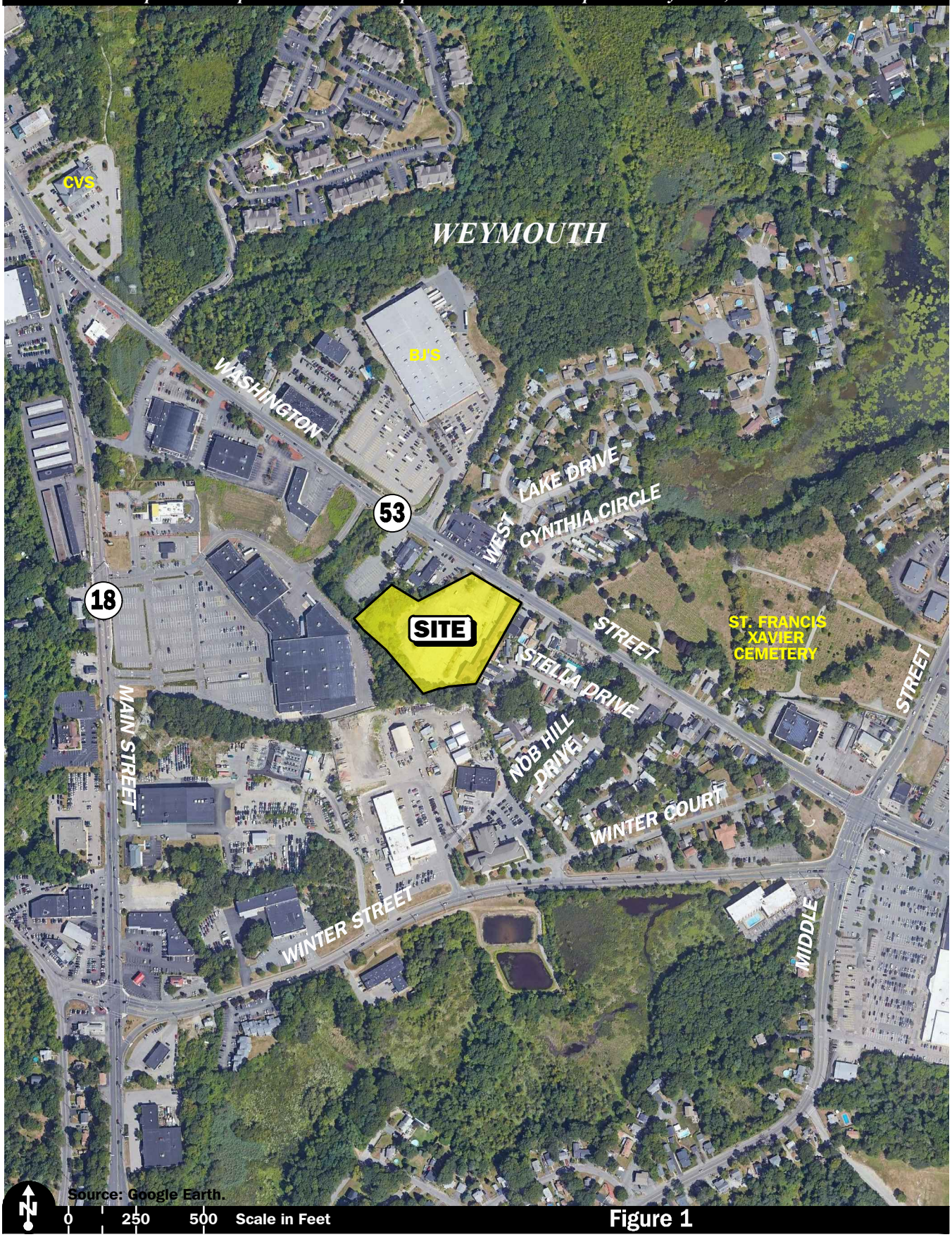
Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a mixed-use development to be located 655 Washington Street (Route 53) in Weymouth, Massachusetts (hereafter referred to as the Project). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project, along Route 53 and at the following specific intersections: Route 53 at Route 18; Route 53 at Middle Street; Middle Street at Winter Street; and Route 53 at the Project site driveway.

PROJECT DESCRIPTION

The Project will entail the construction of a mixed-use development to be located 655 Washington Street (Route 53) in Weymouth, Massachusetts. As proposed, the Project will entail the construction of a 160-unit multifamily residential community and 4,000± square feet (sf) of ground floor retail space. The Project site encompasses approximately 3.7± acres of land that is bounded by Route 53 and commercial properties to the north; the Town of Weymouth municipal facilities and residential and commercial properties to the south; residential properties to the east; and commercial properties to the west. The Project site currently contains a 47-room motel and associated appurtenances collectively known as the Boston Motel that will be removed to accommodate the Project. Figure 1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site will be provided by way of a new driveway that will intersect the south side of Route 53 and parallel to the easterly property line of the Project site. The existing driveways that currently serve the Project site (two (2)) will be closed in conjunction with the Project, thereby reducing the number of conflict points, particularly for pedestrians and bicyclists. The Project will require the issuance of a State Highway Access Permit from the Massachusetts Department of Transportation (MassDOT) for access to Route 53 as the section of roadway along which the Project site is located is a State Highway under the jurisdiction of MassDOT

Off-street parking will be provided for 260 vehicles, consisting of 94 exterior parking spaces and 166 parking spaces to be located within a parking garage to be situated underneath the building, which is within the range of parking spaces required per Sections 120-25.20(A), *Required parking*,



Source: Google Earth.

Figure 1

Site Location Map

Vanasse & Associates inc

R:\8826\8826SLM.dwg, 2/5/2021 10:20:45 AM

Copyright © 2021 by VAi. All Rights Reserved.

and 120-74(L), *Minimum required spaces*, of Article XVII, *Off-Street Parking*, of the Zoning Ordinance of the Town of Weymouth.[4]

STUDY METHODOLOGY

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

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

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

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

[4]The Zoning Bylaw requires a minimum of: 1.25 parking spaces per studio and 1 bedroom units (117 units); 1.50 parking spaces per all other bedroom units (43 units); and 1.00 parking space for each 200 sf of gross floor area of retail space on the first floor; which equates to a minimum of 231 parking spaces for the Project. The Zoning Bylaw also requires a maximum of: 1.50 parking spaces per studio and 1 bedroom units; 2.00 parking spaces per all other bedroom units; and 1.00 parking space for each 200 sf of gross floor area of retail space on the first floor; which equates to a maximum of 282 parking spaces for the Project.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in January 2021. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area that was assessed for the Project consisted of Route 53 and the following specific intersections: Route 53 at Route 18; Route 53 at Middle Street; Middle Street at Winter Street; and Route 53 at the Project site driveway.

The following describes the study area roadway and intersections.

Roadway

Route 53

- Two-lane urban minor arterial roadway under MassDOT jurisdiction
- Traverses the study area in a general northwest-southeast alignment
- Provides two 12 foot wide travel lanes that are separated by a double-yellow centerline with 6 to 7-foot wide marked shoulders and additional travel lanes at major intersections
- The posted speed limit is 35 miles per hour (mph)
- Sidewalks are provided along both sides of the roadway
- Illumination is provided by way of street lights mounted on wood poles
- Land use within the study area consists of the Project site, the Saint Francis Xavier cemetery, and residential and commercial properties

Intersections

Table 1 and Figure 2 summarize existing lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in January 2021.

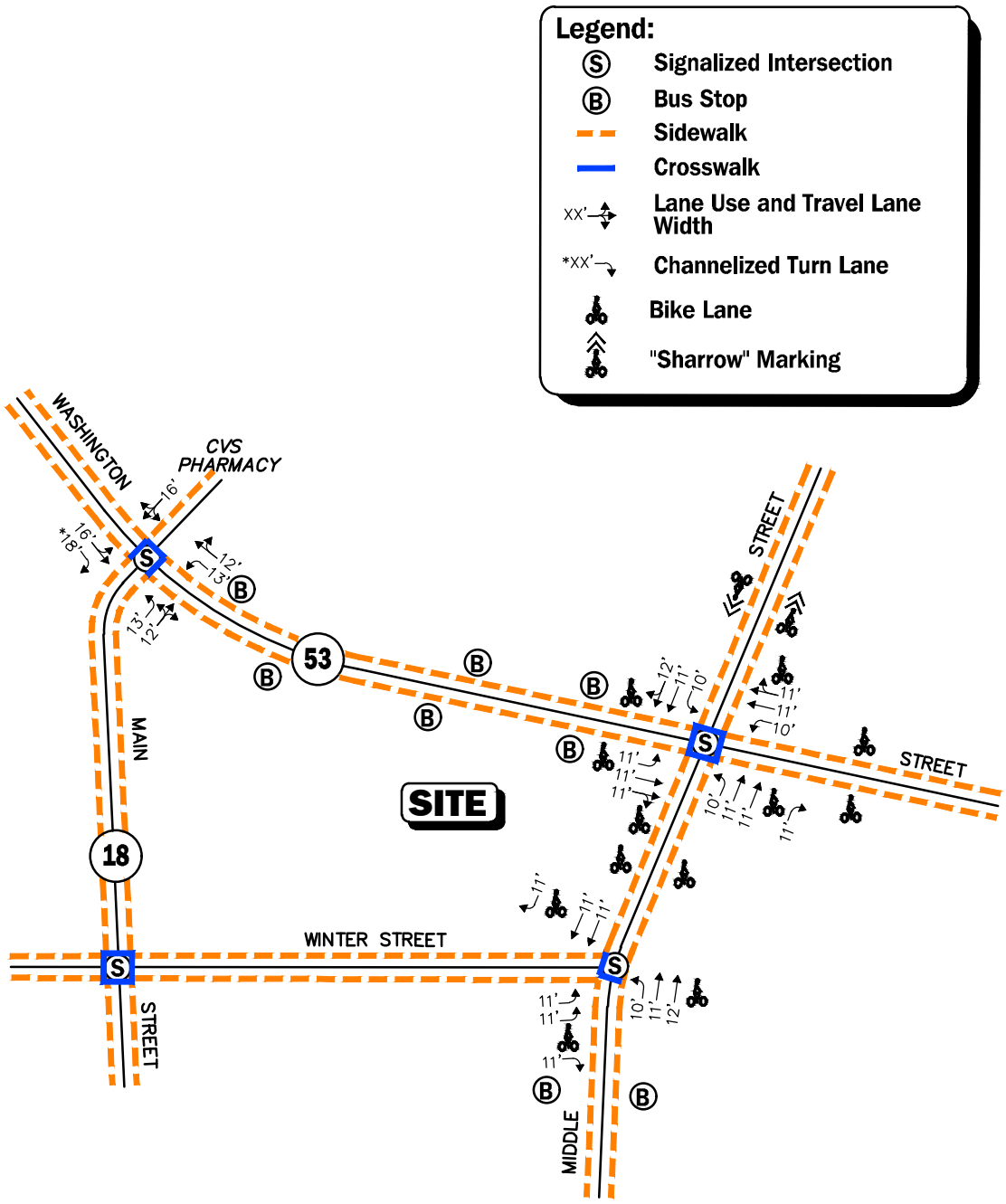
Table 1
STUDY AREA INTERSECTION DESCRIPTION

Intersection	Traffic Control Type[a]	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Rte. 53/ Rte. 18	TS	1 left-turn/through lane with a right-turn slip-ramp on the Rte. 53 eastbound; 1 left-turn lane and 1 through/right-turn lane on Rte. 53 westbound; 1 left-turn lane and 1 general purpose lane on Rte. 18; 1 general purpose lane on the CVS dwy.	Yes; 2 to 4 feet on Rte. 53 and 2 feet on Rte. 18	Yes; both sides of Rte. 53 and Rte. 18; west side of the CVS dwy.; crosswalks provided across Rte. 53 and the CVS dwy.; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes; shared traveled-way[b]
Rte. 53/ Middle St.	TS	1 left-turn lane and 2 general-purpose travel lanes on Rte. 53; 1 left-turn lane, 2 through lanes, and 1 right-turn lane on Middle St. northbound; 1 left turn lane, 1 through lane, and 1 through/ right-turn lane on Middle St. southbound	Yes; 4 feet on Rte. 53 and 1 foot on Middle St.	Yes; both sides of the intersecting roadways; crosswalks provided for crossing all legs; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes; Bike lanes on Rte. 53 and on Middle St. south of the intersection with "sharrow" pvm't markings to the north
Middle St./ Winter St.	TS	1 left-turn lane and 2 through lanes on Middle St. northbound; 2 through lanes and 1 right-turn lane on Middle St. southbound; 2 left-turn lanes and 1 right-turn lane on Winter St.	Yes; 1 to 4 feet on Middle St. and Winter St.	Yes; both sides of the intersecting roadways; crosswalks provided across the Middle St. south leg and Winter St.; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes; Bike lanes on Middle St. and Winter St.

[a]TS = Traffic Signal Control.
[b]Combined shoulder and travel lane width equal to or exceed 14 feet.

TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in January 2021. The ATR counts were conducted on Route 53 in the vicinity of the Project site on January 14th through 16th, 2020 (Thursday through Saturday, inclusive) in order to record weekday traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period manual TMCs performed at the study intersections on January 14, 2020 (Thursday), and during the Saturday midday peak period (11:00 AM to 2:00 PM) on January 16, 2020 (Saturday). These time periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.



Not To Scale

Figure 2

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

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:21:25 PM, DWG To PDF.pc3

Traffic-Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic volume data from MassDOT Continuous Count Station No. 6255 located on Route 3, north of Route 18, in Weymouth were reviewed.[5] Based on a review of this data, it was determined that traffic volumes for the month of January are approximately 9.2 percent below average-month conditions. As such, the January traffic volumes were adjusted upward by 9.2 percent in order to be representative of average-month conditions.

In order to account for the impact on traffic volumes and trip patterns resulting from the "safer-at-home" order and the phased "Reopening Massachusetts" plan that was issued by the Governor on May 18, 2020, in response to the COVID-19 pandemic, traffic-volume data collected at MassDOT Continuous Count Station No. 6255 in January 2021 was compared to data collected at the same count station in January 2018. The 2018 traffic volumes were expanded to 2021 by applying a background traffic growth rate of 1.0 percent per year (discussion follows) in order to allow for a comparison of the data. Based on this pre and post-COVID-19 traffic count data comparison, the 2021 traffic-volume data that was collected as a part of this assessment was adjusted upward by an additional 18.2 percent in order to account for the reduced traffic volumes resulting from the phased "Reopening Massachusetts" plan.

The 2021 Existing traffic volumes are summarized in Table 2, with the weekday morning and evening peak-hour traffic volumes graphically depicted on Figure 3 and the Saturday midday peak-hour traffic volumes graphically depicted on Figure 4. Note that the peak-hour traffic volumes that are presented in Table 2 were obtained from the aforementioned figures.

Table 2
2021 EXISTING TRAFFIC VOLUMES

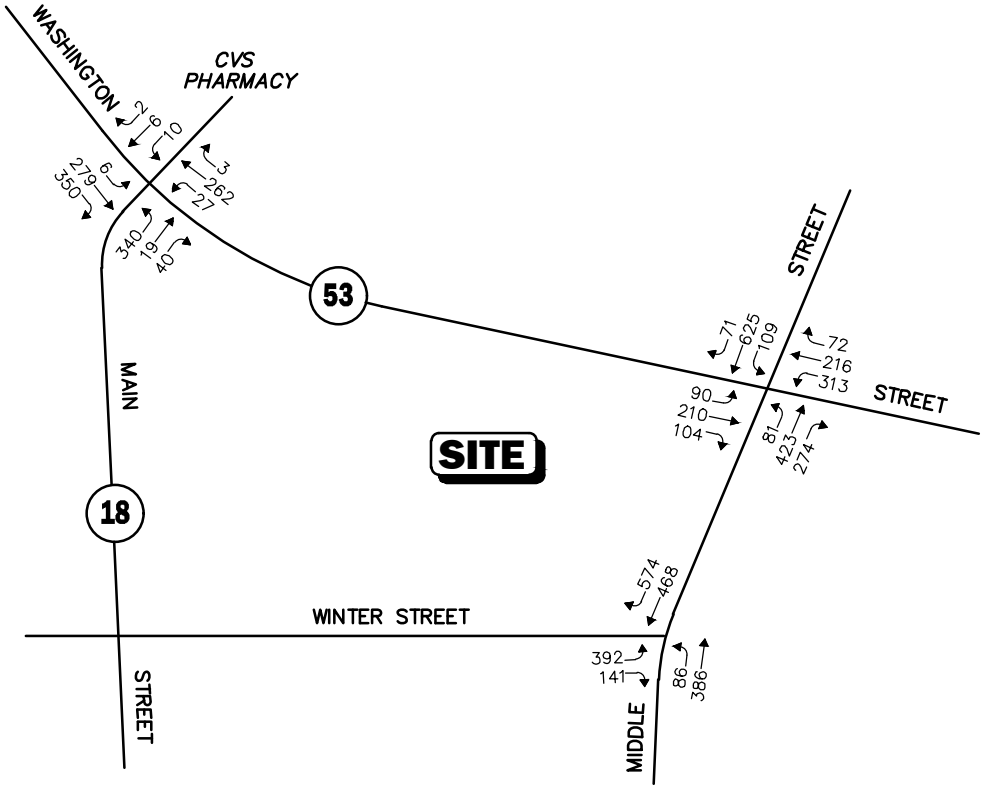
Location/Peak Hour	AWT[a]	Saturday[b]	VPH[c]	K Factor[d]	Directional Distribution[e]
Route 53, west of the Project Site Driveway	12,540	11,830	--	--	--
Weekday Morning (8:00 – 9:00 AM)	--	--	772	6.2	52.3% EB
Weekday Evening (4:00 – 5:00 PM)	--	--	1,312	10.5	56.3% EB
Saturday Midday (1:00 – 2:00 PM)	--	--	1,434	12.1	51.0% EB

[a]Average weekday traffic in vehicles per day.
[b]Saturday traffic in vehicles per day.
[c]Vehicles per hour.
[d]Percent of daily traffic occurring during the peak hour.
[e]Percent traveling in peak direction.
EB=eastbound.

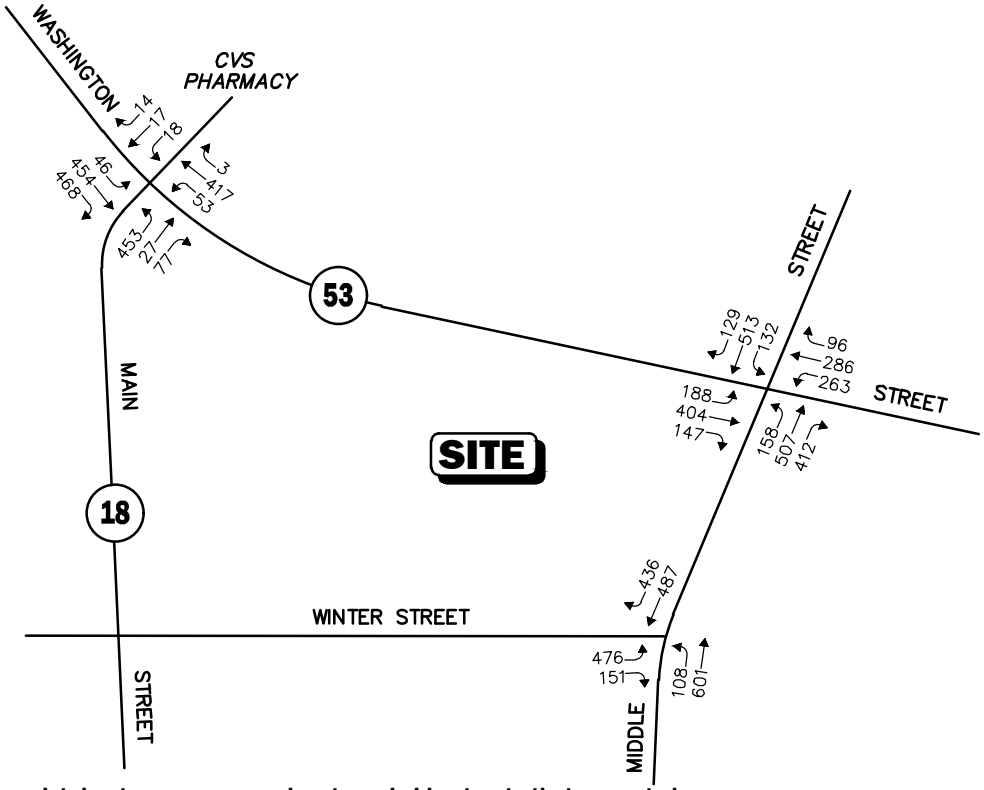
As can be seen in Table 2, Route 53 in the vicinity of the Project site was found to accommodate approximately 12,540 vehicles on an average weekday and 11,830 vehicles on a Saturday (two-way, 24-hour volumes), with approximately 772 vehicles per hour (vph) during the weekday morning peak-hour, 1,312 vph during the weekday evening peak-hour and 1,434 vph during the Saturday midday peak-hour.

[5]MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2021.

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure 3

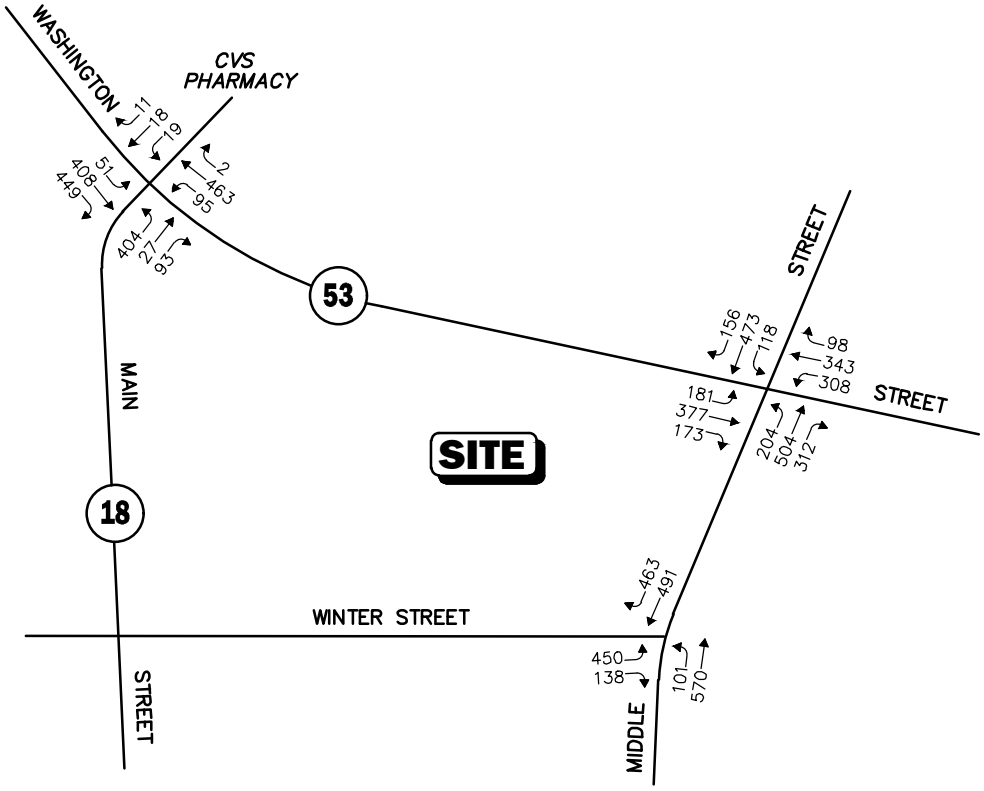
2021 Existing Weekday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:23:20 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure 4

2021 Existing Saturday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:23:53 PM, DWG To PDF.pc3

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in January 2021. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study area intersections. As detailed on Figure 2, sidewalks are generally provided along both sides of the study area roadways, with crosswalks provided for crossing one or more legs of the study area intersections. Pedestrian traffic signal equipment (i.e., push buttons and signal indications) and phasing (exclusive) are provided at the signalized study area intersections.

Bicycle lanes are provided along Route 53 east and west of Middle Street; along Middle Street south of Route 53; and along Winter Street; with "sharrow" pavement markings and accompanying signs provided along Middle Street north of Route 53. In addition, both Route 53 and Route 18 provide sufficient width to accommodate bicycle travel in a shared traveled-way configuration (i.e., bicyclists and motor vehicles sharing the traveled-way) where marked bicycle lanes or other accommodations are not currently provided.[6] Bicycle detection is provided as a part of the traffic signal systems at the signalized study area intersections.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Massachusetts Bay Transportation Transit Authority (MBTA). MBTA bus Route 226, *Columbian Square - Braintree Station*, provides service along Route 53 with continued service to Braintree Station where connections can be made to the Red Line subway system, the Commuter Rail (Kingston/Plymouth Line and Middleborough/Lakeville Line with service to South Station in Boston) and other MBTA bus routes. The Route 226 Bus includes a stop along both sides of Route 53 at West Lake Drive that serve the Project site. In addition to fixed-route bus services, the MBTA operates The Ride paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive or mental disability in compliance with the Americans with Disabilities Act (ADA).

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

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Route 53 in the vicinity of the Project site in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

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

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 53	
	Eastbound	Westbound
Mean Travel Speed (mph)	28	28
85th Percentile Speed (mph)	34	35
Posted Speed Limit (mph)	35	35

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Route 53 in the vicinity of the Project site was found to be 28 mph in both the north and southbound directions. 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 34 mph eastbound and 35 mph westbound, which is generally consistent with the posted speed limit in the vicinity of the Project site (35 mph). The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

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 (2014 through 2018, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and presented in Table 4.

As can be seen in Table 4, the study area intersections were found to have experienced an average of approximately 10 or fewer reported motor vehicle crashes per year over the five-year review period, the majority of which occurred on a weekday; during daylight; under clear weather conditions; and were classified as angle-type crashes that resulted in property damage only. The Route 53/Route 18 and Middle Street/Winter Street intersections were found to have motor vehicle crash rates above the MassDOT average crash rate for a signalized intersection for the MassDOT Highway Division District in which the intersection is located (District 6).

A review of the MassDOT statewide High Crash Location List indicated that the intersections of Route 53 at Route 18 and Route 53 at Middle Street are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash cluster locations for 2015-2017. A Road Safety Audit (RSA) was completed in May 2018 that included both intersections and provided specific recommendations to improve safety.[7] The suggested improvements do not appear to have been advanced at this time.

No fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period. The detailed MassDOT Crash Rate Worksheets are provided in the Appendix.

[7]Ibid 2.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY[a]

	Rte. 53/ Rte. 18	Rte. 53/ Middle St.	Middle St./ Winter St.
Traffic Control Type:[b]	TS	TS	TS
Year:			
2014	11	6	8
2015	6	5	7
2016	16	10	9
2017	10	8	4
2018	5	12	5
Total	48	41	33
Average	9.60	8.20	6.60
Rate[c]	1.16	0.63	0.72
MassDOT Crash Rate:[d]	0.78/0.71	0.78/0.71	0.78/0.71
Significant?[e]	Yes	No	Yes
Type:			
Angle	17	18	16
Rear-End	9	10	7
Head-On	2	1	0
Sideswipe	12	11	6
Fixed Object	8	1	1
Pedestrian/Bicycle	0	0	3
Unknown/Other	0	0	0
Total	48	41	33
Conditions:			
Clear	32	33	24
Cloudy	8	4	3
Rain	8	4	6
Snow/Ice	0	0	0
Total	48	41	33
Lighting:			
Daylight	34	25	22
Dawn/Dusk	1	0	2
Dark (Road Lit)	13	16	9
Dark (Road Unlit)	0	0	0
Total	48	41	33
Day of Week:			
Monday through Friday	38	28	21
Saturday	7	8	6
Sunday	3	5	6
Total	48	41	33
Severity:			
Property Damage Only	39	34	26
Personal Injury	9	7	6
Fatality	0	0	0
Unknown	0	0	1
Total	48	41	33

[a]Source: MassDOT Safety Management/Traffic Operations Unit records, 2014 through 2018.
[b]Traffic Control Type: TS = traffic signal.
[c]Crash rate per million vehicles entering the intersection.
[d]Statewide/District crash rate.
[e]The intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 6).

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2028, which reflects a seven-year planning horizon consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. Independent of the Project, traffic volumes on the roadway network in the year 2028 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2028 No-Build traffic volumes reflect 2028 Build traffic volume conditions with the Project.

FUTURE TRAFFIC GROWTH

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

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

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

Specific Development by Others

The Department of Planning and Community Development for the Town of Weymouth and the Hingham Planning Board were consulted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on these consultations, the following projects were identified for inclusion in this assessment:

- ***Union Point (Southfield), Abington, Rockland and Weymouth, Massachusetts.*** This project consists of the phased redevelopment of the former South Weymouth Naval Air Station in Abington, Rockland and Weymouth, Massachusetts, to accommodate a mixed-

use development to be known as Union Point (formerly Southfield). When complete, Union Point is expected to encompass 8 million ± sf of commercial space and 3,855 residential units. Phase 1 of the project is expected to be completed within the seven-year planning horizon of this assessment (2028) and will include 2,855 residential units and 2.06 million ± sf of commercial space.

- ***Hanover Apartments, Washington Street, Weymouth, Massachusetts.*** This proposed project will entail the construction of a 270-unit multifamily residential community to be located off Washington Street and just north of the Hingham town line.

- ***Pleasant Street Residences, 881 & 897 Pleasant Street, Weymouth, Massachusetts.*** This proposed project will entail the construction of a 34-unit multifamily residential community to be located at 881 & 897 Pleasant Street.

Traffic volumes associated with the aforementioned development projects by others were either estimated using trip-generation statistics published by the ITE[8] for the appropriate land use(s) or were obtained from the traffic study conducted for the specific development,[9] and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

General Background Traffic Growth

Traffic-volume data compiled by MassDOT for Continuous Count Station No. 5255 in Weymouth was reviewed in order to determine general traffic growth trends in the area. Based on a review of this data, a 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

The Town of Weymouth and MassDOT were contacted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2028 within the study area. Based on these discussions, the following roadway improvement project was identified:

- **Quincy, Braintree and Weymouth - Resurface and Related Work on Route 53 (MassDOT Project No. 608498)**. This project is being undertaken by MassDOT and is currently in the preliminary design phase.

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

No-Build Traffic Volumes

The 2028 No-Build condition peak-hour traffic-volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2021 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the

[8]Ibid 1.

[9]*Final Environmental Impact Report*, Naval Air Station Development Project, Weymouth, Massachusetts (EEA No. 11085R); Epsilon Associates, Inc., et al; May 31, 2007.

identified specific development projects by others. The resulting 2028 No-Build weekday morning and evening peak-hour traffic volumes are shown on Figure 5 with the 2028 No-Build Saturday midday peak-hour traffic volumes shown on Figure 6.

PROJECT-GENERATED TRAFFIC

Design year (2028 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of a 160-unit multifamily residential community and 4,000± sf of retail space. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE[10] for similar land uses as those proposed were used. ITE Land Use Code 221, *Multifamily Housing (Mid-Rise)*, and 820, *Shopping Center*, were used to establish the base trip-generation calculations for the Project.

Internal Trips

A portion of the trips expected to be generated by the Project will consist of internal or dual-purpose trips. An internal trip consists of a resident, customer and/or employee that patronizes more than one of the uses planned within a development and is common in mixed-use projects with appropriate accommodations to facilitate trips between uses. By way of example, a resident of the Project may patronize the retail space that are to be located within the Project site. In order to account for this interaction, the multi-use trip-generation calculation methodology promulgated by the ITE[11] was applied to the base ITE trip-generation calculations.

Pass-By Trips

Not all of the trips expected to be generated by the commercial component of the Project (retail space) will be new trips on the roadway network. A significant portion of these trips will consist of pass-by trips or vehicles already traveling along adjacent roadways for other purposes that will patronize the Project in conjunction with their trip and then continue to their original destination. These trips are not new trips on the roadway network as a result of the Project. Statistics published by the ITE[12] indicate that, on average, up to 34 percent of the trips generated by a retail use may consist of pass-by trips. In accordance with MassDOT guidelines which limits pass-by trips to the lesser of: i) 15 percent of the adjacent roadway traffic volume; or ii) the ITE pass-by trip rate for the specific use; the ITE published pass-by trips rates were applied to the base trip-generation calculations for the retail component of the Project.

Transit Use

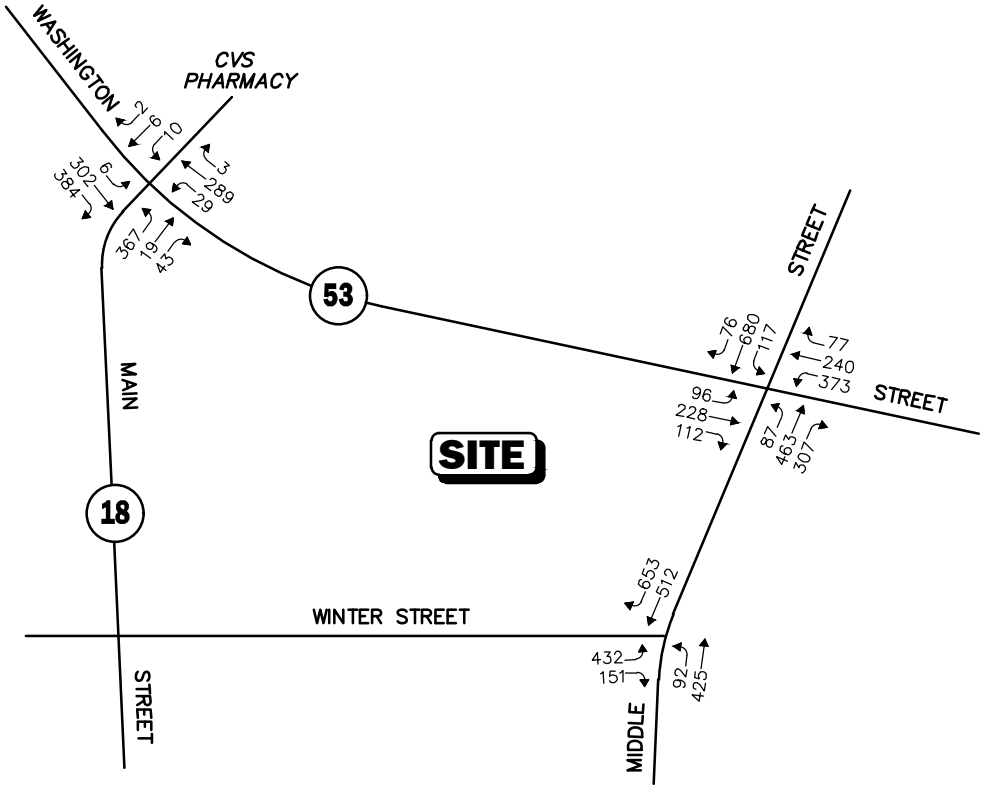
Given the availability of public transportation services to the Project site (MBTA bus services) and the interconnected network of sidewalks, it is expected that a portion of the residents, patrons and employees of the Project will use public transportation services, walk or bicycle, thereby reducing

[10] Ibid 1.

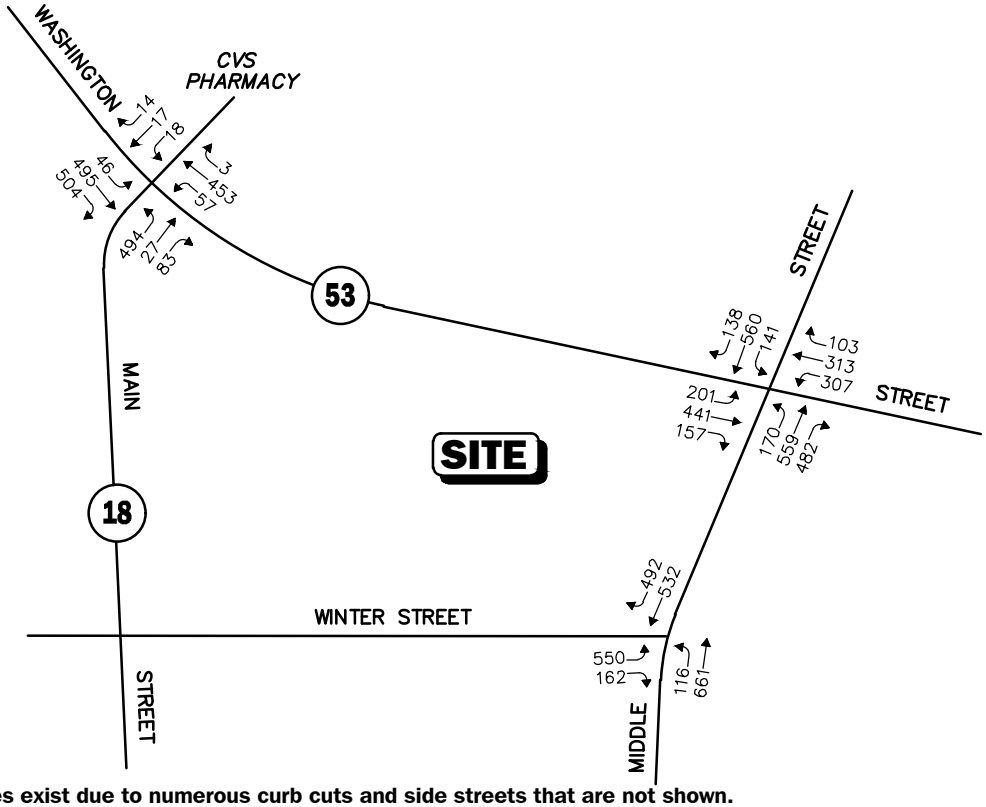
[11] *Trip Generation Handbook*, 3rd Edition, A Recommended Practice of the Institute of Transportation Engineers; Institute of Transportation Engineers; Washington, D.C.; September 2017.

[12] Ibid.

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure 5

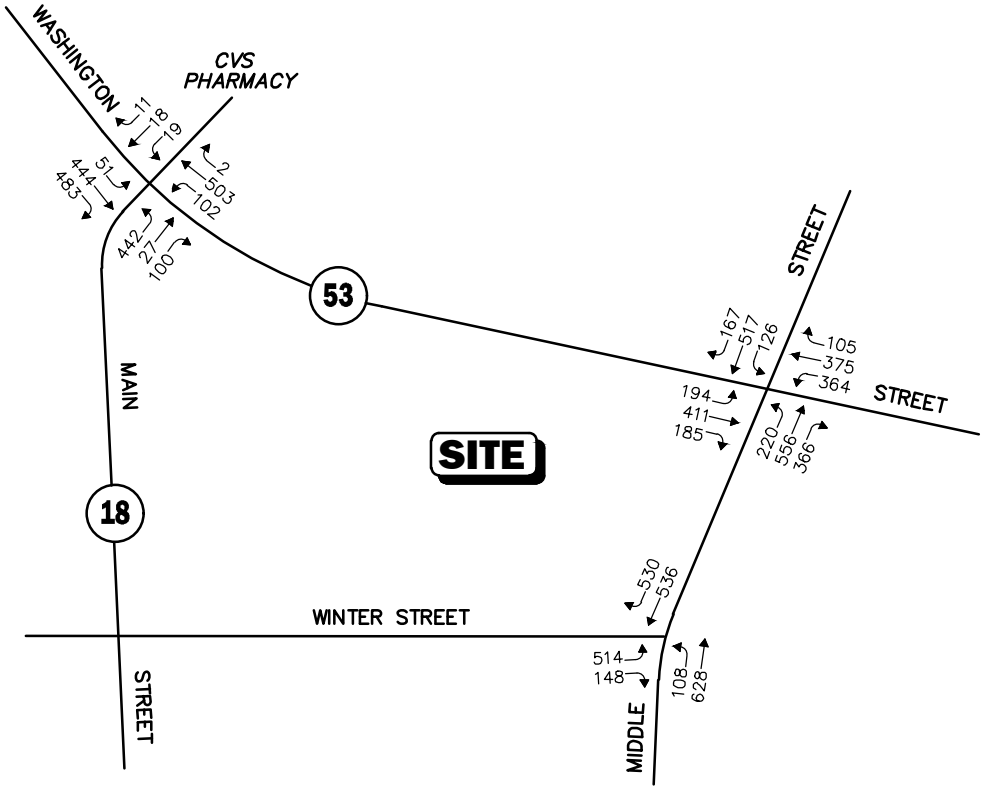
2028 No-Build Weekday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:24:24 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure 6

2028 No-Build Saturday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:24:58 PM, DWG To PDF.pc3

the volume of single-occupant vehicle (SOV) trips that may be associated with the Project. In order to determine the proportion of employees of the Project that may use transit, walk or bicycle as their primary mode of transportation, travel mode data obtained from the 2015-2019 American Community Survey (ACS) for the Census Tract that contains the Project site (Census Tract 4224) was reviewed. Based on the ACS data, the following commuting modes were identified for workers age 16 or older who reside within the Town:

- *Single-Occupant Vehicle: 73.1%*
- *Car/Vanpool/Taxi: 7.2%*
- *Public Transportation: 14.4%*
- *Walk/Bicycle/Other: 3.0%*
- *Worked at Home: 2.3%*

According to the ACS, approximately 26 percent of workers that reside in the Census Tract reported that they used an alternative mode of transportation to SOV to travel to/from work, with approximately 7 percent participating in a car or vanpool, 14 percent using public transportation (transit), 3 percent walking/bicycling or using other methods of transportation and 2 percent reporting that they work at home.

That being said, in order to provide conservative (high) traffic volumes from which to assess the potential impact of the Project on the transportation infrastructure, a reduction to the ITE base trip-generation calculations was not applied to account for transit use or the use of alternative modes of transportation to SOVs.

Table 5 summarizes the anticipated trip characteristics of the Project using the above methodology.

Table 5
TRIP GENERATION SUMMARY

Time Period/Direction	Vehicle Trips								
	Residential Component			Retail Component					
	(A) Proposed Residential Community (160 Units)[a]	(B) Internal Trips	(C = A - B) Net Trips	(D) Retail Space (4,000 sf)[b]	(E) Internal Trips	(F = D - E) Net Trips	(G) Pass-By Trips[c]	(H = F -G) Primary Trips	(I = C + H) Total Primary Vehicle Trips
Average Weekday Daily									
Entering	435	8	427	76	8	68	23	45	472
Exiting	435	8	427	76	8	68	23	45	472
Total	870	16	854	152	16	136	46	90	944
Weekday Morning Peak Hour									
Entering	14	0	14	2	0	2	0	2	16
Exiting	40	0	40	2	0	2	0	2	42
Total	54	0	54	4	0	4	0	4	58
Weekday Evening Peak Hour									
Entering	42	3	39	7	1	6	2	4	43
Exiting	28	3	25	8	1	7	2	5	30
Total	70	6	64	15	2	13	4	9	73
Saturday Midday Peak Hour									
Entering	36	3	33	9	2	7	2	5	38
Exiting	38	3	35	9	2	7	2	5	40
Total	74	6	68	18	4	14	4	10	78

[a]Based on ITE LUC 221, *Multifamily Housing (Mid-Rise)*; 160 dwelling units.

[b]Based on ITE LUC 820, *Shopping Center*; 4,000 sf. The average trip rate was used due to the small size of the demised area.

[c]A Pass-by trip rate was applied to the traffic volumes associated with the retail use as follows: weekday daily and weekday evening peak hour - 34 percent, weekday morning peak hour - 0 percent and Saturday midday peak hour – 26 percent.

Project-Generated Traffic Volume Summary

As can be seen in Table 5, using the aforementioned methodology and after applying adjustments to account for internal and pass-by trips and without consideration of the use of alternative modes of transportation, the Project is expected to generate approximately 944 new vehicle trips on an average weekday (two-way, 24-hour volume, or 472 vehicles entering and 472 exiting), with 58 new vehicle trips (16 vehicles entering and 42 exiting) expected during the weekday morning peak-hour, 73 new vehicle trips (43 vehicles entering and 30 exiting) expected during the weekday evening peak-hour, and 78 new vehicle trips (38 vehicles entering and 40 exiting) expected during the Saturday midday peak-hour.

Table 6 compares the traffic volumes associated with the Project to those of the motel that currently occupies the Project site. Note that the traffic volumes shown in Table 6 that are associated with the Project include pass-by trips and represent the total volume of traffic entering and exiting the Project site.

Table 6
TRAFFIC VOLUME COMPARISON

	Vehicle Trips		
Time Period/Direction	(A) Proposed Mixed-Use Development[a]	(B) Existing Motel (47 Rooms)[b]	(A-B) Difference
Average Weekday Daily:	990	158	+832
Weekday Morning Peak Hour:	58	18	+40
Weekday Evening Peak Hour:	77	18	+59
Saturday Midday Peak Hour	82	22	+60

[a]Includes pass-by trips.
[b]Based on ITE LUC 320, *Motel*.

Traffic Volume Comparison

As can be seen in Table 6, in comparison to the existing motel that occupies the Project site, the Project is expected to generate approximately 832 additional vehicle trips on an average weekday (two-way, 24-hour volume), with 40 additional vehicle trips expected during the weekday morning peak-hour, 59 additional vehicle trips expected during the weekday evening peak-hour and 60 additional vehicle trips expected during the Saturday midday peak-hour.

Based on the predicted increase in average weekday traffic that the Project represents over the volume of traffic generated by the existing motel, the Project will not exceed the Transportation thresholds of the Massachusetts Environmental Policy Act (MEPA) that would necessitate the filing of an Environmental Notification Form (ENF).

TRIP DISTRIBUTION AND ASSIGNMENT

Separate trip-distribution patterns were developed for the residential and retail components of the Project given the differing nature and purpose of the trips associated with these uses. For the residential component of the Project, the directional distribution was determined based on a review of Journey-to-Work data obtained from the U.S. Census for persons residing in the Town of Weymouth. For the retail component of the Project, the directional distribution was determined based on a review of existing traffic patterns within the study area.

The trip distribution patterns for the residential and retail components for the Project are graphically depicted on Figures 7 and 8, respectively. Traffic volumes expected to be generated by the Project were assigned onto the study area roadway network as shown on Figure 9 for the weekday morning, weekday evening peak hours, and on Figure 10 for the Saturday midday peak-hour.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

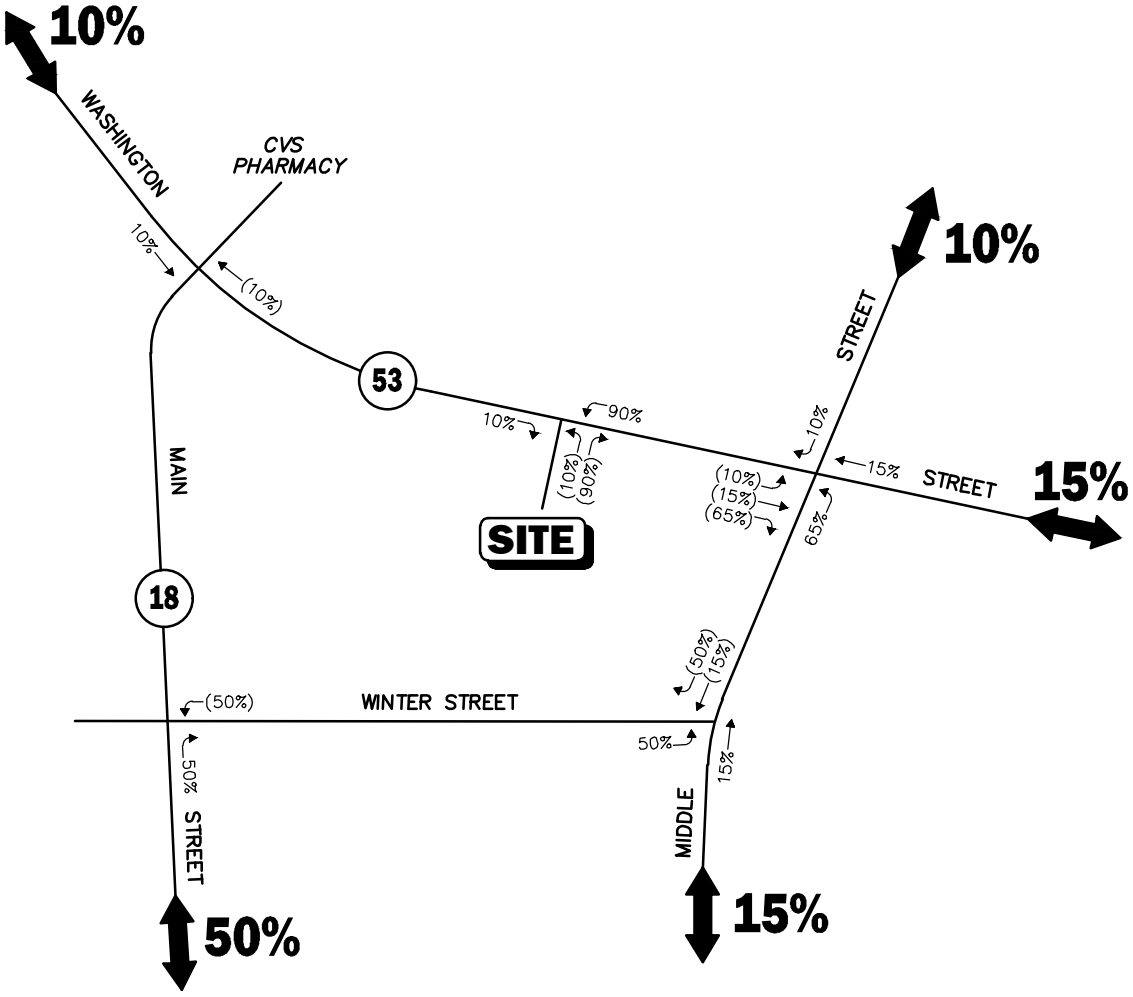
The 2028 Build condition traffic volumes consist of the 2028 No-Build traffic volumes with the additional traffic expected to be generated by the Project added to them. The 2028 Build weekday morning and evening peak-hour traffic-volumes are graphically depicted on Figure 11, with the 2028 Build Saturday midday peak-hour traffic-volumes graphically depicted on Figure 12. Note that traffic volumes associated with the existing motel were not removed from the 2028 Build condition peak-hour traffic volumes given that the number of occupied rooms was relatively small due to the COVID-19 pandemic.

A summary of peak-hour projected traffic-volume changes outside of the study area that is the subject of this assessment is shown in Table 7. These changes are a result of the construction of the Project.

Legend:

XX Entering Trips

(XX) Exiting Trips



Not To Scale

Figure 7

Trip Distribution Map
Residential Component

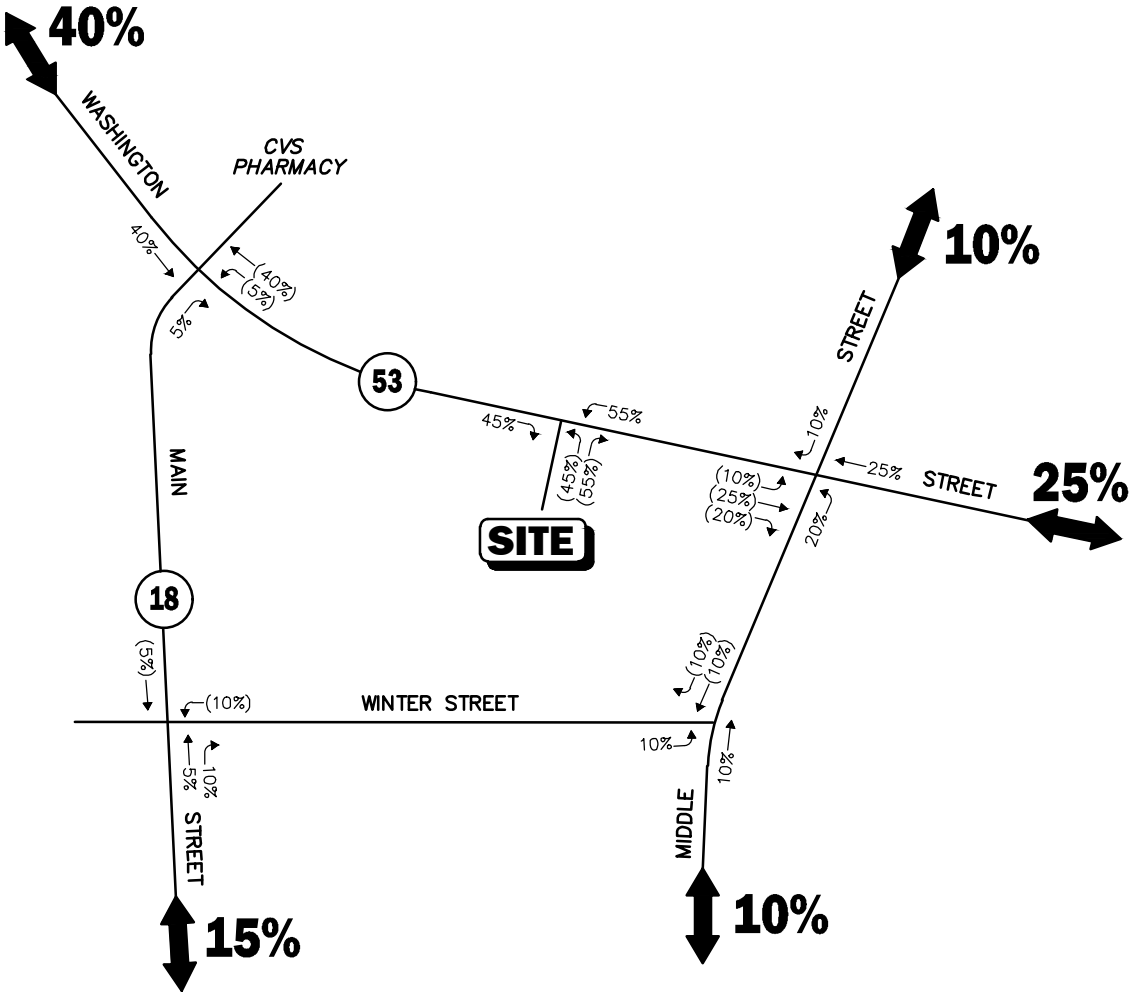
Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/8/2021 7:51:24 AM, DWG To PDF.pc3

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure 8

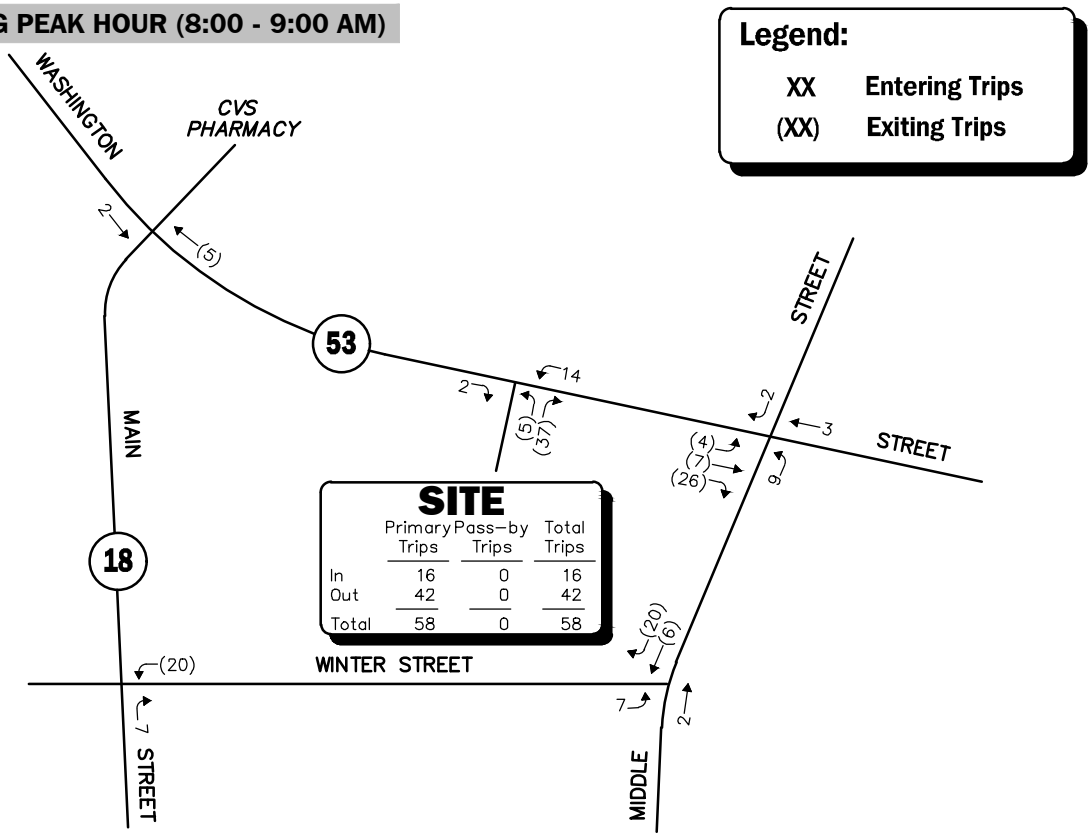
Trip Distribution Map
Retail Component

Vanasse & Associates inc

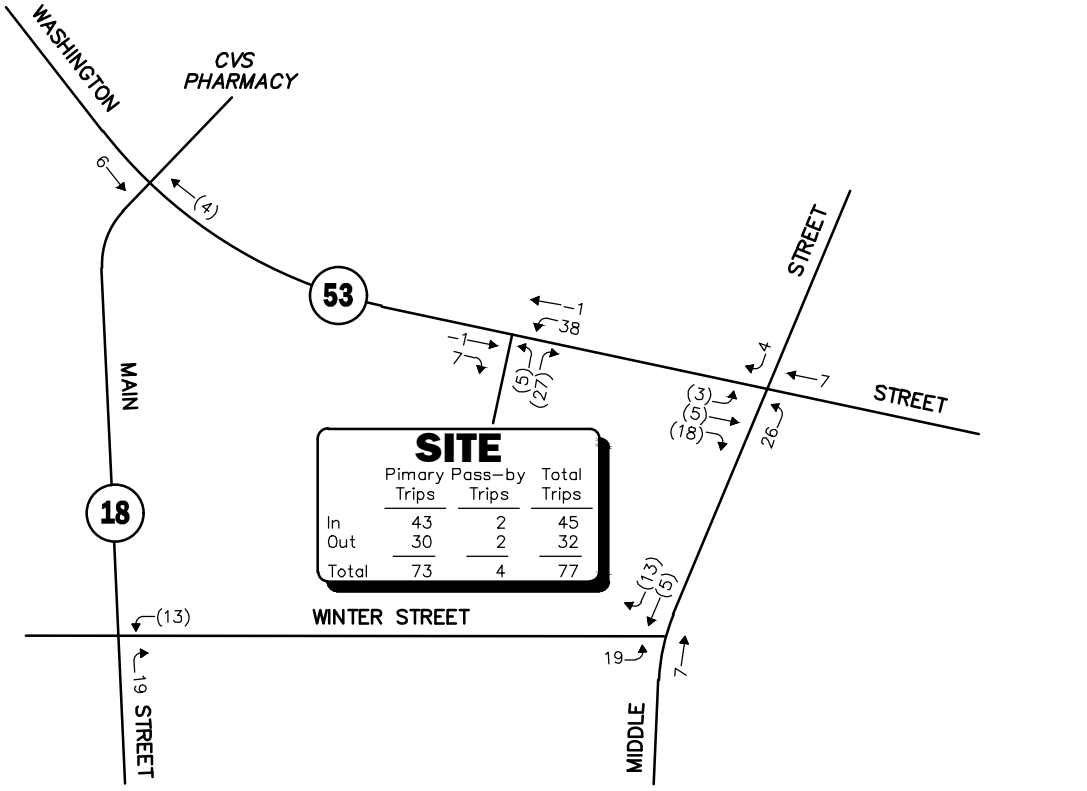
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 3:57:07 PM, DWG To PDF.pc3

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Not To Scale

Figure 9

Project-Generated Weekday Peak Hour Traffic Volumes

Vanasse & Associates inc

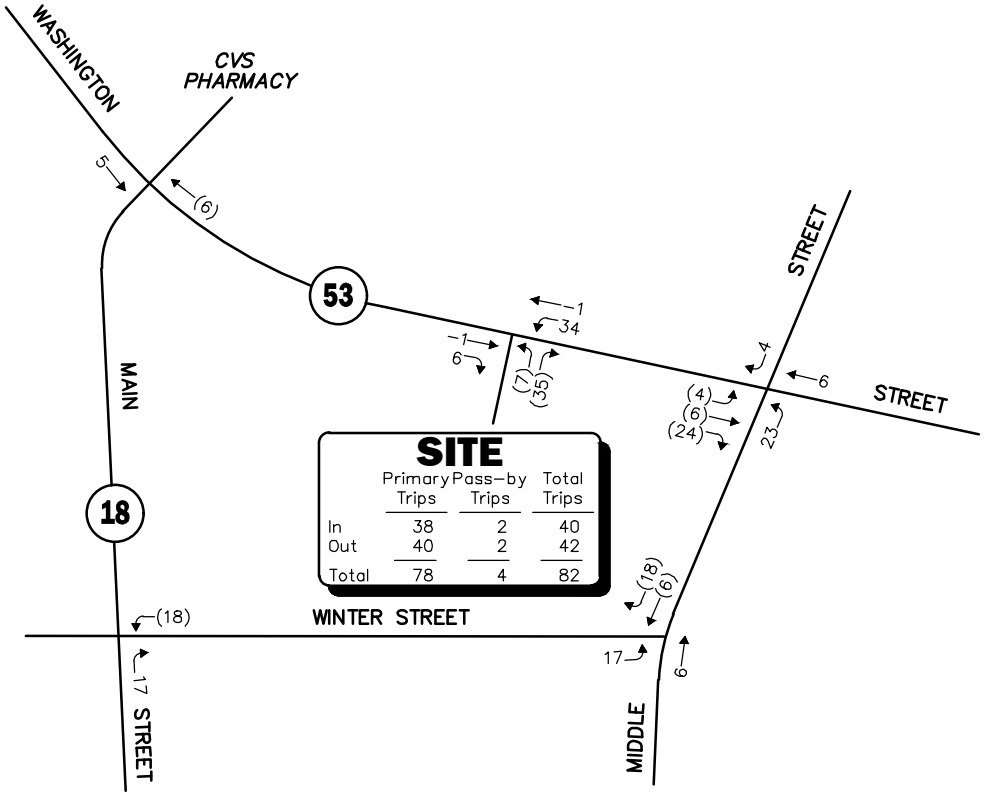
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 4:03:19 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure 10

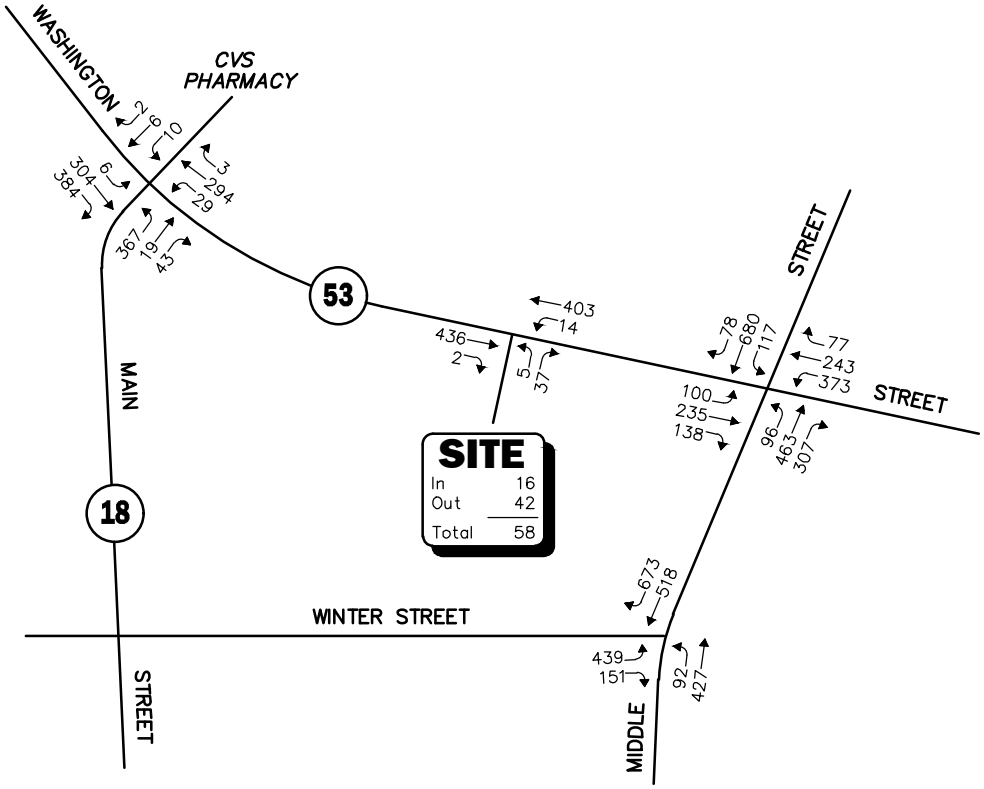
Project-Generated Saturday Peak Hour Traffic Volumes

Vanasse & Associates inc

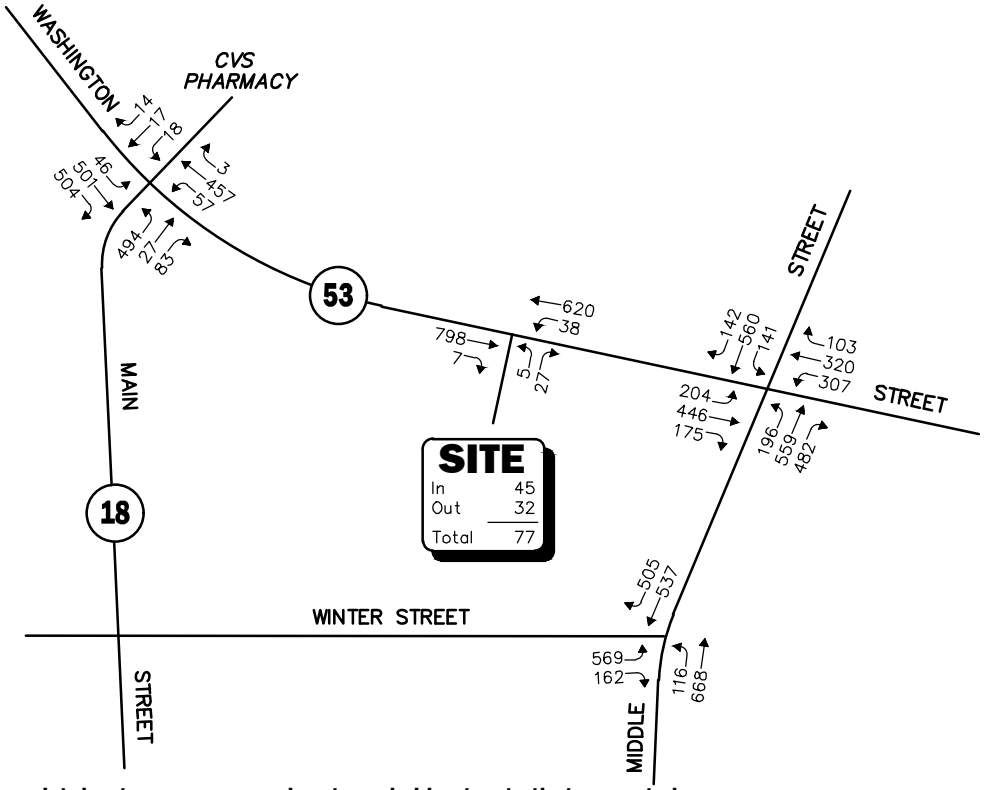
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 4:06:02 PM, DWG To PDF.pc3

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure 11

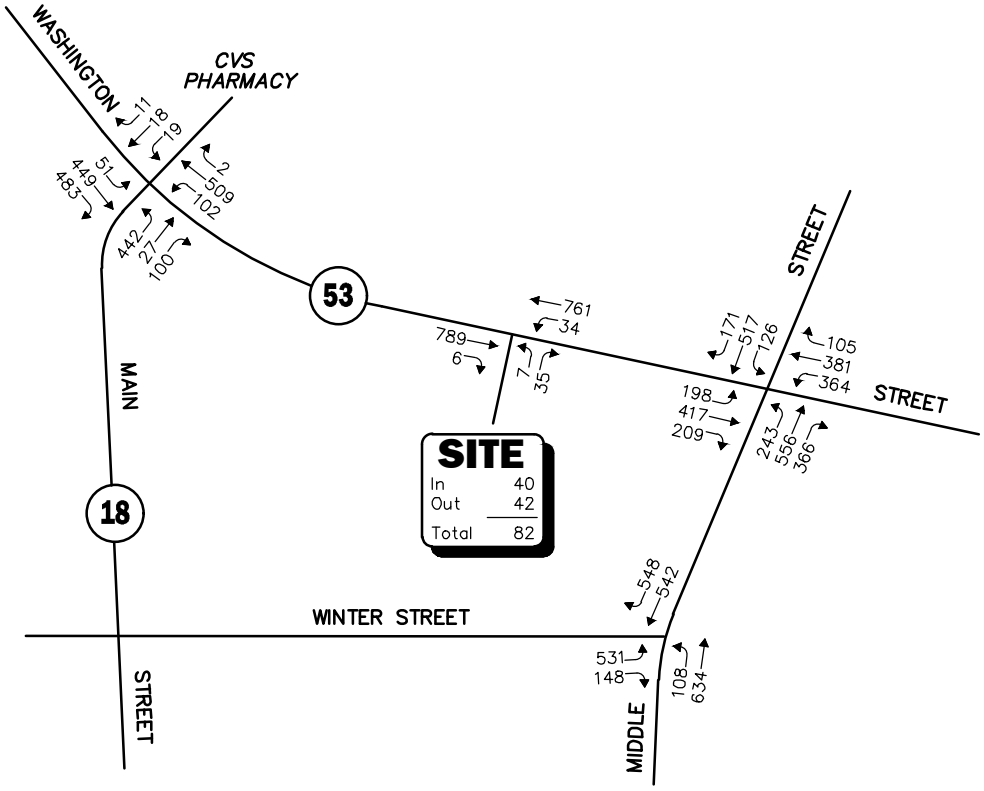
2028 Build Weekday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:28:20 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure 12

2028 Build Saturday Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:29:09 PM, DWG To PDF.pc3

Table 7
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2021 Existing	2028 No-Build	2028 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
Route 53, east of Middle Street:					
Weekday Morning	1,194	1,342	1,352	10	0.7
Weekday Evening	1,593	1,787	1,799	12	0.6
Saturday Midday	1,556	1,747	1,759	12	0.7
Route 53, west of Route 18:					
Weekday Morning	1,239	1,350	1,357	7	0.5
Weekday Evening	1,852	2,006	2,016	10	0.5
Saturday Midday	1,786	1,934	1,945	11	0.6
Middle Street, north of Route 18:					
Weekday Morning	1,390	1,509	1,515	6	0.4
Weekday Evening	1,565	1,702	1,709	7	0.4
Saturday Midday	1,530	1,665	1,673	8	0.5
Middle Street, south of Winter Street:					
Weekday Morning	1,081	1,180	1,188	8	0.7
Weekday Evening	1,347	1,471	1,483	12	0.8
Saturday Midday	1,300	1,420	1,432	12	0.8
Winter Street, west of Middle Street:					
Weekday Morning	1,193	1,328	1,355	27	2.0
Weekday Evening	1,171	1,320	1,352	32	2.4
Saturday Midday	1,152	1,300	1,335	35	2.7

As shown in Table 7, Project-related traffic-volume increases outside of the study area relative to 2028 No-Build conditions are anticipated to range from 0.4 to 2.7 percent during the peak periods, with vehicle increases shown to range from 6 to 35 vehicles. ***When distributed over the peak-hour, the predicted traffic volume increases would not result in a significant impact (increase) on motorist delays or vehicle queuing outside of the immediate study area that is the subject of this assessment.***

TRAFFIC OPERATIONS ANALYSIS

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

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.[13] The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

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

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

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

Signalized Intersections

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

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

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 Highway Capacity Manual and implemented as a part of the Synchro® 10 software as recommended by MassDOT. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. Table 8 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 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 capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual.*[14] Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2010 *Highway Capacity Manual*. Table 9 summarizes the relationship between level of service and average control delay for two-way stop controlled and all-way stop controlled intersections.

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

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

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

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

Vehicle Queue Analysis

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

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2021 Existing, 2028 No-Build and 2028 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 10 and 11, with the detailed analysis results presented in the Appendix.

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

As can be seen in Tables 10 and 11, ***the addition of Project-related traffic to the study area intersections is not predicted to result in a significant increase in motorist delays or vehicle queuing over No-Build conditions***. Project-related impacts at the study area intersections were identified as follows:

Route 53 at Route 18 – No change in LOS was identified to occur over No-Build conditions, with Project-related impacts defined as a predicted increase in overall average motorist delay of less than 1.0 seconds and in vehicle queuing of up to one (1) vehicle.

Route 53 at Middle Street – No change in LOS was identified to occur over No-Build conditions, with Project-related impacts defined as a predicted increase in overall average motorist delay of up to 2.7 seconds and in vehicle queuing of up to two (2) vehicles. Independent of the Project, it was noted that one or more movements at the intersection are predicted to operate at or over capacity (i.e., LOS "E" or "F", respectively) during the peak hours under No-Build conditions.

Middle Street at Winter Street – No-change in overall LOS is expected to occur over No-Build conditions; however, delays were shown to increase by less than 1.0 seconds for the left-turn movement from the Winter Street eastbound approach that caused the LOS to degrade from LOS B to LOS C during the weekday evening peak-hour. Vehicle queues at the intersection were shown to increase by up to two (2) vehicles with the addition of Project-related traffic.

Route 53 at the Project Site Driveway – All movements exiting the Project site driveway were shown to operate at LOS C or better during the peak periods, with minimal vehicle queuing (up to one (1) vehicle). All movements along Route 53 approaching the driveway were shown to operate at LOS A with negligible vehicle queuing predicted.

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

Signalized Intersection/Peak-hour/Movement	2021 Existing				2028 No-Build				2028 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue 50th/95th	V/C	Delay	LOS	Queue 50th/95th
Route 53 at Route 18												
Weekday Morning:												
Route 53 EB LT/TH	0.54	21.0	C	2/12	0.56	21.8	C	3/13	0.56	21.8	C	3/13
Route 53 EB RT	0.22	7.1	A	0/1	0.24	7.1	A	0/1	0.24	7.1	A	0/1
Route 53 WB LT	0.41	34.3	C	1/2	0.36	35.1	D	1/2	0.36	35.2	D	1/2
Route 53 WB TH/RT	0.44	15.2	B	2/9	0.48	15.9	B	3/10	0.48	16.0	B	3/11
Route 18 NB LT	0.44	20.2	C	2/10	0.48	21.0	C	2/11	0.47	21.1	C	2/11
Route 18 NB LT/TH/RT	0.44	20.3	C	2/10	0.47	21.0	C	2/11	0.47	21.1	C	2/11
CVS Driveway SB LT/TH/RT	0.25	32.3	C	0/2	0.26	33.7	C	0/2	0.26	33.8	C	0/2
Overall	--	**16.5**	**B**	--	--	**16.9**	**B**	--	--	**16.9**	**B**	--
Weekday Evening:												
Route 53 EB LT/TH	0.80	35.4	D	11/23	0.82	37.4	D	12/26	0.82	37.4	D	12/27
Route 53 EB RT	0.32	9.7	A	1/3	0.35	9.7	A	2/3	0.35	9.7	A	2/3
Route 53 WB LT	0.40	42.7	D	2/4	0.44	45.3	D	2/4	0.44	45.6	D	2/4
Route 53 WB TH/RT	0.54	19.5	B	7/16	0.57	20.3	C	8/18	0.58	20.3	C	8/18
Route 18 NB LT	0.64	33.3	C	7/17	0.70	37.2	D	8/19	0.71	37.6	D	8/19
Route 18 NB LT/TH/RT	0.65	33.5	C	6/17	0.70	37.4	D	8/18	0.71	37.8	D	8/18
CVS Driveway SB LT/TH/RT	0.44	43.0	D	2/3	0.46	45.6	D	2/3	0.47	45.9	D	2/3
Overall	--	**26.3**	**C**	--	--	**28.1**	**C**	--	--	**28.2**	**C**	--
Saturday Midday:												
Route 53 EB LT/TH	0.77	33.5	C	11/23	0.77	34.0	C	12/26	0.77	34.0	C	12/26
Route 53 EB RT	0.32	9.8	B	1/3	0.35	10.7	B	2/3	0.35	10.7	B	2/3
Route 53 WB LT	0.65	51.6	D	3/7	0.65	51.6	D	3/7	0.65	51.6	D	3/7
Route 53 WB TH/RT	0.57	19.2	B	8/18	0.57	19.2	B	9/20	0.57	19.2	B	9/20
Route 18 NB LT	0.64	34.7	C	6/16	0.76	46.3	D	8/18	0.76	46.6	D	8/18
Route 18 NB LT/TH/RT	0.61	34.1	C	6/14	0.72	43.9	D	7/16	0.72	44.5	D	7/16
CVS Driveway SB LT/TH/RT	0.41	44.1	D	1/3	0.43	49.6	D	2/3	0.44	49.9	D	2/3
Overall	--	**26.3**	C	--	--	**29.2**	**C**	--	--	**29.3**	**C**	--

See notes at the end of table.

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

Signalized Intersection/Peak-hour/Movement	2021 Existing				2028 No-Build				2028 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue 50th/95th	V/C	Delay	LOS	Queue 50th/95th
Route 53 at Middle Street												
Weekday Morning:												
Route 53 EB LT	0.34	32.9	C	2/4	0.41	39.6	D	2/5	0.42	40.3	D	2/5
Route 53 EB TH/RT	0.68	44.6	D	5/12	0.84	60.6	E	6/13	0.94	76.7	E	7/15
Route 53 WB LT	0.82	37.9	D	6/15	0.88	47.2	D	9/19	0.88	48.0	D	9/19
Route 53 WB TH/RT	0.36	31.5	C	4/8	0.37	33.7	C	4/8	0.37	34.3	C	5/8
Middle Street NB LT	0.37	33.3	C	2/5	0.43	40.2	D	2/5	0.47	41.6	D	3/6
Middle Street NB TH	0.51	32.1	C	5/10	0.52	33.9	C	7/12	0.51	33.9	C	7/12
Middle Street NB RT	0.42	16.9	B	4/9	0.46	18.0	B	5/10	0.45	18.0	B	5/10
Middle Street SB LT	0.55	45.9	D	8/10	0.67	58.1	E	4/11	0.67	59.2	E	4/11
Middle Street SB TH/RT	0.74	34.2	C	9/18	0.77	37.7	D	11/20	0.77	38.1	D	12/20
Overall	--	**33.8**	**C**	--	--	**39.5**	**D**	--	--	**42.2**	**D**	--
Weekday Evening:												
Route 53 EB LT	0.49	26.9	C	3/8	0.56	28.7	C	3/8	0.57	29.0	C	3/9
Route 53 EB TH/RT	0.67	36.9	D	6/13	0.72	39.5	D	7/15	0.75	40.5	D	7/16
Route 53 WB LT	0.77	31.7	C	4/14	0.94	60.9	E	6/19	0.94	61.0	E	6/19
Route 53 WB TH/RT	0.39	28.9	C	4/8	0.43	30.9	C	5/9	0.78	31.0	C	5/9
Middle Street NB LT	0.63	39.1	D	4/8	0.67	41.5	D	4/8	0.70	48.8	D	5/10
Middle Street NB TH	0.67	36.7	D	7/11	0.70	37.8	D	8/12	0.70	37.9	D	8/12
Middle Street NB RT	0.30	19.4	B	0/2	0.37	23.1	C	1/3	0.37	23.1	C	1/3
Middle Street SB LT	0.61	46.3	D	3/9	0.67	51.0	D	4/10	0.67	51.0	D	4/10
Middle Street SB TH/RT	0.74	37.3	D	8/13	0.76	38.7	D	9/14	0.76	38.6	D	9/14
Overall	--	**33.2**	**C**	--	--	**37.5**	**D**	--	--	**38.1**	**D**	--
Saturday Midday:												
Route 53 EB LT	0.53	27.3	C	3/8	0.60	29.5	C	3/9	0.62	30.1	C	3/9
Route 53 EB TH/RT	0.69	37.5	D	6/14	0.75	40.5	D	7/16	0.78	41.9	D	8/17
Route 53 WB LT	0.89	47.0	D	5/18	1.08	>80.0	F	7/23	1.08	>80.0	F	7/23
Route 53 WB TH/RT	0.45	30.0	C	5/10	0.50	31.9	C	5/11	0.51	32.0	C	5/11
Middle Street NB LT	0.76	46.7	D	5/10	0.84	57.2	E	5/12	0.93	75.2	E	6/14
Middle Street NB TH	0.59	35.0	D	6/10	0.63	35.8	D	7/12	0.63	35.8	D	7/12
Middle Street NB RT	0.20	18.5	B	0/2	0.24	19.0	B	0/2	0.24	19.0	B	0/2
Middle Street SB LT	0.60	46.3	D	3/8	0.64	50.0	D	4/9	0.64	50.0	D	4/9
Middle Street SB TH/RT	0.74	37.0	D	8/13	0.77	38.2	D	9/14	0.77	38.4	D	9/15
Overall	--	**35.5**	D	--	--	**42.9**	**D**	--	--	**44.4**	**D**	--

See notes at the end of table.

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

Signalized Intersection/Peak-hour/Movement	2021 Existing				2028 No-Build				2028 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue 50th/95th	V/C	Delay	LOS	Queue 50th/95th
Middle Street at Winter Street												
Weekday Morning:												
Winter Street EB LT	0.44	18.4	B	2/6	0.50	19.0	B	3/7	0.51	19.2	B	3/8
Winter Street EB RT	0.18	9.9	A	1/2	0.23	10.4	B	1/3	0.23	10.4	B	1/3
Middle Street NB LT	0.24	10.0	A	1/2	0.30	10.6	B	1/3	0.30	10.6	B	1/3
Middle Street NB TH	0.25	8.7	A	2/4	0.30	9.1	A	2/5	0.30	9.1	A	2/5
Middle Street SB TH	0.51	17.9	B	3/7	0.57	18.6	B	3/7	0.58	18.6	B	3/7
Middle Street SB RT	0.65	12.0	B	4/15	0.77	14.2	B	4/22	0.80	15.1	B	5/23
Overall	--	**13.6**	**B**	--	--	**14.6**	**B**	--	--	**15.0**	**B**	--
Weekday Evening:												
Winter Street EB LT	0.55	18.4	B	3/8	0.63	20.0	B	4/10	0.65	20.4	C	4/11
Winter Street EB RT	0.11	8.7	A	0/1	0.12	9.2	A	0/1	0.12	9.2	A	0/1
Middle Street NB LT	0.30	11.1	B	1/3	0.34	11.7	B	1/3	0.34	11.7	B	1/3
Middle Street NB TH	0.37	10.2	B	2/7	0.41	10.8	B	3/7	0.41	10.9	B	3/7
Middle Street SB TH	0.53	18.9	B	3/7	0.56	19.6	B	3/8	0.56	19.8	B	5/8
Middle Street SB RT	0.26	7.1	A	0/2	0.29	7.1	A	0/2	0.30	7.1	A	0/2
Overall	--	**13.3**	**B**	--	--	**14.0**	**B**	--	--	**14.1**	**B**	--
Saturday Midday:												
Winter Street EB LT	0.48	18.5	B	2/7	0.53	19.3	B	3/8	0.55	19.5	B	3/9
Winter Street EB RT	0.09	9.3	A	0/1	0.09	9.6	A	0/1	0.09	9.6	A	0/1
Middle Street NB LT	0.27	10.4	B	1/3	0.30	11.0	B	1/3	0.31	11.1	B	1/3
Middle Street NB TH	0.33	9.3	A	2/6	0.36	9.9	A	2/7	0.37	10.0	A	2/7
Middle Street SB TH	0.54	18.2	B	3/7	0.57	19.0	B	4/8	0.58	19.2	B	4/8
Middle Street SB RT	0.30	7.3	A	0/2	0.34	7.3	A	0/2	0.35	7.4	A	0/2
Overall	--	**12.8**	B	--	--	**13.3**	**B**	--	--	**13.4**	**B**	--

[a]Volume-to-capacity ratio.
[b]Percentile delay per vehicle in seconds.
[c]Level-of-Service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; 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	2020 Existing				2028 No-Build				2028 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Route 53 at the Project Site Driveway												
Weekday Morning:												
Route 53 EB LT/RT	--	--	--	--	--	--	--	--	438	0.0	A	0
Route 53 WB LT/TH	--	--	--	--	--	--	--	--	417	0.3	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	42	12.5	B	1
Weekday Evening:												
Route 53 EB TH/RT	--	--	--	--	--	--	--	--	805	0.0	A	0
Route 53 WB LT/TH	--	--	--	--	--	--	--	--	658	0.6	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	32	21.4	C	1
Saturday Midday:												
Route 53 EB TH/RT	--	--	--	--	--	--	--	--	795	0.0	A	0
Route 53 WB LT/TH	--	--	--	--	--	--	--	--	795	0.4	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	42	24.3	C	1

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

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersection with Route 53 in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[15] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 12 presents the measured SSD and ISD at the subject intersection.

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

Table 12
SIGHT DISTANCE MEASUREMENTS[a]

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD)[b]	Measured
Route 53 at the Project Site Driveway			
Stopping Sight Distance:			
Route 53 approaching from the east	305	--	500+
Route 53 approaching from the west	305	--	500+
Intersection Sight Distance:			
Looking to the east from the Project Site Driveway	305	445	500+
Looking to the west from the Project Site Driveway	305	385	500+

[a]Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 40 mph approach speed along Route 53.

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

As can be seen in Table 10, the available lines of sight exceed the recommended minimum sight distances to function in a safe (SSD) and efficient (ISD) manner based on a 40 mph approach speed along Route 53, which is 5 to 6 mph above the measured 85th percentile vehicle travel speed (34/35 mph) and 5 mph above the posted speed limit (35 mph).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has conducted a TIA in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a multifamily residential community to be located 655 Washington Street (Route 53) in Weymouth, Massachusetts. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE[16] and after applying adjustments to account for internal trips and pass-by trips, and without consideration of the use of public transportation services, the Project is expected to generate approximately 944 new vehicle trips on an average weekday (two-way, 24-hour volume), with 58 new vehicle trips expected during the weekday morning peak hour, 73 new vehicle trips expected during the weekday evening peak hour and 78 new vehicle trips expected during the Saturday midday peak-hour;

2. In comparison to the motel that currently occupies the Project site, the Project is expected to generate approximately 832 additional vehicle trips on an average weekday (two-way, 24-hour volume), with 40 additional vehicle trips expected during the weekday morning peak-hour, 59 additional vehicle trips expected during the weekday evening peak-hour, and 60 additional vehicle trips expected during the Saturday midday peak-hour

3. The Project will not result in a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with overall operating conditions at the signalized study area intersections shown to be maintained at LOS D or better with the addition of Project-related traffic, where an LOS of "D" or better is defined as "acceptable" traffic operations;

[16] Ibid 1.

4. Independent of the Project, it was noted that one or more movements at the Route 53/Middle Street intersection are predicted to operate at or over their design capacity (i.e. LOS "E" or "F") during the peak hours under 2028 No-Build conditions;

5. All movements at the Project site driveway intersection with Route 53 were shown to operate at LOS C or better during the peak hours with vehicle queues of up to one (1) vehicle predicted exiting the Project site (no material vehicle queuing is predicted to occur along Route 53 at the Project site driveway);

6. Independent of the Project, the Route 53/Route 18 and Middle Street/Winter Street intersections were found to have a motor vehicle crash rate that is above the MassDOT average crash rates for similar intersections. In addition, and also independent of the Project, the Route 53/Route 18 and Route 53/Middle Street intersections were included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash locations for 2015-2017. A Road Safety Audit (RSA) was completed in May 2018 for these intersections that included specific recommendations to improve safety.[17] The suggested improvements do not appear to have been advanced at this time; and

7. Lines of sight to and from the Project site driveway intersection with Route 53 were found to exceed the recommended minimum distance for safe and efficient operation based on the appropriate approach speed.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of a new driveway that will intersect the south side of Route 53 and parallel to the easterly property line of the Project site. The existing driveways that currently serve the Project site (two (2)) will be closed in conjunction with the Project, thereby reducing the number of conflict points, particularly for pedestrians and bicyclists. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the site plans:

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

[17] Ibid 2.

- Where perpendicular parking is proposed, the drive aisle behind the parking should be a minimum of 23 feet in order to facilitate parking maneuvers.

- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[18]

- A sidewalk should be provided to link the proposed building to the sidewalk along Washington Street (Route 53).

- Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings internal to the Project site and for crossing the Project site driveway.

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

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

- Consideration should be given to providing electric vehicle (EV) charging stations for residents of the Project.

- Secure bicycle parking should be provided within the Project site.

Off Site

Route 53/Route 18

Independent of the Project, the intersection of Route 53 at Route 18 was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for a signalized intersection and the intersection is included on MassDOT's HSIP listing as a high crash cluster location for 2015-2017. As identified previously, an RSA was conducted in May 2018 that included this intersection and suggested a number of safety-related improvements. In an effort to improve safety at the Route 53/Route 18 intersection, the Project proponent will design and construct the short-term, low cost improvements that were recommended in the RSA, with exception of the suggested access modifications to the CVS/Pharmacy© driveway, to the extent that the aggregate cost to implement the improvements does not exceed $30,000. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Route 53/Middle Street

Independent of the Project, several movements at the intersection of Route 53 at Middle Street are predicated to operate at or over capacity (i.e., LOS "E" or "F") during the peak hours under 2028 No-Build conditions. In addition, this intersection was also included in the May 2018 RSA. In an effort to improve traffic operations and safety at the Route 53/Route 18 intersection, the

[18]Ibid 3.

Project proponent will design and construct the short-term, low cost improvements that were recommended in the RSA, to the extent that the aggregate cost to implement the improvements does not exceed $25,000, and will design and implement an optimal traffic signal timing and phasing plan. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Middle Street/Winter Street

Independent of the Project, the intersection of Middle Street at Winter Street was found to have a motor vehicle crash rate that is above the MassDOT average crash rate for a signalized intersection. In an effort to improve traffic operations and safety at the Middle Street/Winter Street intersection, the Project proponent will facilitate the completion of a RSA and will evaluate and update the yellow and all-red clearance intervals and the pedestrian phase timing to the extent necessary to ensure compliance with current safety standards. These improvements will be completed prior to the issuance of a Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals.

Transportation Demand Management

Public transportation services are provided within the study area by the MBTA. MBTA bus Route 226, *Columbian Square - Braintree Station*, provides service along Route 53 with continued service to Braintree Station where connections can be made to the Red Line subway system, the Commuter Rail (Kingston/Plymouth Line and Middleborough/Lakeville Line with service to South Station in Boston) and other MBTA bus routes. The Route 226 Bus includes a stop along both sides of Route 53 at West Lake Drive that serve the Project site. In addition to fixed-route bus services, the MBTA operates The Ride paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive or mental disability in compliance with the ADA.

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

- A transportation coordinator will be designated for the Project to coordinate the elements of the TDM program;
- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents and employees of the Project;
- A "welcome packet" will be provided to residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options available;
- Work-at-home workspaces will be provided to support telecommuting by residents of the Project;
- Commercial tenants will be encouraged to offer specific amenities to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;

- Pedestrian accommodations will be incorporated into the Project site and consist of connections to existing sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings that are to be constructed or modified as a part of the Project;

- A mail drop will be provided within the building; and

- Secure bicycle parking will be provided within the Project site.

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

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL AND COVID ADJUSTMENT DATA
VEHICLE TRAVEL SPEED DATA
PUBLIC TRANSPORTATION INFORMATION
MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING
RECOMMENDED ROAD SAFETY AUDIT IMPROVEMENTS
BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS
GENERAL BACKGROUND TRAFFIC GROWTH
TRIP-GENERATION CALCULATIONS
TRIP DISTRIBUTION WORKSHEETS
PROJECT COMPONENT TRIP DISTRIBUTION NETWORKS
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN

CITY OF WEYMOUTH - SCHEDULE OF DISTRICT REGULATIONS

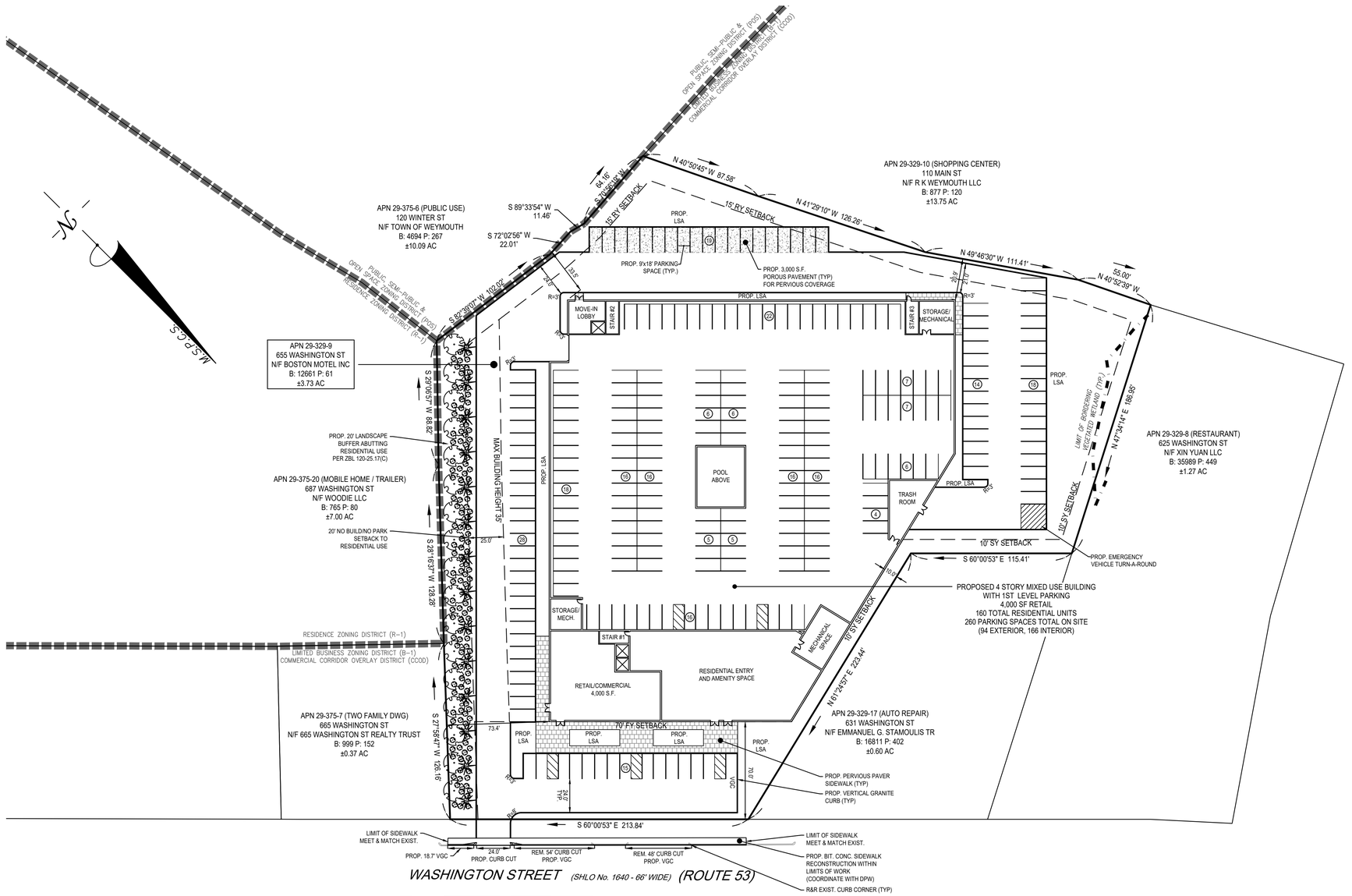
LIMITED BUSINESS B-1 / COMMERCIAL CORRIDOR OVERLAY DISTRICT - ARTICLE VIIB / WASHINGTON STREET CORRIDOR			PARCEL ID 29-329-9-0
	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT AREA	10,000 S.F.	161,670 S.F.	161,670 S.F.
MINIMUM LOT WIDTH	100 FT.	225.88 FT.	259.07 FT.
MINIMUM FRONT YARD SETBACK	25 FT.	18.63 FT.	70 FT.
MAXIMUM FRONT YARD SETBACK	70 FT.	18.63 FT.	70 FT.
MINIMUM SIDE YARD SETBACK	10 FT.	8.6 FT.	10 FT.
MINIMUM REAR YARD SETBACK	15 FT.	6.57 FT.	29.9 FT.
MAXIMUM BUILDING HEIGHT	5 STORIES & 70 FT.	2-STORY	4-STORY
MINIMUM BUILDING HEIGHT	3 STORIES & 45 FT.	2-STORY	4-STORY
MAXIMUM LOT COVERAGE	60%	15.9%	47.2%
MAXIMUM FLOOR AREA RATIO (FAR)	1.00	--	0.98
MAXIMUM IMPERVIOUS COVERAGE	75%	65.7%	75%

ZBL 120-25.20(A) REQUIRED PARKING & 120-74(L) MINIMUM REQUIRED SPACES

COMPONENT	MINIMUM SPACES	MAXIMUM SPACES	REQUIRED (MIN.)	REQUIRED (MAX.)	PROVIDED
STUDIOS & ONE BEDROOM DWELLING UNITS 117 TOTAL UNITS	1.25 PER UNIT	1.5 PER UNIT	146.25 SPACES	175.5 SPACES	157 SPACES
ALL OTHER RESIDENTIAL DWELLING UNITS 43 TOTAL UNITS	1.5 PER UNIT	2.0 PER UNIT	64.5 SPACES	86 SPACES	75 SPACES
RETAIL 4,000 SF	1 SPACE FOR EACH 200 SF OF GROSS FLOOR AREA ON FIRST FLOOR	--	20 SPACES	20 SPACES	30 SPACES
			231 SPACES	282 SPACES	260 SPACES (94 EXTERIOR) (166 INTERIOR)

ZBL 120-25.17(C).
ADDITIONAL REQUIREMENTS WHEN ABUTTING A RESIDENTIAL USE

BUFFER COMPONENT	REQUIRED	PROPOSED
NO BUILD / NO PARK BUFFER	20 FT.	20 FT.
WALL HEIGHT (MIN)	6 FT.	N/A
SHADE TREES (MIN PER 100')	5	5
UNDERSTORY TREES (MIN PER 100')	4	4
SHRUBS (MIN PER 100')	40	40
SHRUB HEIGHT (MIN)	4 FT.	4 FT.



0' 40' 80' 120'
SCALE: 1" = 40'

© MCKENZIE ENGINEERING GROUP, INC.

REV	DATE	DESCRIPTION	BY	APP
-	-	-	-	-

MCKENZIE ENGINEERING GROUP
Assinippi Office Park
150 Longwater Drive, Suite 101
Norwell, MA 02061
P: 781.792.3900
F: 781.792.0333
www.mckeng.com

PROP. MIXED-USE DEVELOPMENT

ASSESSORS PARCEL 29-329-9-0
655 WASHINGTON STREET
WEYMOUTH, MASSACHUSETTS

PROFESSIONAL ENGINEER:

APPLICANT:
TRINITY GREEN DEVELOPMENT, LLC
180 CANTON AVE.
MILTON, MASSACHUSETTS 02186

PERMIT PLAN SET

DRAWN BY:	RPL
DESIGNED BY:	RPL
CHECKED BY:	AJC
APPROVED BY:	BCM
DATE:	1/12/21
SCALE:	1"=40'
PROJECT NO.:	220-164

DWG. TITLE:
Site Layout Plan

DWG. NO: C-3

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts
978-664-2565

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826VL01

Start	1/14/2021	EB		Hour Totals		WB		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	80			7	115				
12:15		9	77			6	137				
12:30		7	75			6	97				
12:45		4	84	29	316	0	101	19	450	48	766
01:00		8	77			8	106				
01:15		1	96			6	106				
01:30		3	96			4	111				
01:45		4	93	16	362	1	113	19	436	35	798
02:00		5	84			1	106				
02:15		0	85			1	97				
02:30		2	86			4	104				
02:45		3	83	10	338	3	104	9	411	19	749
03:00		0	100			3	123				
03:15		0	90			2	119				
03:30		1	105			3	113				
03:45		7	81	8	376	3	116	11	471	19	847
04:00		1	81			3	116				
04:15		4	94			4	97				
04:30		1	99			7	108				
04:45		6	89	12	363	15	91	29	412	41	775
05:00		5	65			9	112				
05:15		9	67			15	111				
05:30		10	65			19	100				
05:45		13	67	37	264	19	107	62	430	99	694
06:00		16	60			26	95				
06:15		13	57			36	80				
06:30		38	47			34	76				
06:45		37	64	104	228	49	62	145	313	249	541
07:00		33	64			31	60				
07:15		41	44			60	57				
07:30		62	45			57	56				
07:45		57	37	193	190	70	56	218	229	411	419
08:00		53	46			71	46				
08:15		45	35			81	42				
08:30		81	37			52	37				
08:45		64	40	243	158	84	34	288	159	531	317
09:00		57	19			73	42				
09:15		53	32			99	28				
09:30		70	26			87	30				
09:45		65	30	245	107	75	22	334	122	579	229
10:00		60	23			77	28				
10:15		91	15			79	28				
10:30		73	12			83	21				
10:45		71	12	295	62	83	13	322	90	617	152
11:00		80	6			93	11				
11:15		67	6			107	12				
11:30		77	10			105	8				
11:45		82	6	306	28	106	3	411	34	717	62
Total		1498	2792			1867	3557			3365	6349
Percent		34.9%	65.1%			34.4%	65.6%			34.6%	65.4%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826VL01

Start Time	1/15/2021 Fri	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		7	83			6	116				
12:15		3	91			7	108				
12:30		6	89			4	121				
12:45		7	106	23	369	7	134	24	479	47	848
01:00		4	84			2	121				
01:15		2	111			3	120				
01:30		1	108			2	117				
01:45		3	100	10	403	1	123	8	481	18	884
02:00		4	104			3	105				
02:15		4	85			2	107				
02:30		2	78			2	108				
02:45		0	115	10	382	2	126	9	446	19	828
03:00		3	86			4	129				
03:15		3	85			2	124				
03:30		1	103			4	128				
03:45		1	74	8	348	3	148	13	529	21	877
04:00		0	91			1	104				
04:15		5	104			4	110				
04:30		5	109			9	111				
04:45		7	100	17	404	13	131	27	456	44	860
05:00		7	78			11	127				
05:15		16	103			13	114				
05:30		11	84			20	111				
05:45		19	92	53	357	33	122	77	474	130	831
06:00		18	94			27	108				
06:15		12	86			28	91				
06:30		26	68			37	80				
06:45		28	84	84	332	33	89	125	368	209	700
07:00		31	85			41	87				
07:15		41	68			53	74				
07:30		50	63			58	71				
07:45		45	49	167	265	56	56	208	288	375	553
08:00		33	38			68	63				
08:15		43	43			59	53				
08:30		66	42			76	40				
08:45		59	38	201	161	90	36	293	192	494	353
09:00		60	33			90	47				
09:15		68	20			80	42				
09:30		78	35			91	35				
09:45		74	26	280	114	87	39	348	163	628	277
10:00		84	35			70	19				
10:15		86	19			71	27				
10:30		82	21			91	23				
10:45		79	14	331	89	104	20	336	89	667	178
11:00		83	20			114	18				
11:15		80	17			94	12				
11:30		80	10			120	10				
11:45		95	5	338	52	105	8	433	48	771	100
Total		1522	3276			1901	4013			3423	7289
Percent		31.7%	68.3%			32.1%	67.9%			32.0%	68.0%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826VL01

Start Time	1/16/2021 Sat	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		11	71			13	107				
12:15		13	86			6	118				
12:30		11	77			6	128				
12:45		6	68	41	302	8	133	33	486	74	788
01:00		9	94			6	128				
01:15		2	93			4	116				
01:30		5	94			3	144				
01:45		3	79	19	360	1	121	14	509	33	869
02:00		4	90			5	105				
02:15		3	88			5	111				
02:30		3	90			3	111				
02:45		6	126	16	394	7	101	20	428	36	822
03:00		2	96			3	97				
03:15		1	106			4	101				
03:30		3	95			2	127				
03:45		2	88	8	385	3	113	12	438	20	823
04:00		3	90			5	106				
04:15		4	72			3	116				
04:30		4	95			6	119				
04:45		2	89	13	346	4	96	18	437	31	783
05:00		7	93			8	75				
05:15		3	72			5	88				
05:30		8	56			1	76				
05:45		9	63	27	284	9	91	23	330	50	614
06:00		14	77			17	76				
06:15		10	76			13	87				
06:30		18	62			16	76				
06:45		10	66	52	281	31	63	77	302	129	583
07:00		19	51			18	70				
07:15		16	48			30	60				
07:30		27	52			24	53				
07:45		27	36	89	187	30	68	102	251	191	438
08:00		36	41			48	62				
08:15		37	48			35	55				
08:30		49	37			41	33				
08:45		48	28	170	154	60	39	184	189	354	343
09:00		43	34			47	33				
09:15		48	29			50	32				
09:30		57	30			50	34				
09:45		61	23	209	116	76	31	223	130	432	246
10:00		65	22			83	31				
10:15		65	15			71	18				
10:30		60	12			96	21				
10:45		81	17	271	66	75	12	325	82	596	148
11:00		70	9			97	17				
11:15		81	13			93	10				
11:30		76	12			85	14				
11:45		59	10	286	44	107	10	382	51	668	95
Total		1201	2919			1413	3633			2614	6552
Percent		29.2%	70.8%			28.0%	72.0%			28.5%	71.5%
Grand Total		4221	8987			5181	11203			9402	20190
Percent		32.0%	68.0%			31.6%	68.4%			31.8%	68.2%
ADT		ADT 9,864		AADT 9,864							

Accurate Counts
978-664-2565

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826VL01

Start	1/11/2021		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	29	19	23	24	41	33	*	*	31	25
01:00	*	*	*	*	*	*	16	19	10	8	19	14	*	*	15	14
02:00	*	*	*	*	*	*	10	9	10	9	16	20	*	*	12	13
03:00	*	*	*	*	*	*	8	11	8	13	8	12	*	*	8	12
04:00	*	*	*	*	*	*	12	29	17	27	13	18	*	*	14	25
05:00	*	*	*	*	*	*	37	62	53	77	27	23	*	*	39	54
06:00	*	*	*	*	*	*	104	145	84	125	52	77	*	*	80	116
07:00	*	*	*	*	*	*	193	218	167	208	89	102	*	*	150	176
08:00	*	*	*	*	*	*	243	288	201	293	170	184	*	*	205	255
09:00	*	*	*	*	*	*	245	334	280	348	209	223	*	*	245	302
10:00	*	*	*	*	*	*	295	322	331	336	271	325	*	*	299	328
11:00	*	*	*	*	*	*	**306**	**411**	**338**	**433**	**286**	**382**	*	*	**310**	**409**
12:00 PM	*	*	*	*	*	*	316	450	369	479	302	486	*	*	329	472
01:00	*	*	*	*	*	*	362	436	403	481	360	**509**	*	*	**375**	475
02:00	*	*	*	*	*	*	338	411	382	446	**394**	428	*	*	371	428
03:00	*	*	*	*	*	*	**376**	**471**	348	**529**	385	438	*	*	370	**479**
04:00	*	*	*	*	*	*	363	412	**404**	456	346	437	*	*	371	435
05:00	*	*	*	*	*	*	264	430	357	474	284	330	*	*	302	411
06:00	*	*	*	*	*	*	228	313	332	368	281	302	*	*	280	328
07:00	*	*	*	*	*	*	190	229	265	288	187	251	*	*	214	256
08:00	*	*	*	*	*	*	158	159	161	192	154	189	*	*	158	180
09:00	*	*	*	*	*	*	107	122	114	163	116	130	*	*	112	138
10:00	*	*	*	*	*	*	62	90	89	89	66	82	*	*	72	87
11:00	*	*	*	*	*	*	28	34	52	48	44	51	*	*	41	44
Lane	0	0	0	0	0	0	4290	5424	4798	5914	4120	5046	0	0	4403	5462
Day	0		0		0		9714		10712		9166		0		9865	
AM Peak	-	-	-	-	-	-	11:00	11:00	11:00	11:00	11:00	11:00	-	-	11:00	11:00
Vol.	-	-	-	-	-	-	306	411	338	433	286	382	-	-	310	409
PM Peak	-	-	-	-	-	-	15:00	15:00	16:00	15:00	14:00	13:00	-	-	13:00	15:00
Vol.	-	-	-	-	-	-	376	471	404	529	394	509	-	-	375	479

Comb. Total	0	0	0	9714	10712	9166	0	9865

ADT ADT 9,864 AADT 9,864

MANUAL TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021

Groups Printed- Cars - Trucks

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	3	0	6	27	1	58	2	2	1	28	67	195
07:15 AM	2	1	0	2	49	0	72	1	2	2	30	70	231
07:30 AM	0	0	0	8	42	1	58	1	5	2	50	55	222
07:45 AM	1	2	0	2	48	0	70	6	10	3	40	62	244
Total	3	6	0	18	166	2	258	10	19	8	148	254	892
08:00 AM	1	2	0	8	50	0	67	2	8	1	46	69	254
08:15 AM	1	0	2	4	65	1	74	6	5	2	47	61	268
08:30 AM	3	1	0	7	41	2	55	0	11	1	63	75	259
08:45 AM	3	2	0	2	47	0	68	7	7	1	60	66	263
Total	8	5	2	21	203	3	264	15	31	5	216	271	1044
Grand Total	11	11	2	39	369	5	522	25	50	13	364	525	1936
Apprch %	45.8	45.8	8.3	9.4	89.3	1.2	87.4	4.2	8.4	1.4	40.4	58.2	
Total %	0.6	0.6	0.1	2	19.1	0.3	27	1.3	2.6	0.7	18.8	27.1	
Cars	10	11	1	34	359	5	506	25	48	13	356	507	1875
% Cars	90.9	100	50	87.2	97.3	100	96.9	100	96	100	97.8	96.6	96.8
Trucks	1	0	1	5	10	0	16	0	2	0	8	18	61
% Trucks	9.1	0	50	12.8	2.7	0	3.1	0	4	0	2.2	3.4	3.2

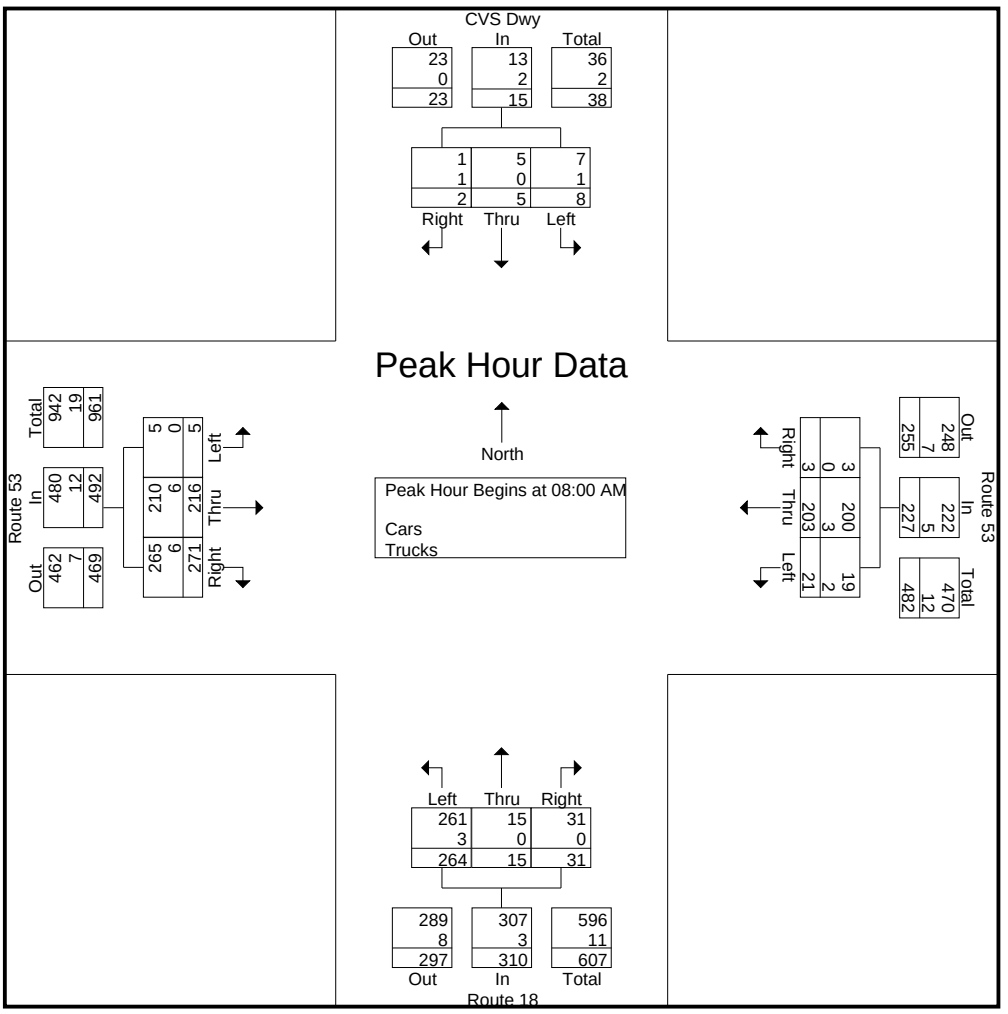
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	**2**	0	3	**8**	50	0	58	67	2	8	77	1	46	69	116	254
08:15 AM	1	0	**2**	3	4	**65**	1	**70**	**74**	6	5	**85**	**2**	47	61	110	**268**
08:30 AM	**3**	1	0	4	7	41	**2**	50	55	0	**11**	66	1	**63**	**75**	**139**	259
08:45 AM	3	2	0	**5**	2	47	0	49	68	**7**	7	82	1	60	66	127	263
Total Volume	8	5	2	15	21	203	3	227	264	15	31	310	5	216	271	492	1044
% App. Total	53.3	33.3	13.3		9.3	89.4	1.3		85.2	4.8	10		1	43.9	55.1		
PHF	.667	.625	.250	.750	.656	.781	.375	.811	.892	.536	.705	.912	.625	.857	.903	.885	.974
Cars	7	5	1	13	19	200	3	222	261	15	31	307	5	210	265	480	1022
% Cars	87.5	100	50.0	86.7	90.5	98.5	100	97.8	98.9	100	100	99.0	100	97.2	97.8	97.6	97.9
Trucks	1	0	1	2	2	3	0	5	3	0	0	3	0	6	6	12	22
% Trucks	12.5	0	50.0	13.3	9.5	1.5	0	2.2	1.1	0	0	1.0	0	2.8	2.2	2.4	2.1

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 2



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

Peak Hour for Each Approach Begins at:

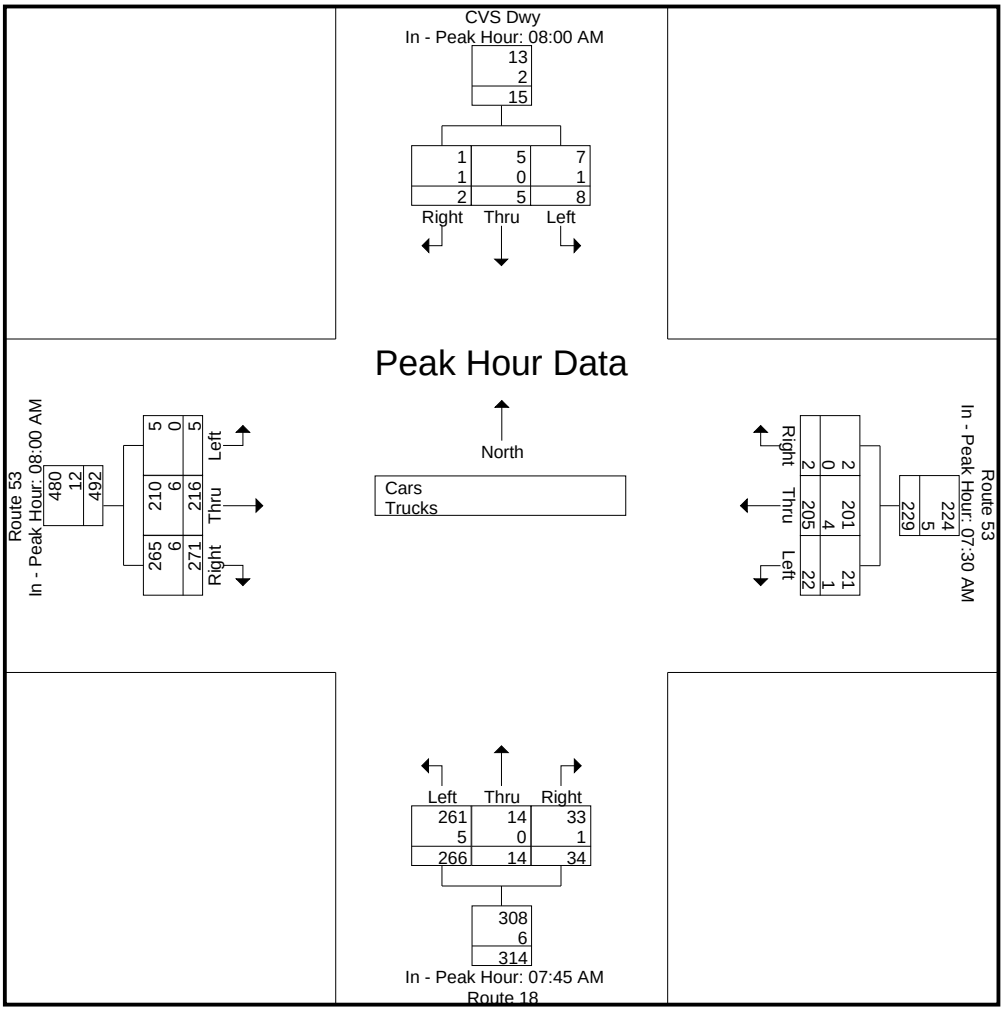
	08:00 AM				07:30 AM				07:45 AM				08:00 AM			
+0 mins.	1	**2**	0	3	**8**	42	**1**	51	70	**6**	10	**86**	1	46	69	116
+15 mins.	1	0	**2**	3	2	48	0	50	67	2	8	77	**2**	47	61	110
+30 mins.	**3**	1	0	4	8	50	0	58	**74**	6	5	85	1	**63**	**75**	**139**
+45 mins.	3	2	0	**5**	4	**65**	1	**70**	55	0	**11**	66	1	60	66	127
Total Volume	8	5	2	15	22	205	2	229	266	14	34	314	5	216	271	492
% App. Total	53.3	33.3	13.3		9.6	89.5	0.9		84.7	4.5	10.8		1	43.9	55.1	
PHF	.667	.625	.250	.750	.688	.788	.500	.818	.899	.583	.773	.913	.625	.857	.903	.885
Cars	7	5	1	13	21	201	2	224	261	14	33	308	5	210	265	480
% Cars	87.5	100	50	86.7	95.5	98	100	97.8	98.1	100	97.1	98.1	100	97.2	97.8	97.6
Trucks	1	0	1	2	1	4	0	5	5	0	1	6	0	6	6	12
% Trucks	12.5	0	50	13.3	4.5	2	0	2.2	1.9	0	2.9	1.9	0	2.8	2.2	2.4

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 4

Groups Printed- Cars

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	3	0	4	26	1	54	2	1	1	27	62	181
07:15 AM	2	1	0	2	46	0	70	1	2	2	30	70	226
07:30 AM	0	0	0	7	41	1	53	1	5	2	49	51	210
07:45 AM	1	2	0	2	46	0	68	6	9	3	40	59	236
Total	3	6	0	15	159	2	245	10	17	8	146	242	853
08:00 AM	1	2	0	8	49	0	67	2	8	1	45	68	251
08:15 AM	1	0	1	4	65	1	74	6	5	2	45	58	262
08:30 AM	3	1	0	6	40	2	52	0	11	1	62	74	252
08:45 AM	2	2	0	1	46	0	68	7	7	1	58	65	257
Total	7	5	1	19	200	3	261	15	31	5	210	265	1022
Grand Total	10	11	1	34	359	5	506	25	48	13	356	507	1875
Apprch %	45.5	50	4.5	8.5	90.2	1.3	87.4	4.3	8.3	1.5	40.6	57.9	
Total %	0.5	0.6	0.1	1.8	19.1	0.3	27	1.3	2.6	0.7	19	27	

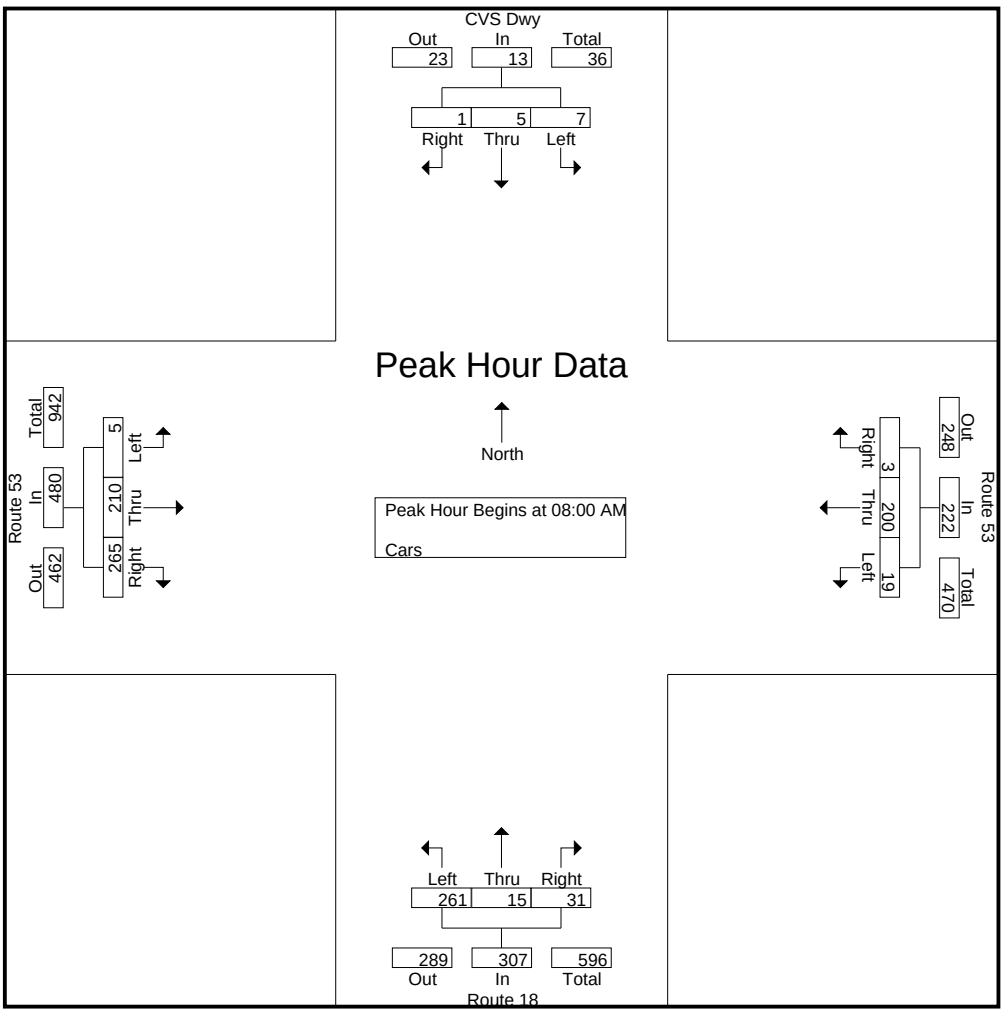
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	**2**	0	3	**8**	49	0	57	67	2	8	77	1	45	68	114	251
08:15 AM	1	0	**1**	2	4	**65**	1	**70**	**74**	6	5	**85**	**2**	45	58	105	**262**
08:30 AM	**3**	1	0	**4**	6	40	**2**	48	52	0	**11**	63	1	**62**	**74**	**137**	252
08:45 AM	2	2	0	4	1	46	0	47	68	**7**	7	82	1	58	65	124	257
Total Volume	7	5	1	13	19	200	3	222	261	15	31	307	5	210	265	480	1022
% App. Total	53.8	38.5	7.7		8.6	90.1	1.4		85	4.9	10.1		1	43.8	55.2		
PHF	.583	.625	.250	.813	.594	.769	.375	.793	.882	.536	.705	.903	.625	.847	.895	.876	.975

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 5



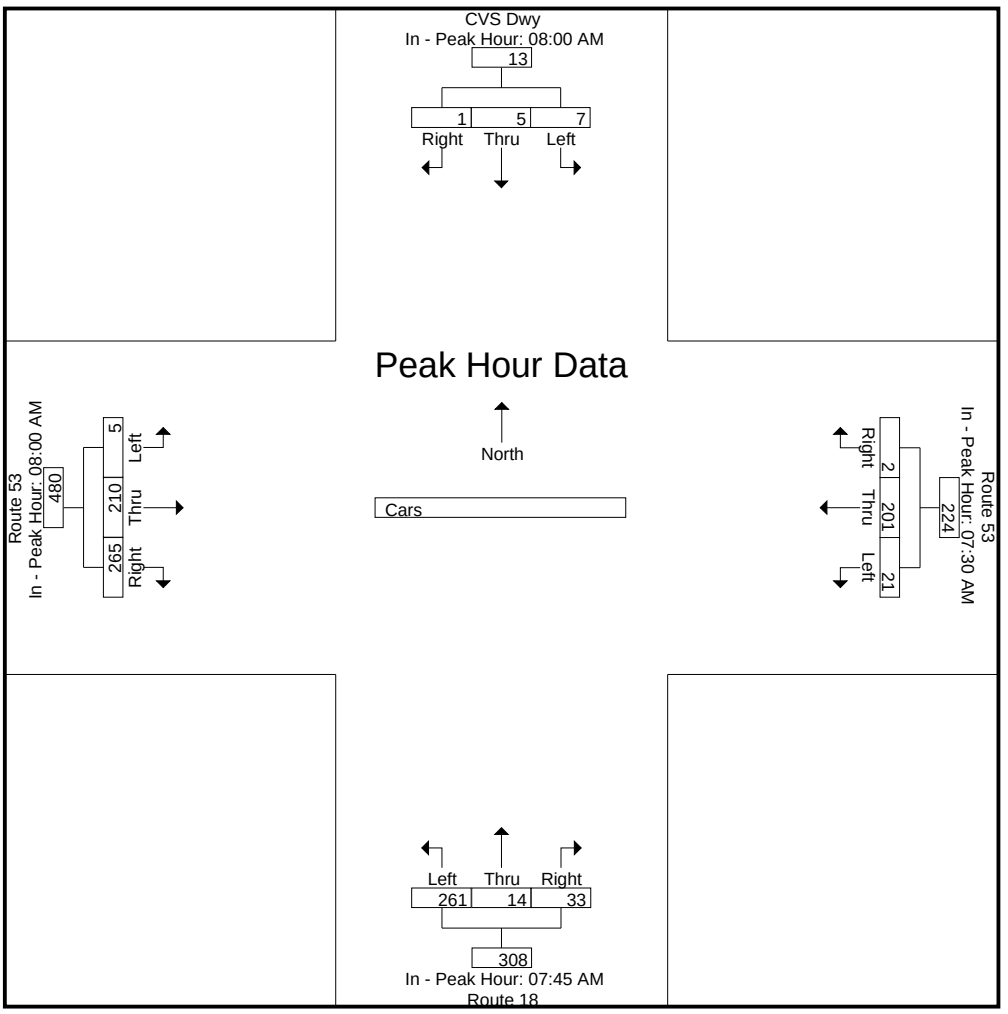
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:45 AM				08:00 AM			
+0 mins.	1	**2**	0	3	7	41	**1**	49	68	**6**	9	83	1	45	68	114
+15 mins.	1	0	**1**	2	2	46	0	48	67	2	8	77	**2**	45	58	105
+30 mins.	**3**	1	0	**4**	**8**	49	0	57	**74**	6	5	**85**	1	**62**	**74**	**137**
+45 mins.	2	2	0	4	4	**65**	1	**70**	52	0	**11**	63	1	58	65	124
Total Volume	7	5	1	13	21	201	2	224	261	14	33	308	5	210	265	480
% App. Total	53.8	38.5	7.7		9.4	89.7	0.9		84.7	4.5	10.7		1	43.8	55.2	
PHF	.583	.625	.250	.813	.656	.773	.500	.800	.882	.583	.750	.906	.625	.847	.895	.876

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021

Groups Printed- Trucks

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	2	1	0	4	0	1	0	1	5	14
07:15 AM	0	0	0	0	3	0	2	0	0	0	0	0	5
07:30 AM	0	0	0	1	1	0	5	0	0	0	1	4	12
07:45 AM	0	0	0	0	2	0	2	0	1	0	0	3	8
Total	0	0	0	3	7	0	13	0	2	0	2	12	39
08:00 AM	0	0	0	0	1	0	0	0	0	0	1	1	3
08:15 AM	0	0	1	0	0	0	0	0	0	0	2	3	6
08:30 AM	0	0	0	1	1	0	3	0	0	0	1	1	7
08:45 AM	1	0	0	1	1	0	0	0	0	0	2	1	6
Total	1	0	1	2	3	0	3	0	0	0	6	6	22
Grand Total	1	0	1	5	10	0	16	0	2	0	8	18	61
Apprch %	50	0	50	33.3	66.7	0	88.9	0	11.1	0	30.8	69.2	
Total %	1.6	0	1.6	8.2	16.4	0	26.2	0	3.3	0	13.1	29.5	

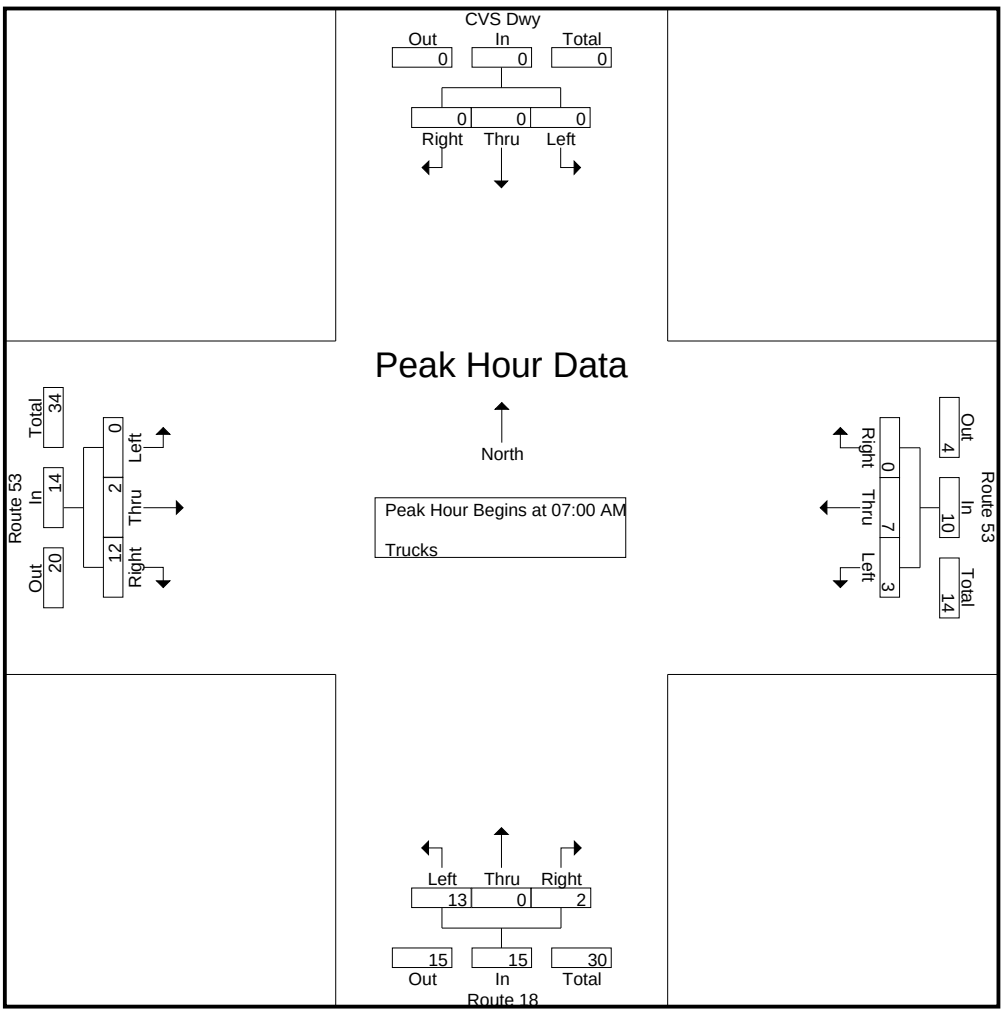
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	**2**	1	0	**3**	4	0	**1**	**5**	0	**1**	**5**	**6**	**14**
07:15 AM	0	0	0	0	0	**3**	0	3	2	0	0	2	0	0	0	0	5
07:30 AM	0	0	0	0	1	1	0	2	**5**	0	0	5	0	1	4	5	12
07:45 AM	0	0	0	0	0	2	0	2	2	0	1	3	0	0	3	3	8
Total Volume	0	0	0	0	3	7	0	10	13	0	2	15	0	2	12	14	39
% App. Total	0	0	0		30	70	0		86.7	0	13.3		0	14.3	85.7		
PHF	.000	.000	.000	.000	.375	.583	.000	.833	.650	.000	.500	.750	.000	.500	.600	.583	.696

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 8



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

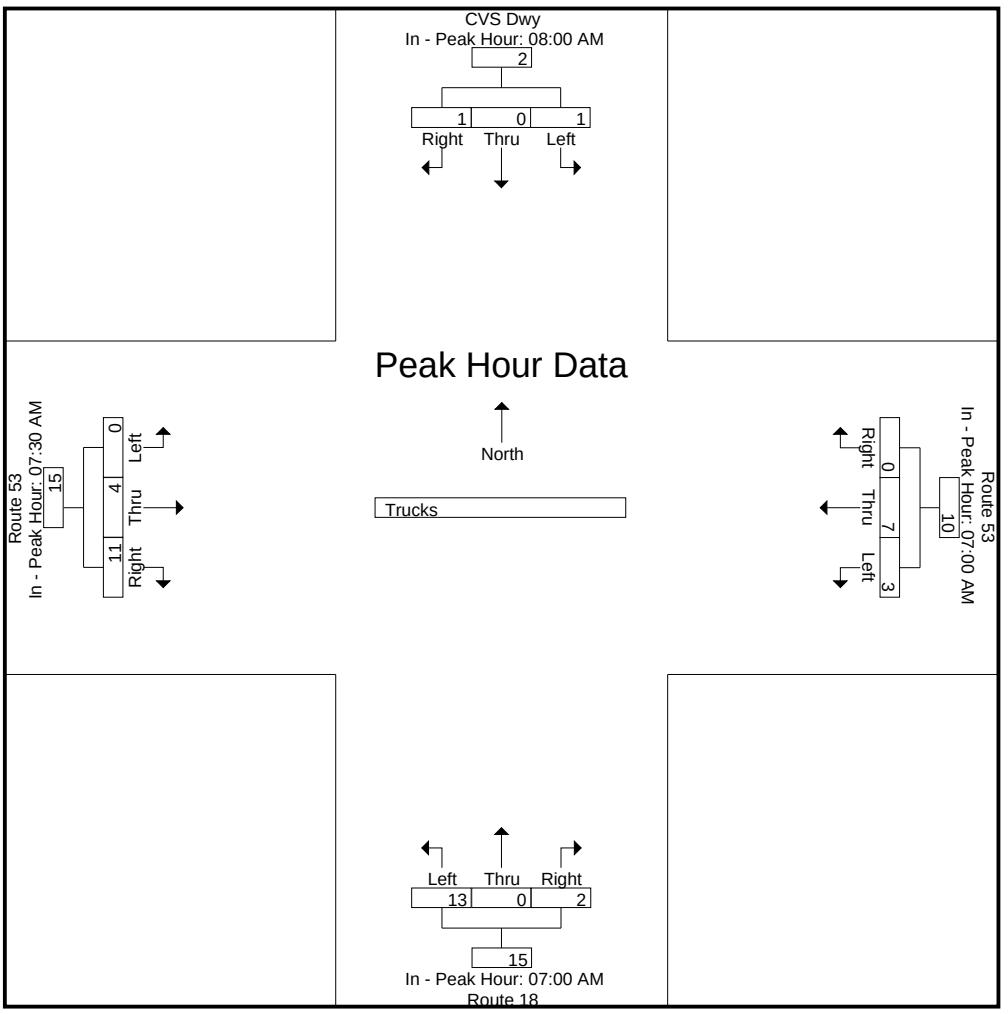
	08:00 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	0	0	0	0	**2**	1	0	**3**	4	0	**1**	**5**	0	1	**4**	**5**
+15 mins.	0	0	**1**	**1**	0	**3**	0	3	2	0	0	2	0	0	3	3
+30 mins.	0	0	0	0	1	1	0	2	**5**	0	0	5	0	1	1	2
+45 mins.	**1**	0	0	1	0	2	0	2	2	0	1	3	0	**2**	3	5
Total Volume	1	0	1	2	3	7	0	10	13	0	2	15	0	4	11	15
% App. Total	50	0	50		30	70	0		86.7	0	13.3		0	26.7	73.3	
PHF	.250	.000	.250	.500	.375	.583	.000	.833	.650	.000	.500	.750	.000	.500	.688	.750

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021

Groups Printed- Bikes Peds

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	4	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	1	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
08:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3
Total	0	0	0	2	0	0	0	0	0	0	1	1	0	0	1	2	5	2	7
Grand Total	0	0	0	4	0	0	0	1	0	0	1	2	0	0	1	2	9	2	11
Apprch %	0	0	0		0	0	0		0	0	100		0	0	100				
Total %	0	0	0		0	0	0		0	0	50		0	0	50		81.8	18.2	

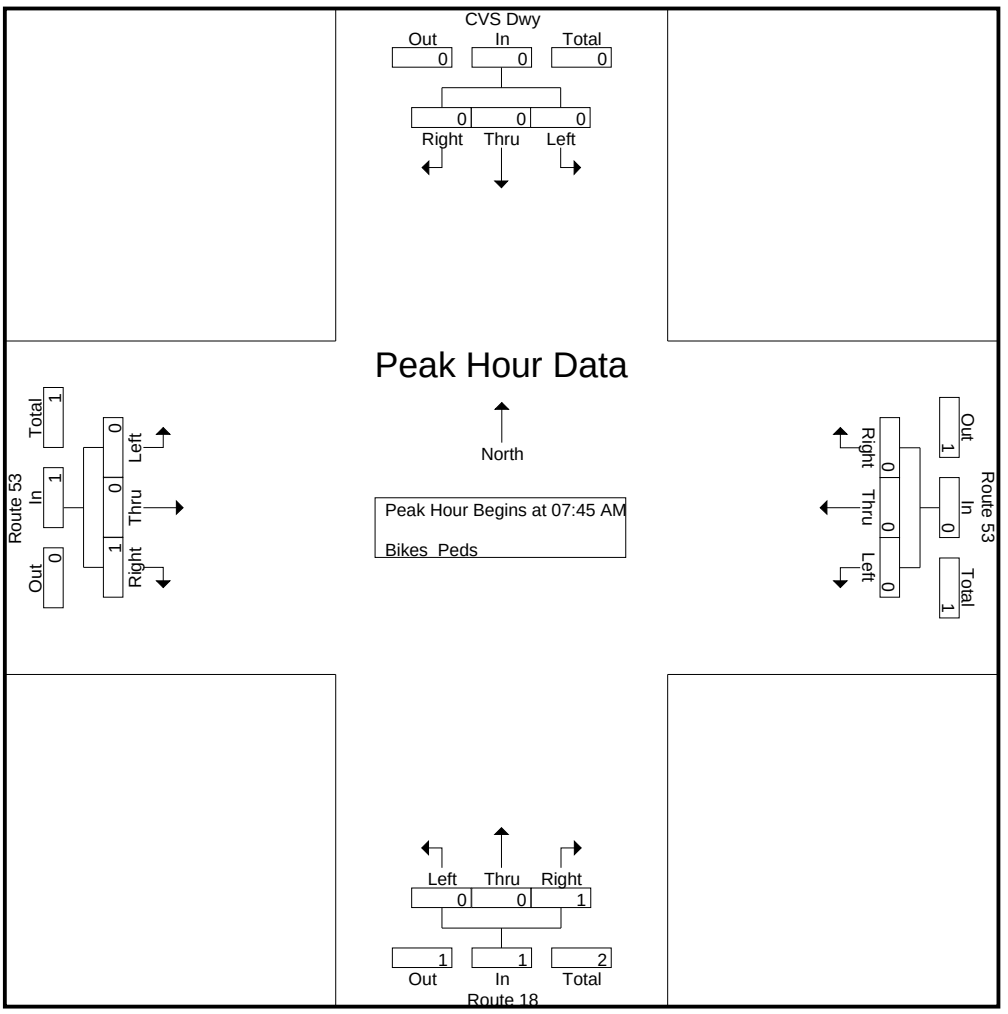
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**1**
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	2
% App. Total	0	0	0		0	0	0		0	0	100		0	0	100		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.250	.500

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 11

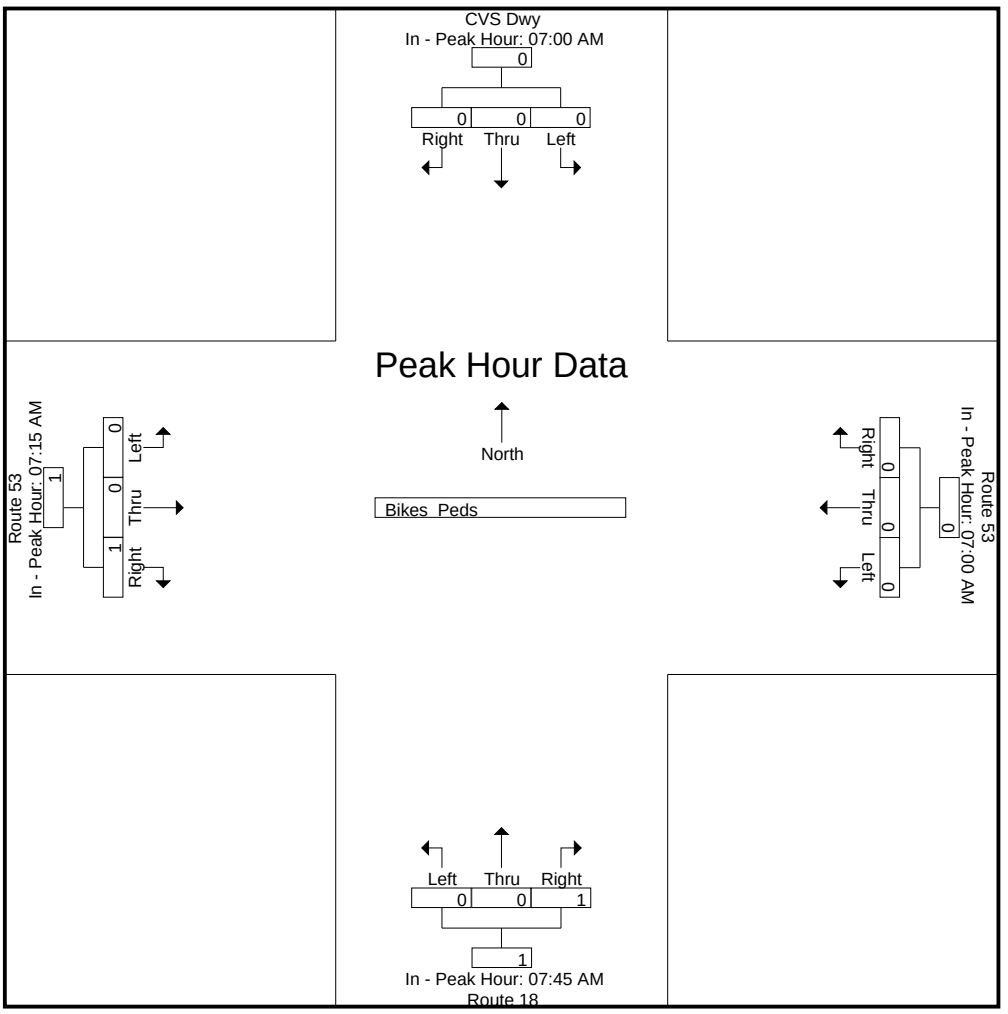


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:45 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	**1**	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1
% App. Total	0	0	0		0	0	0		0	0	100		0	0	100	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.250

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 1

Groups Printed- Cars - Trucks

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	4	3	8	91	0	87	3	13	5	90	91	400
04:15 PM	4	3	1	12	80	0	83	7	19	8	78	99	394
04:30 PM	5	5	4	13	86	1	89	3	13	10	96	87	412
04:45 PM	1	2	3	8	66	2	92	8	15	13	88	86	384
Total	15	14	11	41	323	3	351	21	60	36	352	363	1590
05:00 PM	3	6	1	12	86	0	75	14	14	6	74	79	370
05:15 PM	6	3	0	10	75	1	82	6	13	10	74	97	377
05:30 PM	1	6	0	10	91	0	77	5	12	12	85	76	375
05:45 PM	3	6	2	8	83	0	76	6	14	14	70	80	362
Total	13	21	3	40	335	1	310	31	53	42	303	332	1484
Grand Total	28	35	14	81	658	4	661	52	113	78	655	695	3074
Apprch %	36.4	45.5	18.2	10.9	88.6	0.5	80	6.3	13.7	5.5	45.9	48.7	
Total %	0.9	1.1	0.5	2.6	21.4	0.1	21.5	1.7	3.7	2.5	21.3	22.6	
Cars	28	35	14	80	653	4	657	52	111	78	647	692	3051
% Cars	100	100	100	98.8	99.2	100	99.4	100	98.2	100	98.8	99.6	99.3
Trucks	0	0	0	1	5	0	4	0	2	0	8	3	23
% Trucks	0	0	0	1.2	0.8	0	0.6	0	1.8	0	1.2	0.4	0.7

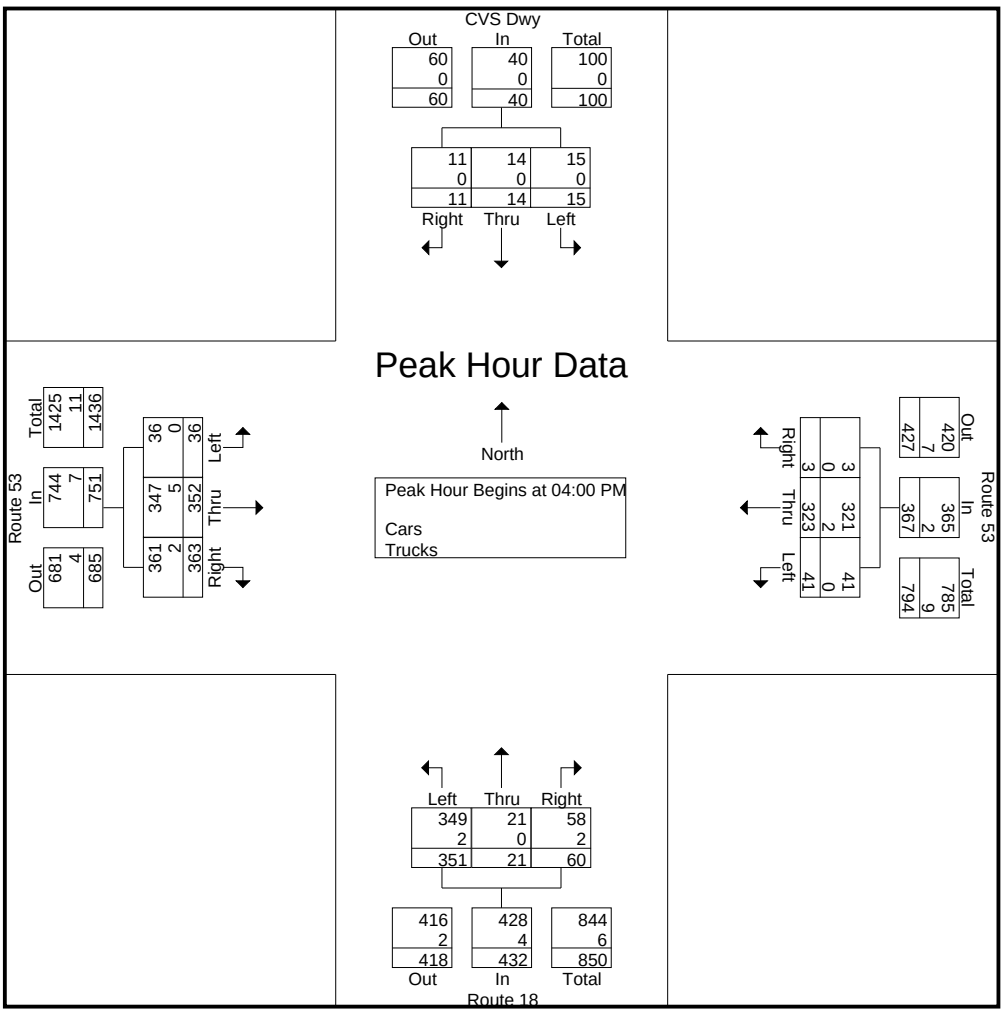
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**5**	4	3	12	8	**91**	0	99	87	3	13	103	5	90	91	186	400
04:15 PM	4	3	1	8	12	80	0	92	83	7	**19**	109	8	78	**99**	185	394
04:30 PM	5	**5**	**4**	**14**	**13**	86	1	**100**	89	3	13	105	10	**96**	87	**193**	**412**
04:45 PM	1	2	3	6	8	66	**2**	76	**92**	**8**	15	**115**	**13**	88	86	187	384
Total Volume	15	14	11	40	41	323	3	367	351	21	60	432	36	352	363	751	1590
% App. Total	37.5	35	27.5		11.2	88	0.8		81.2	4.9	13.9		4.8	46.9	48.3		
PHF	.750	.700	.688	.714	.788	.887	.375	.918	.954	.656	.789	.939	.692	.917	.917	.973	.965
Cars	15	14	11	40	41	321	3	365	349	21	58	428	36	347	361	744	1577
% Cars	100	100	100	100	100	99.4	100	99.5	99.4	100	96.7	99.1	100	98.6	99.4	99.1	99.2
Trucks	0	0	0	0	0	2	0	2	2	0	2	4	0	5	2	7	13
% Trucks	0	0	0	0	0	0.6	0	0.5	0.6	0	3.3	0.9	0	1.4	0.6	0.9	0.8

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 2



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

Peak Hour for Each Approach Begins at:

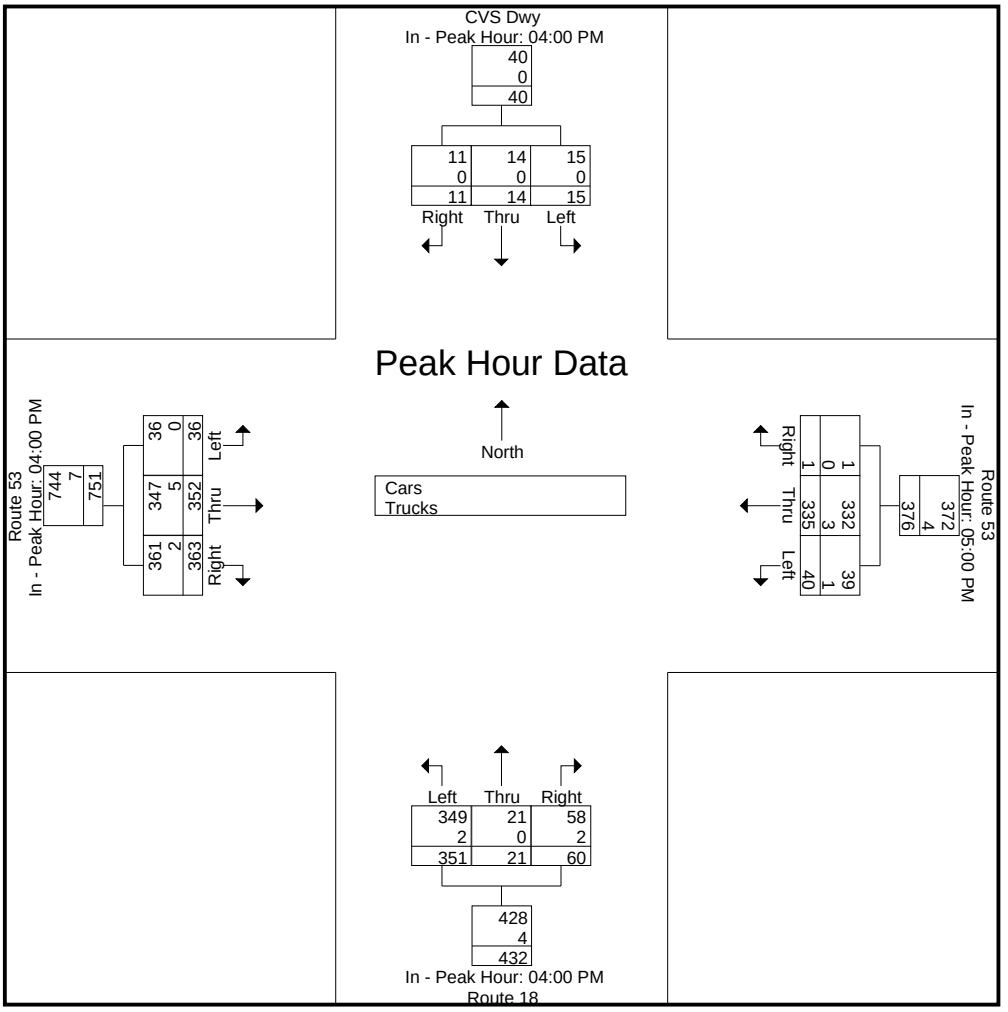
	04:00 PM				05:00 PM				04:00 PM				04:00 PM			
+0 mins.	**5**	4	3	12	**12**	86	0	98	87	3	13	103	5	90	91	186
+15 mins.	4	3	1	8	10	75	**1**	86	83	7	**19**	109	8	78	**99**	185
+30 mins.	5	**5**	**4**	**14**	10	**91**	0	**101**	89	3	13	105	10	**96**	87	**193**
+45 mins.	1	2	3	6	8	83	0	91	**92**	**8**	15	**115**	**13**	88	86	187
Total Volume	15	14	11	40	40	335	1	376	351	21	60	432	36	352	363	751
% App. Total	37.5	35	27.5		10.6	89.1	0.3		81.2	4.9	13.9		4.8	46.9	48.3	
PHF	.750	.700	.688	.714	.833	.920	.250	.931	.954	.656	.789	.939	.692	.917	.917	.973
Cars	15	14	11	40	39	332	1	372	349	21	58	428	36	347	361	744
% Cars	100	100	100	100	97.5	99.1	100	98.9	99.4	100	96.7	99.1	100	98.6	99.4	99.1
Trucks	0	0	0	0	1	3	0	4	2	0	2	4	0	5	2	7
% Trucks	0	0	0	0	2.5	0.9	0	1.1	0.6	0	3.3	0.9	0	1.4	0.6	0.9

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 4

Groups Printed- Cars

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	4	3	8	90	0	86	3	13	5	88	89	394
04:15 PM	4	3	1	12	80	0	83	7	18	8	77	99	392
04:30 PM	5	5	4	13	86	1	88	3	13	10	95	87	410
04:45 PM	1	2	3	8	65	2	92	8	14	13	87	86	381
Total	15	14	11	41	321	3	349	21	58	36	347	361	1577
05:00 PM	3	6	1	12	85	0	75	14	14	6	74	79	369
05:15 PM	6	3	0	10	74	1	82	6	13	10	73	97	375
05:30 PM	1	6	0	9	91	0	77	5	12	12	84	75	372
05:45 PM	3	6	2	8	82	0	74	6	14	14	69	80	358
Total	13	21	3	39	332	1	308	31	53	42	300	331	1474
Grand Total	28	35	14	80	653	4	657	52	111	78	647	692	3051
Apprch %	36.4	45.5	18.2	10.9	88.6	0.5	80.1	6.3	13.5	5.5	45.7	48.8	
Total %	0.9	1.1	0.5	2.6	21.4	0.1	21.5	1.7	3.6	2.6	21.2	22.7	

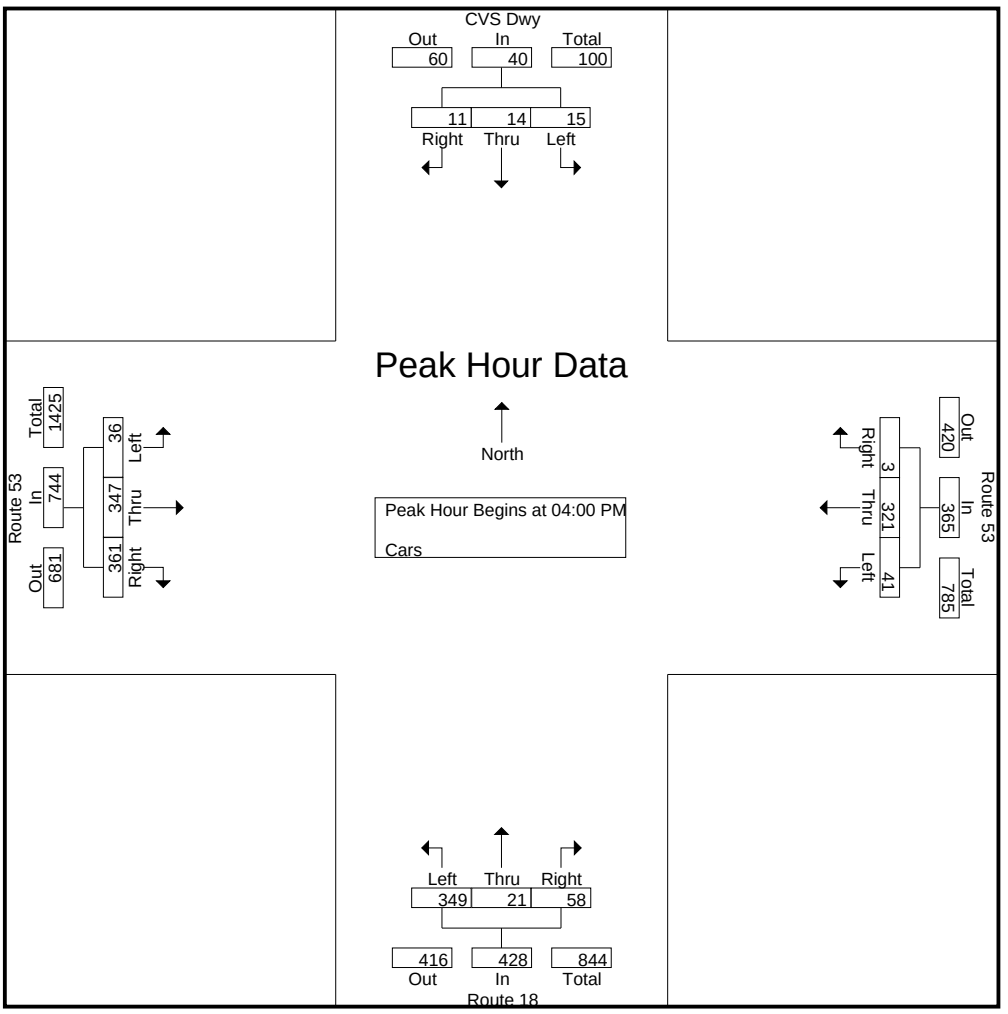
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**5**	4	3	12	8	**90**	0	98	86	3	13	102	5	88	89	182	394
04:15 PM	4	3	1	8	12	80	0	92	83	7	**18**	108	8	77	**99**	184	392
04:30 PM	5	**5**	**4**	**14**	**13**	86	1	**100**	88	3	13	104	10	**95**	87	**192**	**410**
04:45 PM	1	2	3	6	8	65	**2**	75	**92**	**8**	14	**114**	**13**	87	86	186	381
Total Volume	15	14	11	40	41	321	3	365	349	21	58	428	36	347	361	744	1577
% App. Total	37.5	35	27.5		11.2	87.9	0.8		81.5	4.9	13.6		4.8	46.6	48.5		
PHF	.750	.700	.688	.714	.788	.892	.375	.913	.948	.656	.806	.939	.692	.913	.912	.969	.962

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 5



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

Peak Hour for Each Approach Begins at:

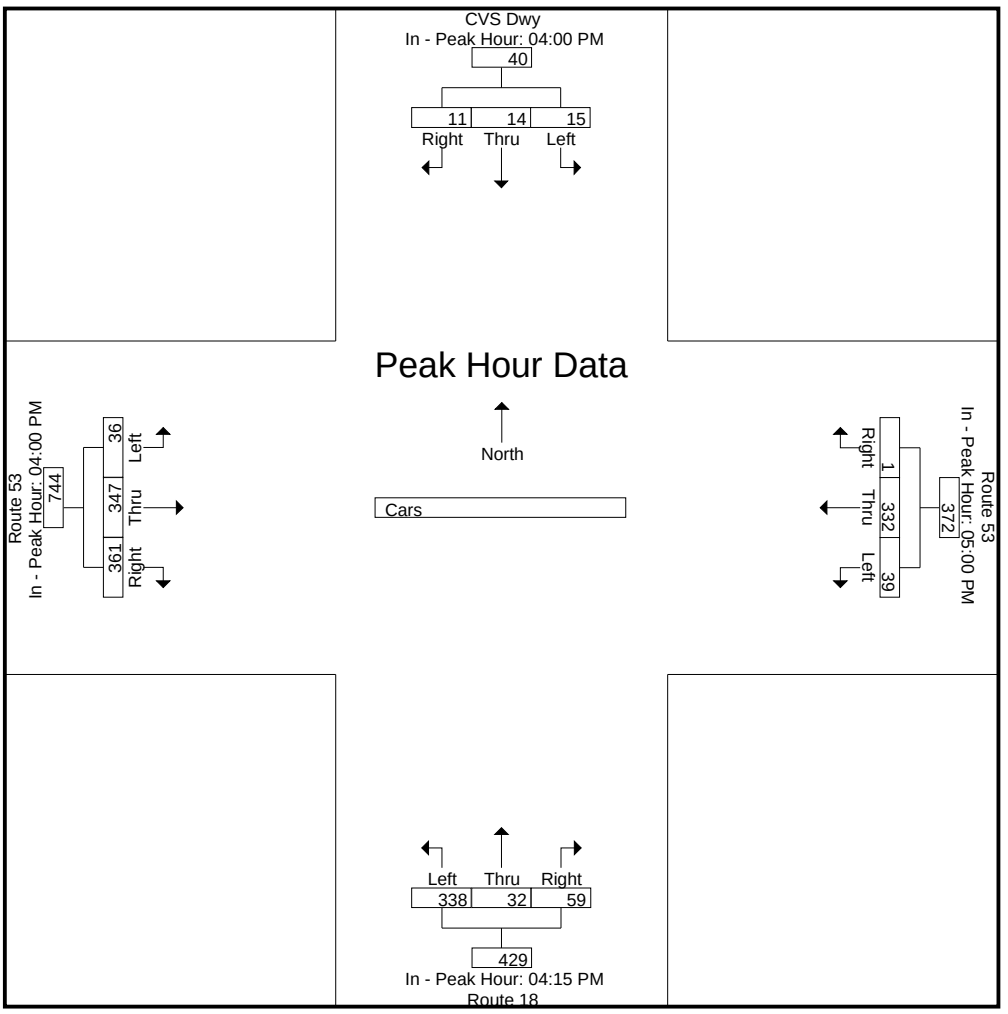
	04:00 PM				05:00 PM				04:15 PM				04:00 PM			
+0 mins.	**5**	4	3	12	**12**	85	0	97	83	7	**18**	108	5	88	89	182
+15 mins.	4	3	1	8	10	74	**1**	85	88	3	13	104	8	77	**99**	184
+30 mins.	5	**5**	**4**	**14**	9	**91**	0	**100**	**92**	8	14	**114**	10	**95**	87	**192**
+45 mins.	1	2	3	6	8	82	0	90	75	**14**	14	103	**13**	87	86	186
Total Volume	15	14	11	40	39	332	1	372	338	32	59	429	36	347	361	744
% App. Total	37.5	35	27.5		10.5	89.2	0.3		78.8	7.5	13.8		4.8	46.6	48.5	
PHF	.750	.700	.688	.714	.813	.912	.250	.930	.918	.571	.819	.941	.692	.913	.912	.969

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021

Groups Printed- Trucks

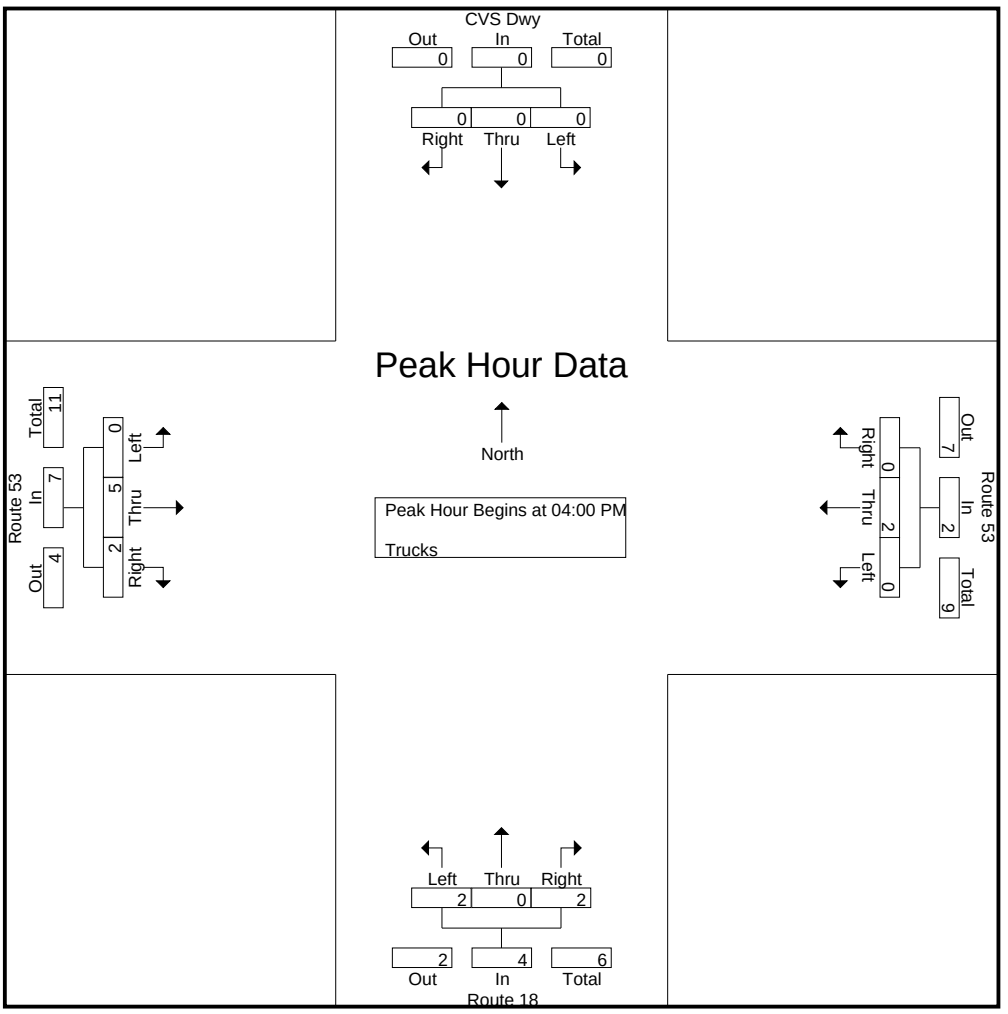
	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	1	0	0	0	2	2	6
04:15 PM	0	0	0	0	0	0	0	0	1	0	1	0	2
04:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
04:45 PM	0	0	0	0	1	0	0	0	1	0	1	0	3
Total	0	0	0	0	2	0	2	0	2	0	5	2	13
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	1	0	0	0	0	0	0	1	1	3
05:45 PM	0	0	0	0	1	0	2	0	0	0	1	0	4
Total	0	0	0	1	3	0	2	0	0	0	3	1	10
Grand Total	0	0	0	1	5	0	4	0	2	0	8	3	23
Apprch %	0	0	0	16.7	83.3	0	66.7	0	33.3	0	72.7	27.3	
Total %	0	0	0	4.3	21.7	0	17.4	0	8.7	0	34.8	13	

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**1**	0	**1**	**1**	0	0	**1**	0	**2**	**2**	**4**	**6**
04:15 PM	0	0	0	0	0	0	0	0	0	0	**1**	1	0	1	0	1	2
04:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
04:45 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
Total Volume	0	0	0	0	0	2	0	2	2	0	2	4	0	5	2	7	13
% App. Total	0	0	0		0	100	0		50	0	50		0	71.4	28.6		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.500	.000	.500	1.00	.000	.625	.250	.438	.542

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 8



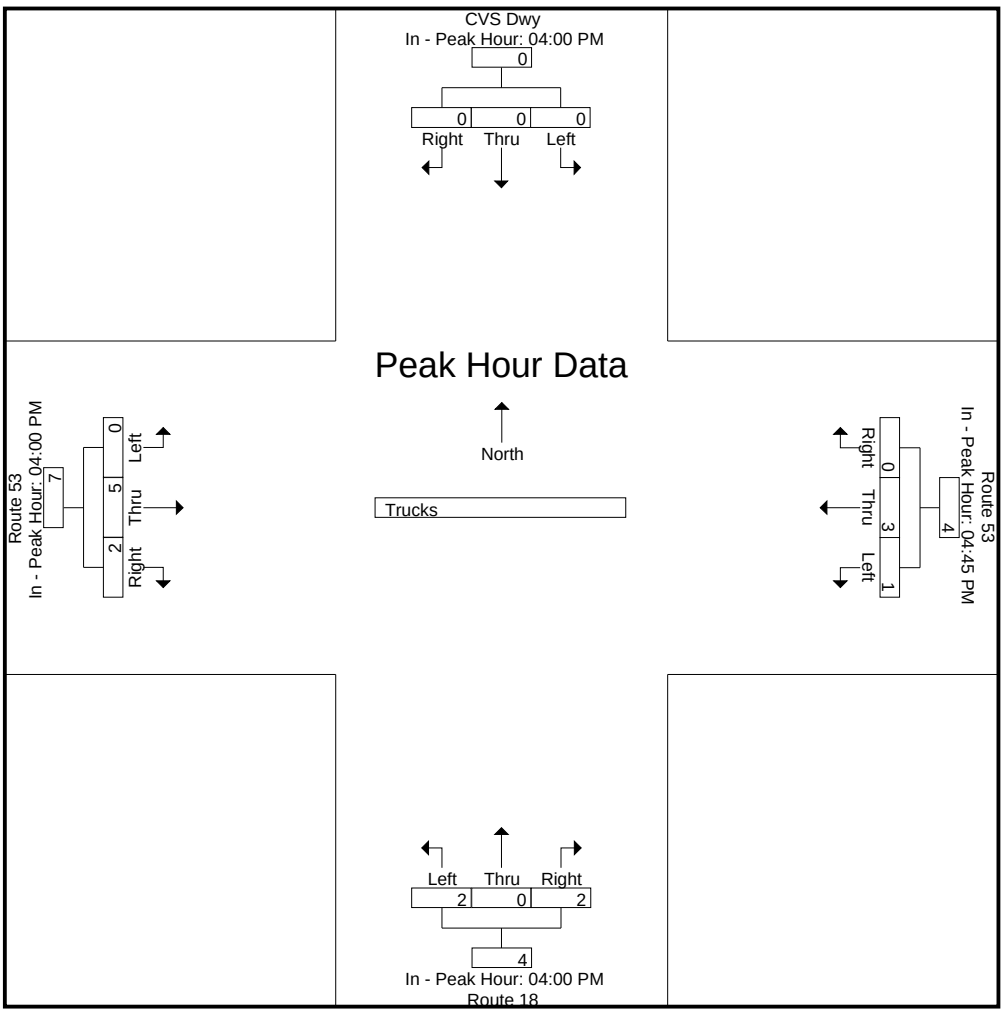
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	**1**	0	0	**1**	0	**2**	**2**	**4**
+15 mins.	0	0	0	0	0	1	0	1	0	0	**1**	1	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1
+45 mins.	0	0	0	0	**1**	0	0	1	0	0	1	1	0	1	0	1
Total Volume	0	0	0	0	1	3	0	4	2	0	2	4	0	5	2	7
% App. Total	0	0	0		25	75	0		50	0	50		0	71.4	28.6	
PHF	.000	.000	.000	.000	.250	.750	.000	1.000	.500	.000	.500	1.000	.000	.625	.250	.438

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021

Groups Printed- Bikes Peds

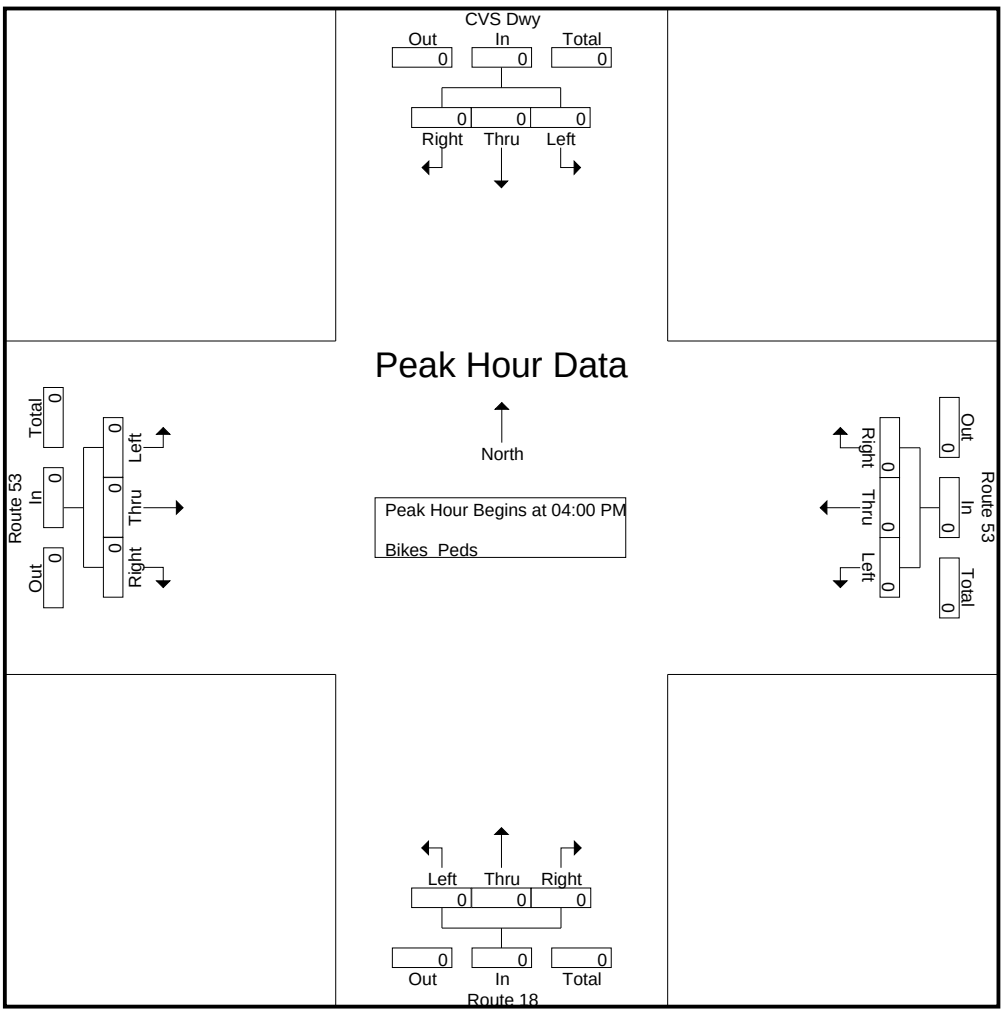
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	3	0	3
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 11

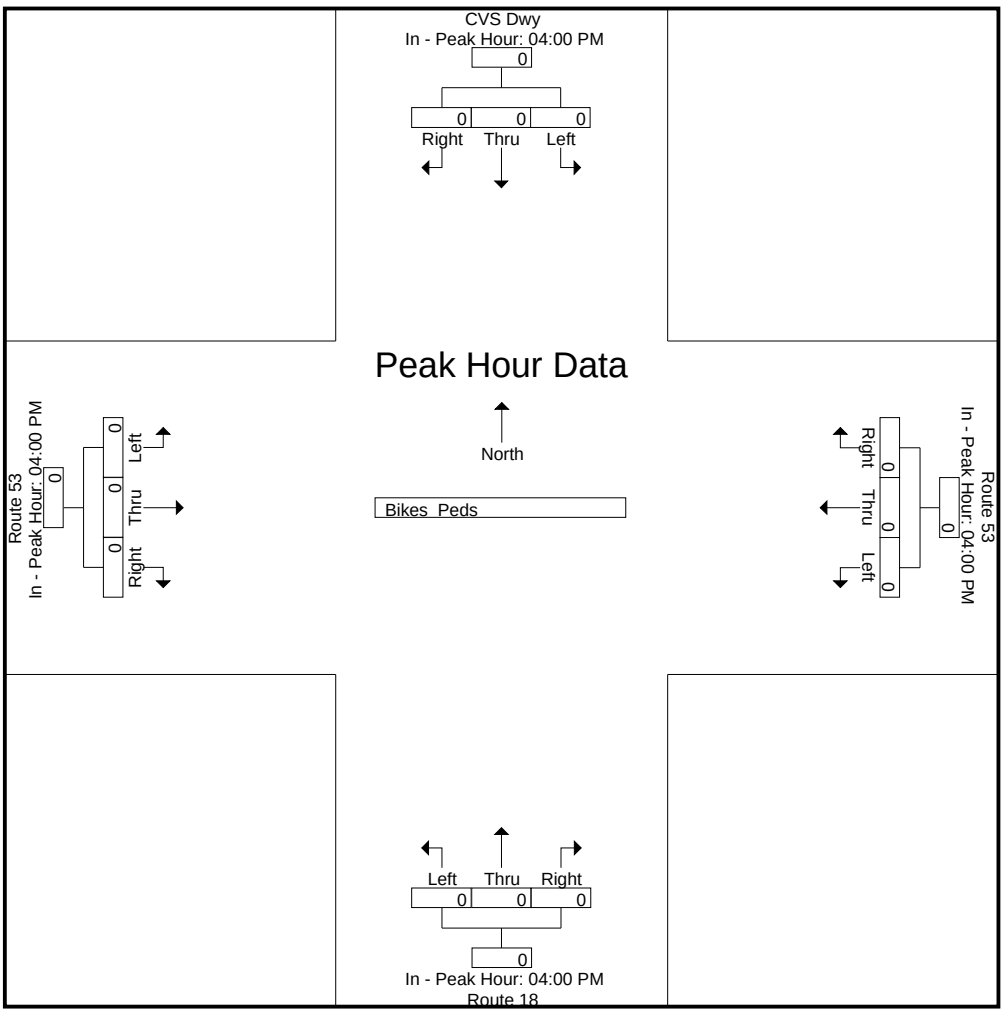


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260001
Site Code : 88260001
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 1

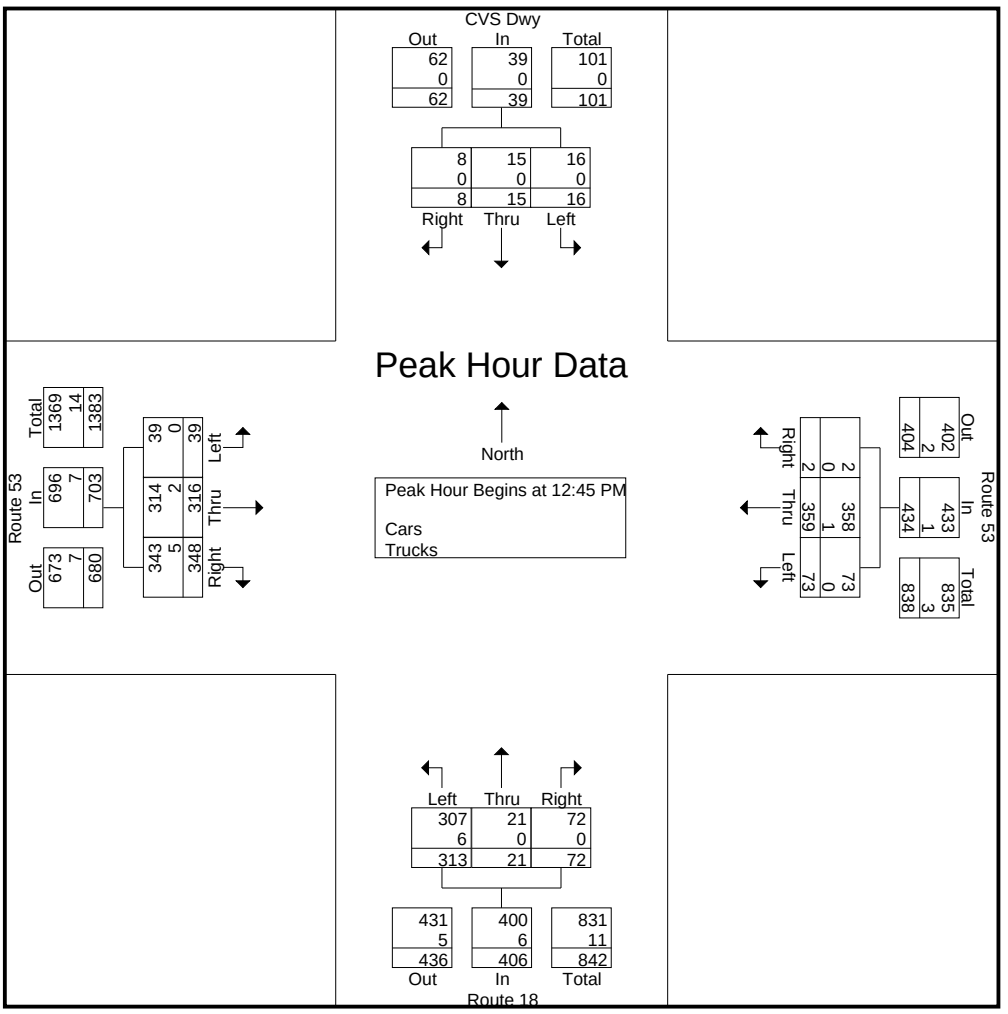
Groups Printed- Cars - Trucks

	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	2	5	3	13	58	1	58	6	14	9	67	58	294
11:15 AM	3	5	1	16	75	1	54	9	15	11	71	67	328
11:30 AM	7	3	4	13	62	0	83	6	19	9	56	83	345
11:45 AM	3	5	1	16	77	2	78	3	21	12	62	74	354
Total	15	18	9	58	272	4	273	24	69	41	256	282	1321
12:00 PM	2	2	3	15	86	0	83	10	22	4	69	78	374
12:15 PM	1	2	2	14	87	0	77	7	13	7	86	85	381
12:30 PM	6	6	3	18	75	0	89	4	21	7	60	73	362
12:45 PM	5	4	0	17	94	0	86	3	17	7	84	102	419
Total	14	14	8	64	342	0	335	24	73	25	299	338	1536
01:00 PM	4	3	2	26	91	1	68	3	22	14	73	72	379
01:15 PM	4	6	2	16	75	1	71	12	17	11	77	75	367
01:30 PM	3	2	4	14	99	0	88	3	16	7	82	99	417
01:45 PM	6	2	0	17	74	1	85	3	18	6	67	87	366
Total	17	13	8	73	339	3	312	21	73	38	299	333	1529
Grand Total	46	45	25	195	953	7	920	69	215	104	854	953	4386
Apprch %	39.7	38.8	21.6	16.9	82.5	0.6	76.4	5.7	17.9	5.4	44.7	49.9	
Total %	1	1	0.6	4.4	21.7	0.2	21	1.6	4.9	2.4	19.5	21.7	
Cars	46	45	25	193	948	7	909	69	213	104	851	946	4356
% Cars	100	100	100	99	99.5	100	98.8	100	99.1	100	99.6	99.3	99.3
Trucks	0	0	0	2	5	0	11	0	2	0	3	7	30
% Trucks	0	0	0	1	0.5	0	1.2	0	0.9	0	0.4	0.7	0.7

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	**5**	4	0	9	17	94	0	111	86	3	17	106	7	**84**	**102**	**193**	**419**
01:00 PM	4	3	2	9	**26**	91	**1**	**118**	68	3	**22**	93	**14**	73	72	159	379
01:15 PM	4	**6**	2	**12**	16	75	1	92	71	**12**	17	100	11	77	75	163	367
01:30 PM	3	2	**4**	9	14	**99**	0	113	**88**	3	16	**107**	7	82	99	188	417
Total Volume	16	15	8	39	73	359	2	434	313	21	72	406	39	316	348	703	1582
% App. Total	41	38.5	20.5		16.8	82.7	0.5		77.1	5.2	17.7		5.5	45	49.5		
PHF	.800	.625	.500	.813	.702	.907	.500	.919	.889	.438	.818	.949	.696	.940	.853	.911	.944
Cars	16	15	8	39	73	358	2	433	307	21	72	400	39	314	343	696	1568
% Cars	100	100	100	100	100	99.7	100	99.8	98.1	100	100	98.5	100	99.4	98.6	99.0	99.1
Trucks	0	0	0	0	0	1	0	1	6	0	0	6	0	2	5	7	14
% Trucks	0	0	0	0	0	0.3	0	0.2	1.9	0	0	1.5	0	0.6	1.4	1.0	0.9

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 2



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

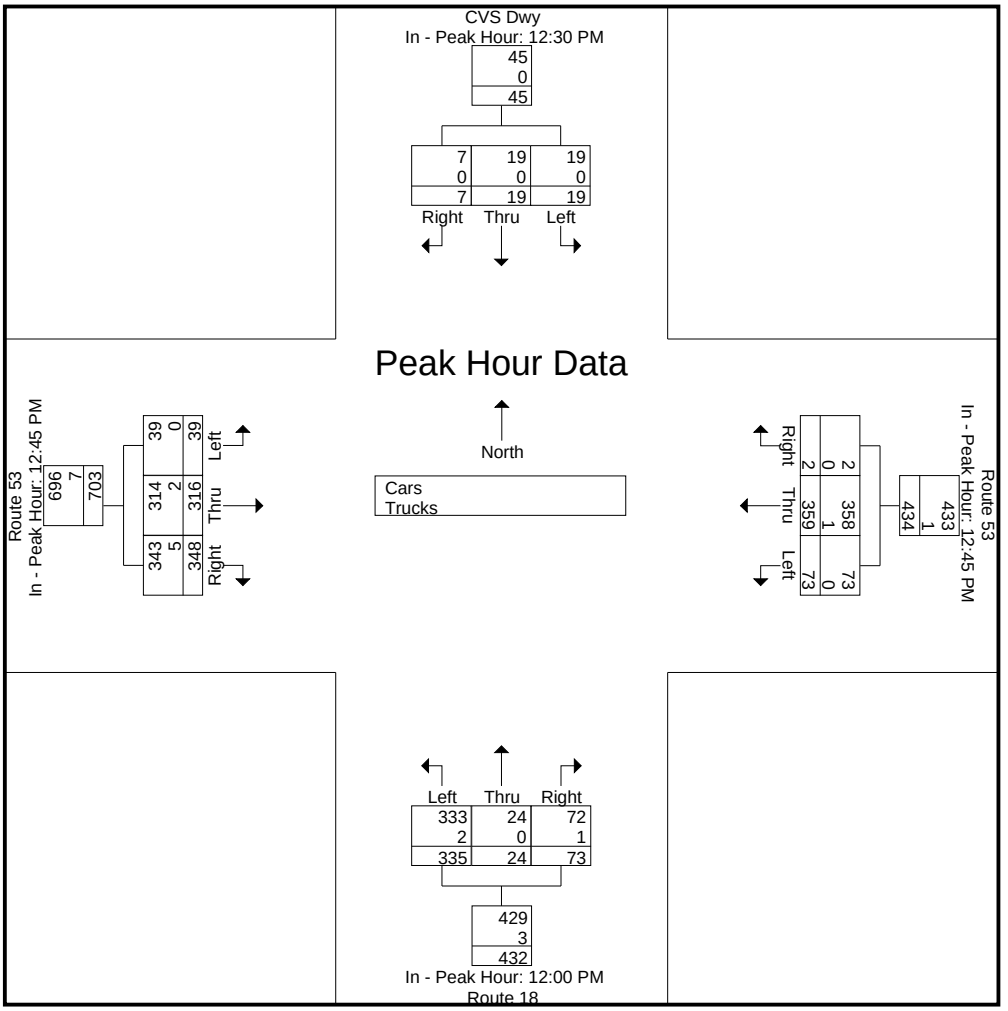
	12:30 PM				12:45 PM				12:00 PM				12:45 PM			
+0 mins.	**6**	**6**	**3**	**15**	17	94	0	111	83	**10**	**22**	**115**	7	**84**	**102**	**193**
+15 mins.	5	4	0	9	**26**	91	**1**	**118**	77	7	13	97	**14**	73	72	159
+30 mins.	4	3	2	9	16	75	1	92	**89**	4	21	114	11	77	75	163
+45 mins.	4	6	2	12	14	**99**	0	113	86	3	17	106	7	82	99	188
Total Volume	19	19	7	45	73	359	2	434	335	24	73	432	39	316	348	703
% App. Total	42.2	42.2	15.6		16.8	82.7	0.5		77.5	5.6	16.9		5.5	45	49.5	
PHF	.792	.792	.583	.750	.702	.907	.500	.919	.941	.600	.830	.939	.696	.940	.853	.911
Cars	19	19	7	45	73	358	2	433	333	24	72	429	39	314	343	696
% Cars	100	100	100	100	100	99.7	100	99.8	99.4	100	98.6	99.3	100	99.4	98.6	99
Trucks	0	0	0	0	0	1	0	1	2	0	1	3	0	2	5	7
% Trucks	0	0	0	0	0	0.3	0	0.2	0.6	0	1.4	0.7	0	0.6	1.4	1

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 4

Groups Printed- Cars

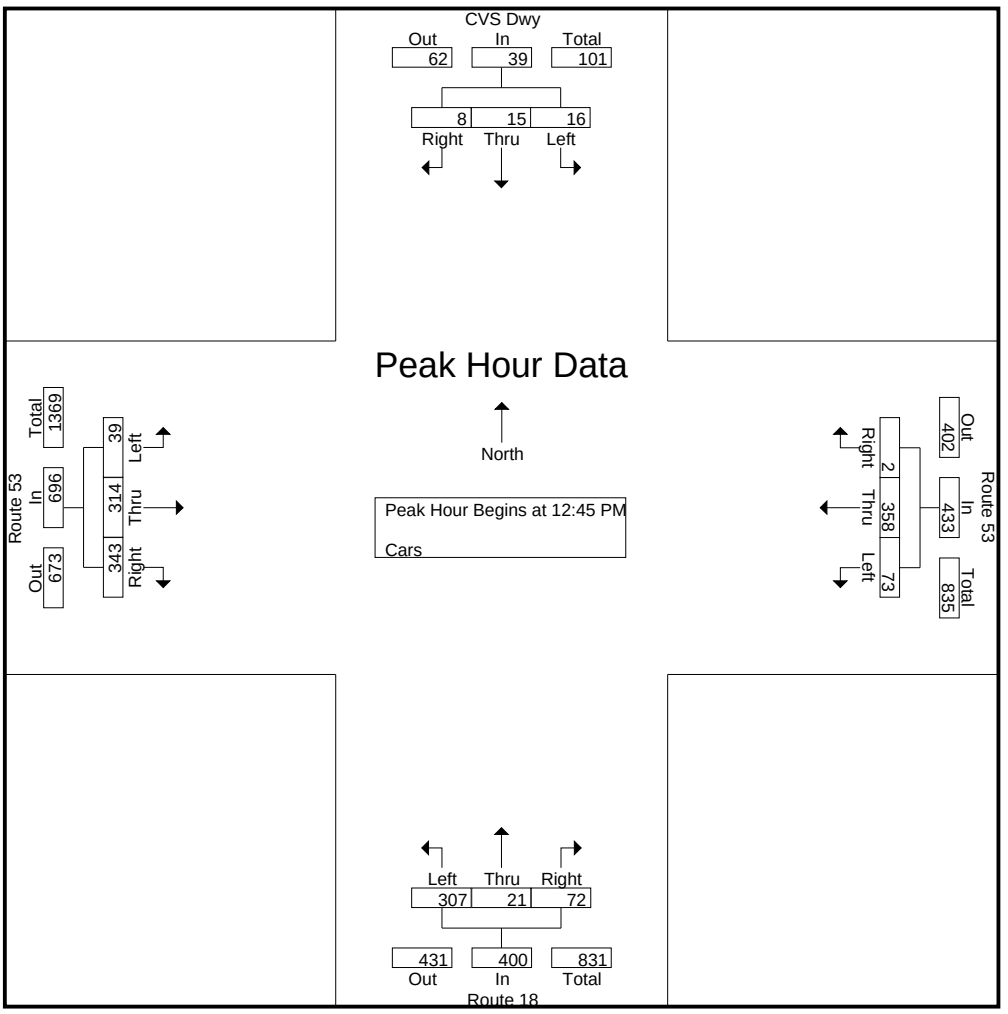
	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	2	5	3	12	58	1	58	6	14	9	67	58	293
11:15 AM	3	5	1	16	74	1	53	9	15	11	71	67	326
11:30 AM	7	3	4	13	60	0	82	6	19	9	56	83	342
11:45 AM	3	5	1	16	77	2	77	3	20	12	62	73	351
Total	15	18	9	57	269	4	270	24	68	41	256	281	1312
12:00 PM	2	2	3	15	86	0	83	10	21	4	69	78	373
12:15 PM	1	2	2	13	87	0	77	7	13	7	85	84	378
12:30 PM	6	6	3	18	75	0	88	4	21	7	60	73	361
12:45 PM	5	4	0	17	93	0	85	3	17	7	84	100	415
Total	14	14	8	63	341	0	333	24	72	25	298	335	1527
01:00 PM	4	3	2	26	91	1	67	3	22	14	72	71	376
01:15 PM	4	6	2	16	75	1	70	12	17	11	76	75	365
01:30 PM	3	2	4	14	99	0	85	3	16	7	82	97	412
01:45 PM	6	2	0	17	73	1	84	3	18	6	67	87	364
Total	17	13	8	73	338	3	306	21	73	38	297	330	1517
Grand Total	46	45	25	193	948	7	909	69	213	104	851	946	4356
Apprch %	39.7	38.8	21.6	16.8	82.6	0.6	76.3	5.8	17.9	5.5	44.8	49.8	
Total %	1.1	1	0.6	4.4	21.8	0.2	20.9	1.6	4.9	2.4	19.5	21.7	

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	**5**	4	0	9	17	93	0	110	**85**	3	17	**105**	7	**84**	**100**	**191**	**415**
01:00 PM	4	3	2	9	**26**	91	**1**	**118**	67	3	**22**	92	**14**	72	71	157	376
01:15 PM	4	**6**	2	**12**	16	75	1	92	70	**12**	17	99	11	76	75	162	365
01:30 PM	3	2	**4**	9	14	**99**	0	113	85	3	16	104	7	82	97	186	412
Total Volume	16	15	8	39	73	358	2	433	307	21	72	400	39	314	343	696	1568
% App. Total	41	38.5	20.5		16.9	82.7	0.5		76.8	5.2	18		5.6	45.1	49.3		
PHF	.800	.625	.500	.813	.702	.904	.500	.917	.903	.438	.818	.952	.696	.935	.858	.911	.945

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 5



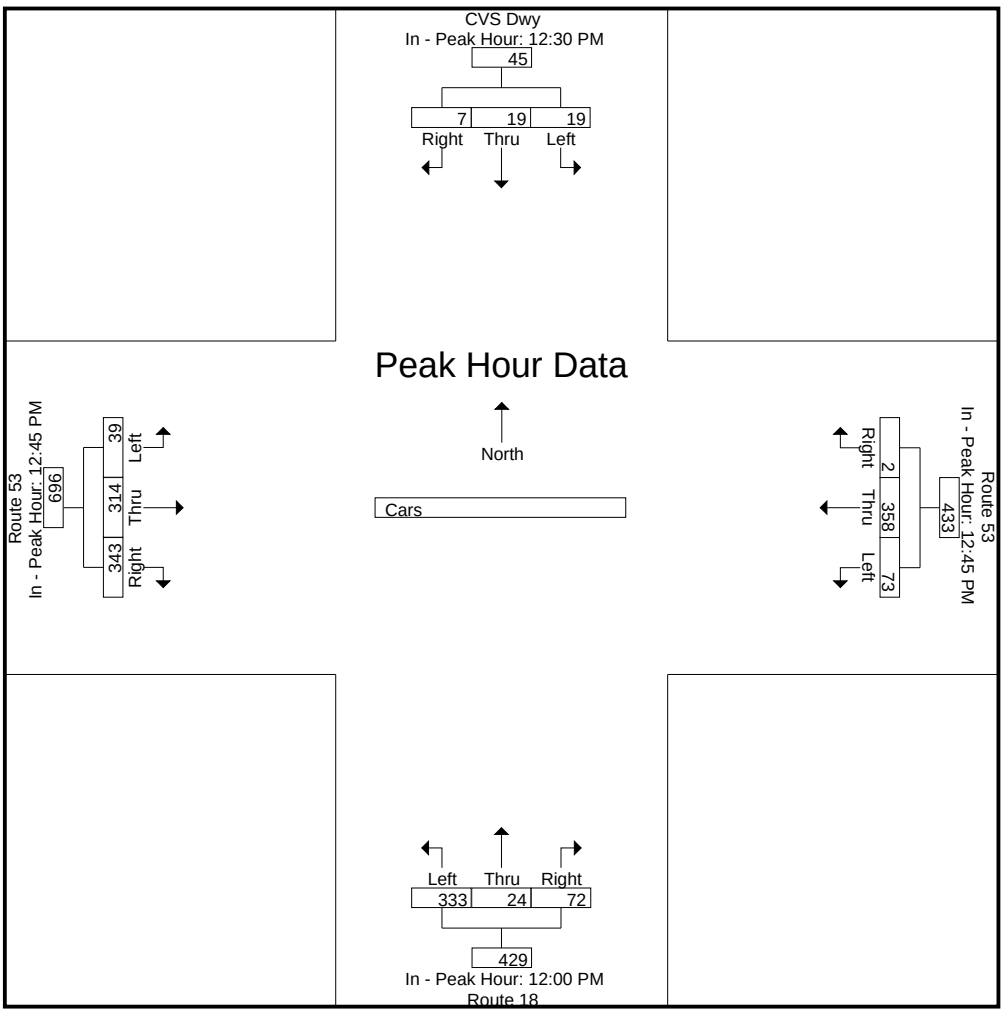
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:30 PM				12:45 PM				12:00 PM				12:45 PM			
+0 mins.	**6**	**6**	**3**	**15**	17	93	0	110	83	**10**	**21**	**114**	7	**84**	**100**	**191**
+15 mins.	5	4	0	9	**26**	91	**1**	**118**	77	7	13	97	**14**	72	71	157
+30 mins.	4	3	2	9	16	75	1	92	**88**	4	21	113	11	76	75	162
+45 mins.	4	6	2	12	14	**99**	0	113	85	3	17	105	7	82	97	186
Total Volume	19	19	7	45	73	358	2	433	333	24	72	429	39	314	343	696
% App. Total	42.2	42.2	15.6		16.9	82.7	0.5		77.6	5.6	16.8		5.6	45.1	49.3	
PHF	.792	.792	.583	.750	.702	.904	.500	.917	.946	.600	.857	.941	.696	.935	.858	.911

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021

Groups Printed- Trucks

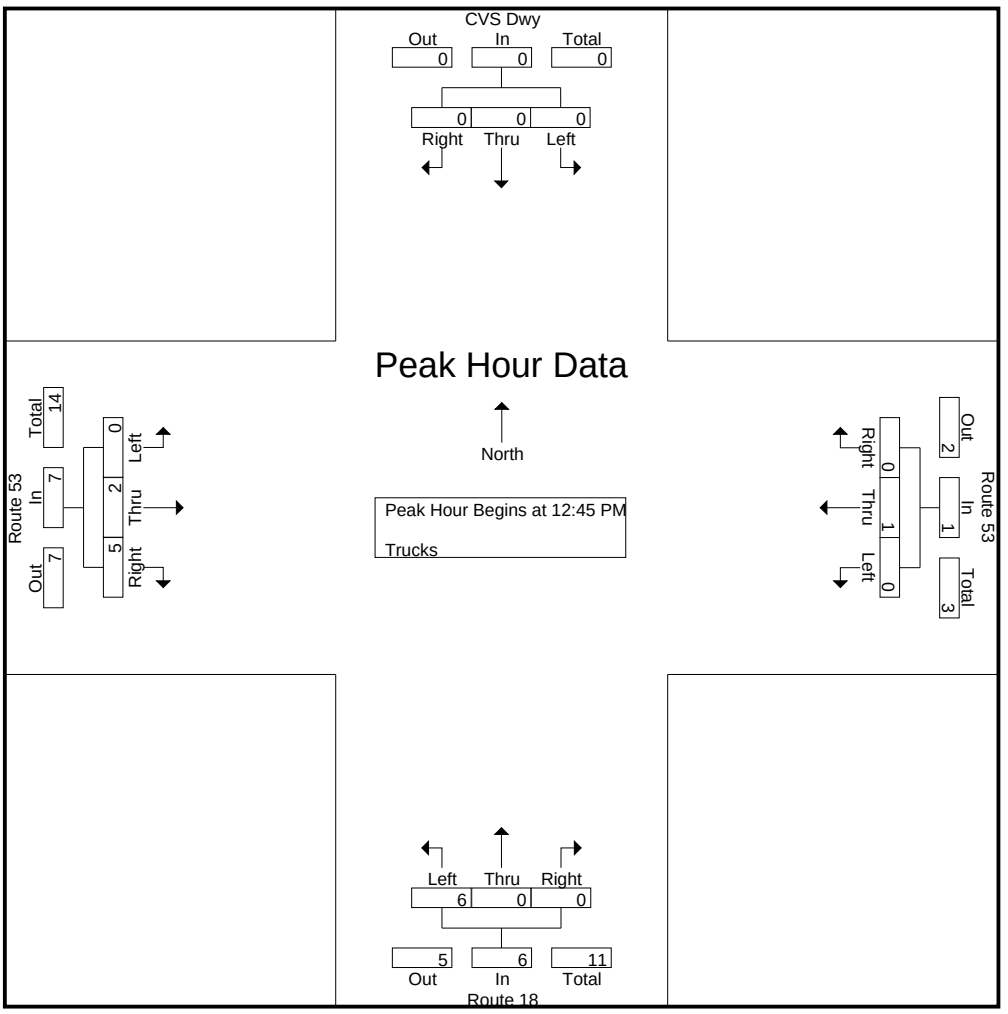
	CVS Dwy From North			Route 53 From East			Route 18 From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	2
11:30 AM	0	0	0	0	2	0	1	0	0	0	0	0	3
11:45 AM	0	0	0	0	0	0	1	0	1	0	0	1	3
Total	0	0	0	1	3	0	3	0	1	0	0	1	9
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
12:15 PM	0	0	0	1	0	0	0	0	0	0	1	1	3
12:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
12:45 PM	0	0	0	0	1	0	1	0	0	0	0	2	4
Total	0	0	0	1	1	0	2	0	1	0	1	3	9
01:00 PM	0	0	0	0	0	0	1	0	0	0	1	1	3
01:15 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
01:30 PM	0	0	0	0	0	0	3	0	0	0	0	2	5
01:45 PM	0	0	0	0	1	0	1	0	0	0	0	0	2
Total	0	0	0	0	1	0	6	0	0	0	2	3	12
Grand Total	0	0	0	2	5	0	11	0	2	0	3	7	30
Apprch %	0	0	0	28.6	71.4	0	84.6	0	15.4	0	30	70	
Total %	0	0	0	6.7	16.7	0	36.7	0	6.7	0	10	23.3	

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	0	0	0	0	**1**	0	**1**	1	0	0	1	0	0	**2**	**2**	4
01:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	**1**	1	2	3
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
01:30 PM	0	0	0	0	0	0	0	0	**3**	0	0	**3**	0	0	2	2	**5**
Total Volume	0	0	0	0	0	1	0	1	6	0	0	6	0	2	5	7	14
% App. Total	0	0	0		0	100	0		100	0	0		0	28.6	71.4		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.500	.000	.000	.500	.000	.500	.625	.875	.700

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

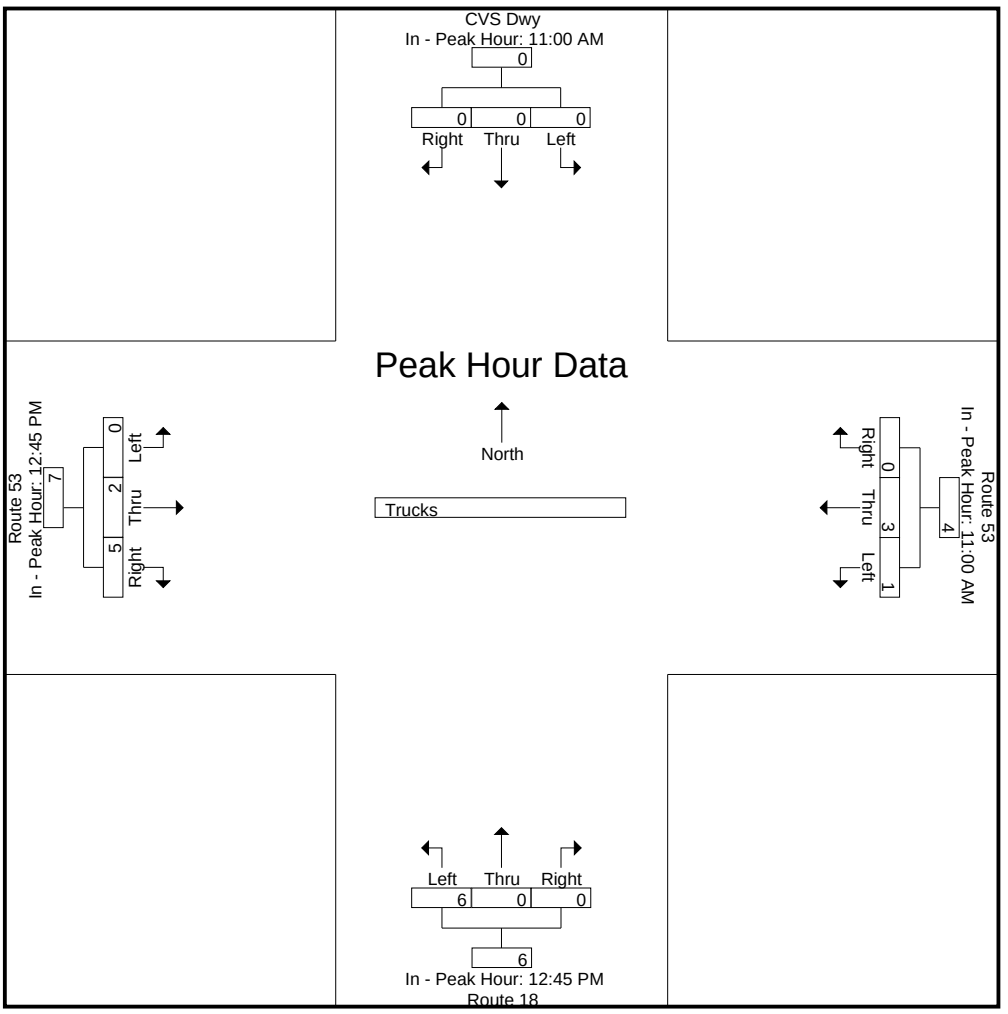
	11:00 AM				11:00 AM				12:45 PM				12:45 PM			
+0 mins.	0	0	0	0	**1**	0	0	1	1	0	0	1	0	0	**2**	**2**
+15 mins.	0	0	0	0	0	1	0	1	1	0	0	1	0	**1**	1	2
+30 mins.	0	0	0	0	0	**2**	0	**2**	1	0	0	1	0	1	0	1
+45 mins.	0	0	0	0	0	0	0	0	**3**	0	0	**3**	0	0	2	2
Total Volume	0	0	0	0	1	3	0	4	6	0	0	6	0	2	5	7
% App. Total	0	0	0		25	75	0		100	0	0		0	28.6	71.4	
PHF	.000	.000	.000	.000	.250	.375	.000	.500	.500	.000	.000	.500	.000	.500	.625	.875

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021

Groups Printed- Bikes Peds

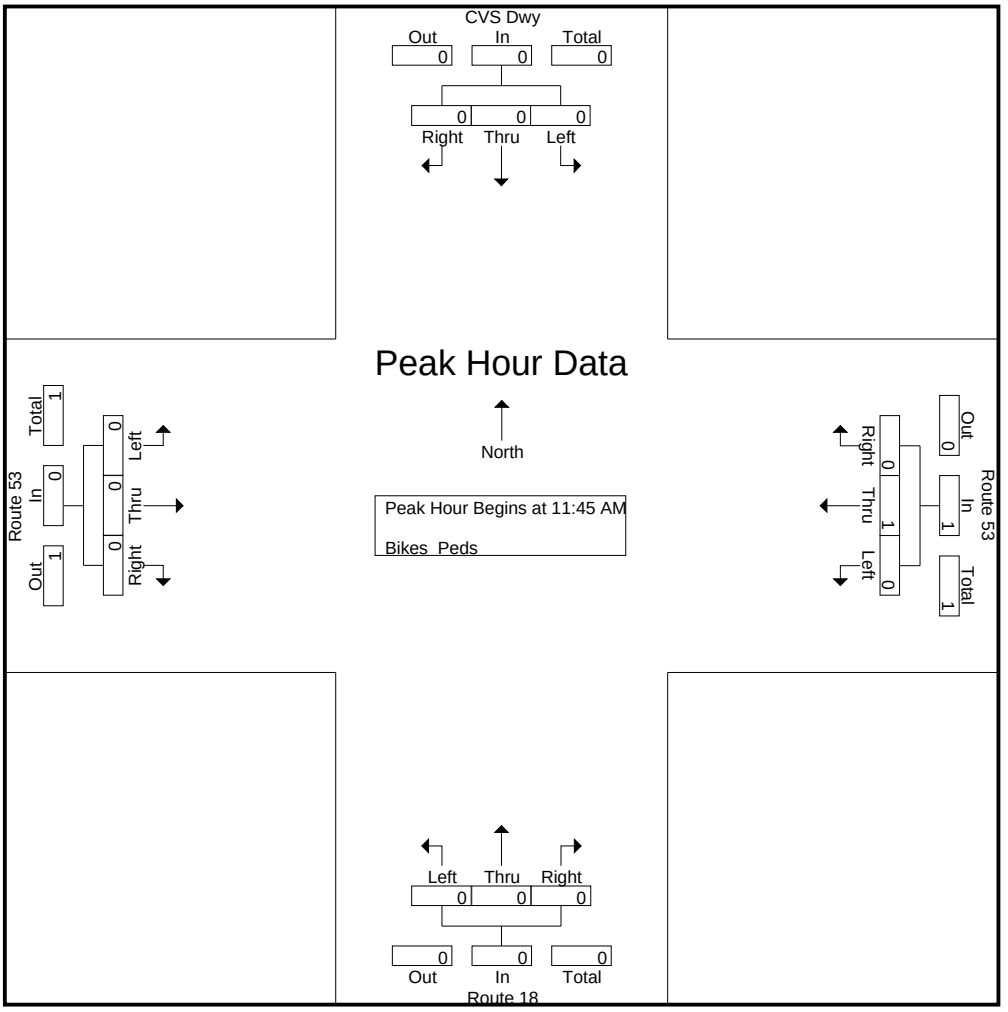
	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	3	1	4
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	3	5	1	6
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	2	1	3
Grand Total	0	0	0	4	0	1	0	0	0	0	0	1	0	1	0	3	8	2	10
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	50	0		0	0	0		0	50	0		80	20	

	CVS Dwy From North				Route 53 From East				Route 18 From South				Route 53 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 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

Accurate Counts
978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 11



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

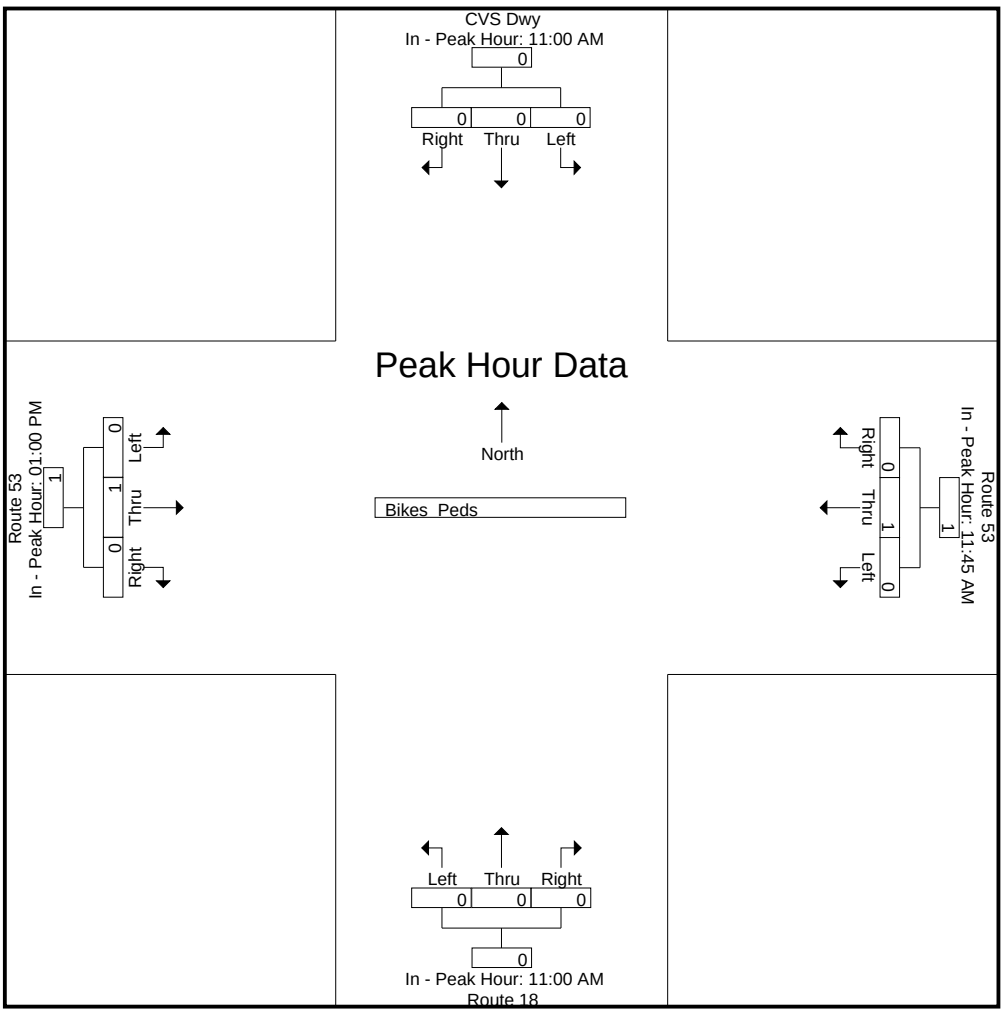
	11:00 AM				11:45 AM				11:00 AM				01:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

Accurate Counts

978-664-2565

N/S Street : CVS Driveway / Route 18
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S1
Site Code : 88260001
Start Date : 1/16/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 1

Groups Printed- Cars - Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	15	73	6	66	20	5	4	51	50	10	18	10	328
07:15 AM	17	95	6	64	37	11	17	83	49	8	28	18	433
07:30 AM	18	114	4	72	36	14	19	71	38	13	41	21	461
07:45 AM	21	118	10	68	41	18	14	94	37	10	37	17	485
Total	71	400	26	270	134	48	54	299	174	41	124	66	1707
08:00 AM	21	92	16	45	43	13	13	85	51	11	41	16	447
08:15 AM	20	148	13	65	53	11	12	72	54	7	39	10	504
08:30 AM	18	109	12	69	34	12	14	77	42	25	46	22	480
08:45 AM	25	136	14	64	38	15	24	94	66	27	37	33	573
Total	84	485	55	243	168	51	63	328	213	70	163	81	2004
Grand Total	155	885	81	513	302	99	117	627	387	111	287	147	3711
Apprch %	13.8	78.9	7.2	56.1	33	10.8	10.3	55.4	34.2	20.4	52.7	27	
Total %	4.2	23.8	2.2	13.8	8.1	2.7	3.2	16.9	10.4	3	7.7	4	
Cars	151	869	77	500	289	96	109	607	375	110	280	140	3603
% Cars	97.4	98.2	95.1	97.5	95.7	97	93.2	96.8	96.9	99.1	97.6	95.2	97.1
Trucks	4	16	4	13	13	3	8	20	12	1	7	7	108
% Trucks	2.6	1.8	4.9	2.5	4.3	3	6.8	3.2	3.1	0.9	2.4	4.8	2.9

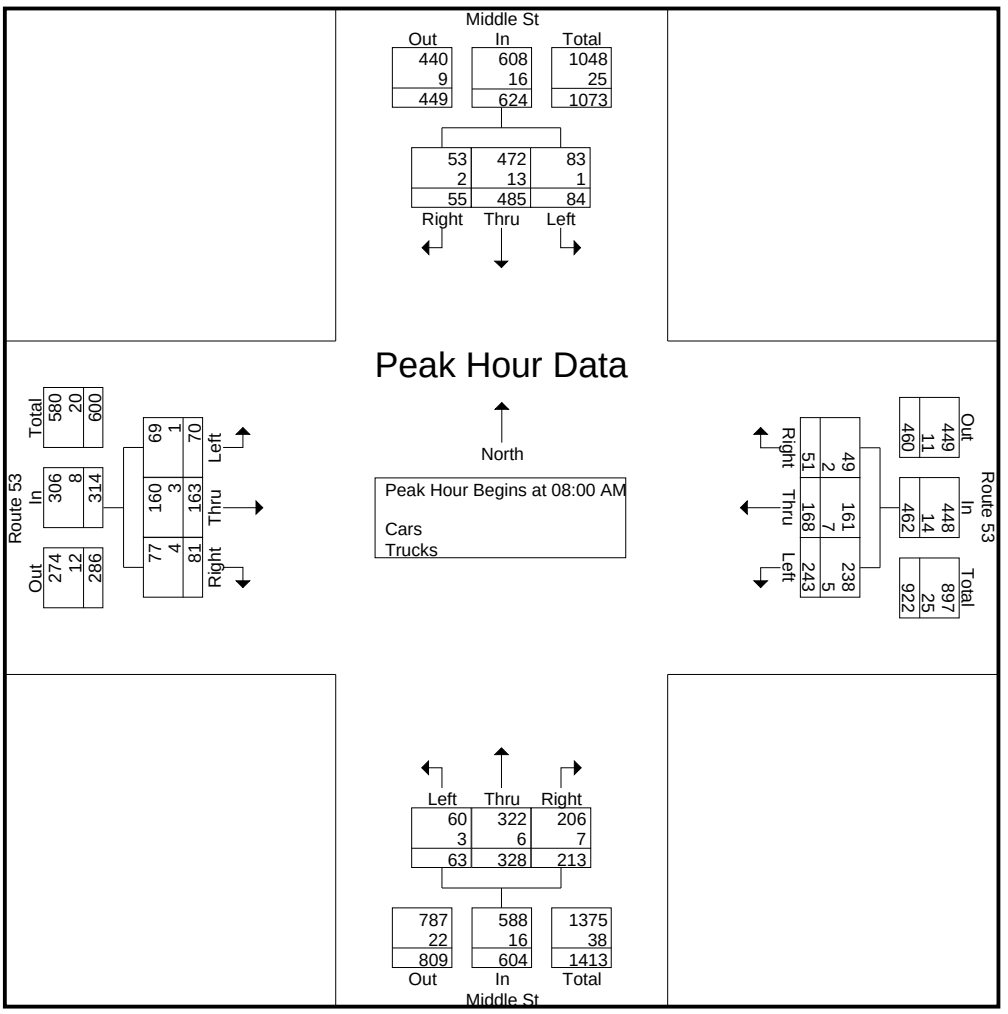
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	21	92	**16**	129	45	43	13	101	13	85	51	149	11	41	16	68	447
08:15 AM	20	**148**	13	**181**	65	**53**	11	**129**	12	72	54	138	7	39	10	56	504
08:30 AM	18	109	12	139	**69**	34	12	115	14	77	42	133	25	**46**	22	93	480
08:45 AM	**25**	136	14	175	64	38	**15**	117	**24**	**94**	**66**	**184**	**27**	37	**33**	**97**	**573**
Total Volume	84	485	55	624	243	168	51	462	63	328	213	604	70	163	81	314	2004
% App. Total	13.5	77.7	8.8		52.6	36.4	11		10.4	54.3	35.3		22.3	51.9	25.8		
PHF	.840	.819	.859	.862	.880	.792	.850	.895	.656	.872	.807	.821	.648	.886	.614	.809	.874
Cars	83	472	53	608	238	161	49	448	60	322	206	588	69	160	77	306	1950
% Cars	98.8	97.3	96.4	97.4	97.9	95.8	96.1	97.0	95.2	98.2	96.7	97.4	98.6	98.2	95.1	97.5	97.3
Trucks	1	13	2	16	5	7	2	14	3	6	7	16	1	3	4	8	54
% Trucks	1.2	2.7	3.6	2.6	2.1	4.2	3.9	3.0	4.8	1.8	3.3	2.6	1.4	1.8	4.9	2.5	2.7

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 2



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

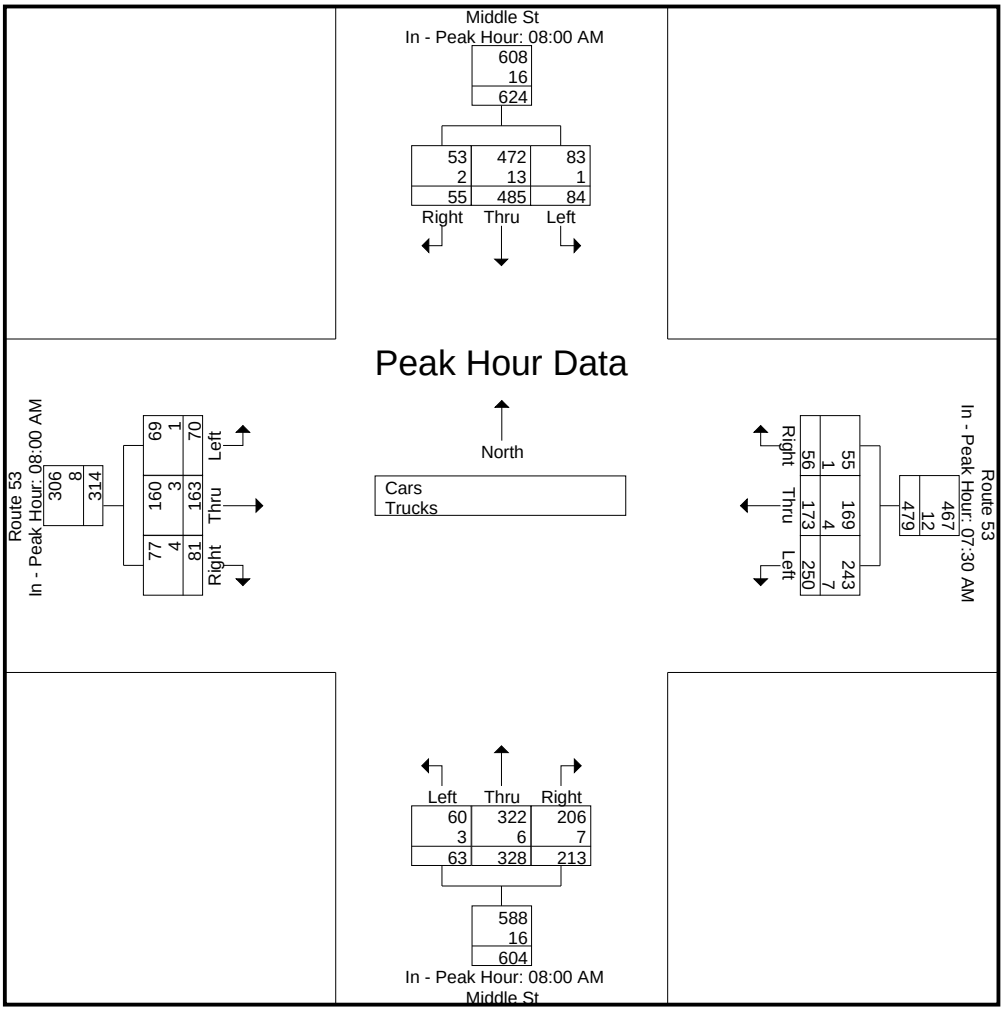
	08:00 AM				07:30 AM				08:00 AM				08:00 AM			
+0 mins.	21	92	**16**	129	**72**	36	14	122	13	85	51	149	11	41	16	68
+15 mins.	20	**148**	13	**181**	68	41	**18**	127	12	72	54	138	7	39	10	56
+30 mins.	18	109	12	139	45	43	13	101	14	77	42	133	25	**46**	22	93
+45 mins.	**25**	136	14	175	65	**53**	11	**129**	**24**	**94**	**66**	**184**	**27**	37	**33**	**97**
Total Volume	84	485	55	624	250	173	56	479	63	328	213	604	70	163	81	314
% App. Total	13.5	77.7	8.8		52.2	36.1	11.7		10.4	54.3	35.3		22.3	51.9	25.8	
PHF	.840	.819	.859	.862	.868	.816	.778	.928	.656	.872	.807	.821	.648	.886	.614	.809
Cars	83	472	53	608	243	169	55	467	60	322	206	588	69	160	77	306
% Cars	98.8	97.3	96.4	97.4	97.2	97.7	98.2	97.5	95.2	98.2	96.7	97.4	98.6	98.2	95.1	97.5
Trucks	1	13	2	16	7	4	1	12	3	6	7	16	1	3	4	8
% Trucks	1.2	2.7	3.6	2.6	2.8	2.3	1.8	2.5	4.8	1.8	3.3	2.6	1.4	1.8	4.9	2.5

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021

Groups Printed- Cars

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	15	71	6	63	17	4	3	50	48	10	17	9	313
07:15 AM	16	95	5	63	35	11	16	78	49	8	28	18	422
07:30 AM	18	114	3	70	36	14	17	69	36	13	39	19	448
07:45 AM	19	117	10	66	40	18	13	88	36	10	36	17	470
Total	68	397	24	262	128	47	49	285	169	41	120	63	1653
08:00 AM	21	90	16	44	42	12	12	82	48	11	41	15	434
08:15 AM	19	145	12	63	51	11	12	70	52	7	38	9	489
08:30 AM	18	105	11	67	32	11	14	77	42	25	45	22	469
08:45 AM	25	132	14	64	36	15	22	93	64	26	36	31	558
Total	83	472	53	238	161	49	60	322	206	69	160	77	1950
Grand Total	151	869	77	500	289	96	109	607	375	110	280	140	3603
Apprch %	13.8	79.2	7	56.5	32.7	10.8	10	55.6	34.4	20.8	52.8	26.4	
Total %	4.2	24.1	2.1	13.9	8	2.7	3	16.8	10.4	3.1	7.8	3.9	

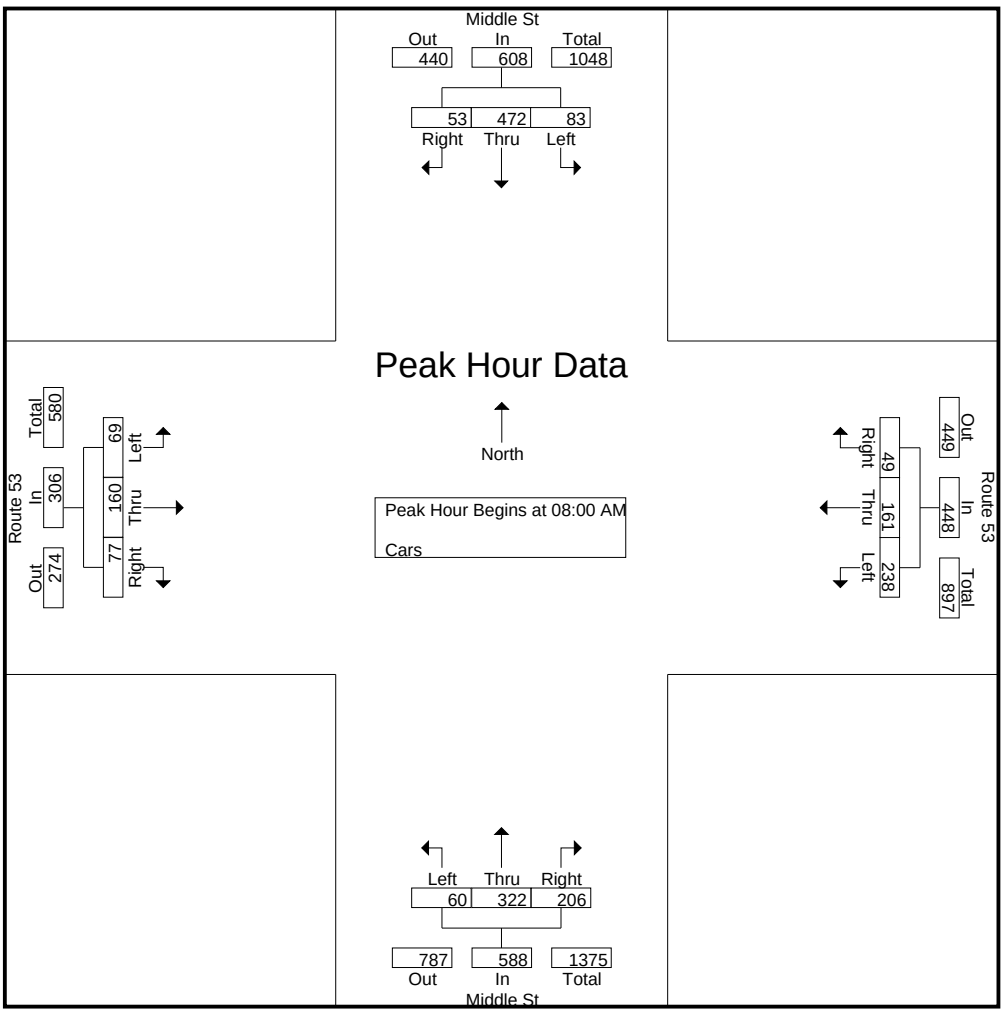
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	21	90	**16**	127	44	42	12	98	12	82	48	142	11	41	15	67	434
08:15 AM	19	**145**	12	**176**	63	**51**	11	**125**	12	70	52	134	7	38	9	54	489
08:30 AM	18	105	11	134	**67**	32	11	110	14	77	42	133	25	**45**	22	92	469
08:45 AM	**25**	132	14	171	64	36	**15**	115	**22**	**93**	**64**	**179**	**26**	36	**31**	**93**	**558**
Total Volume	83	472	53	608	238	161	49	448	60	322	206	588	69	160	77	306	1950
% App. Total	13.7	77.6	8.7		53.1	35.9	10.9		10.2	54.8	35		22.5	52.3	25.2		
PHF	.830	.814	.828	.864	.888	.789	.817	.896	.682	.866	.805	.821	.663	.889	.621	.823	.874

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 5



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

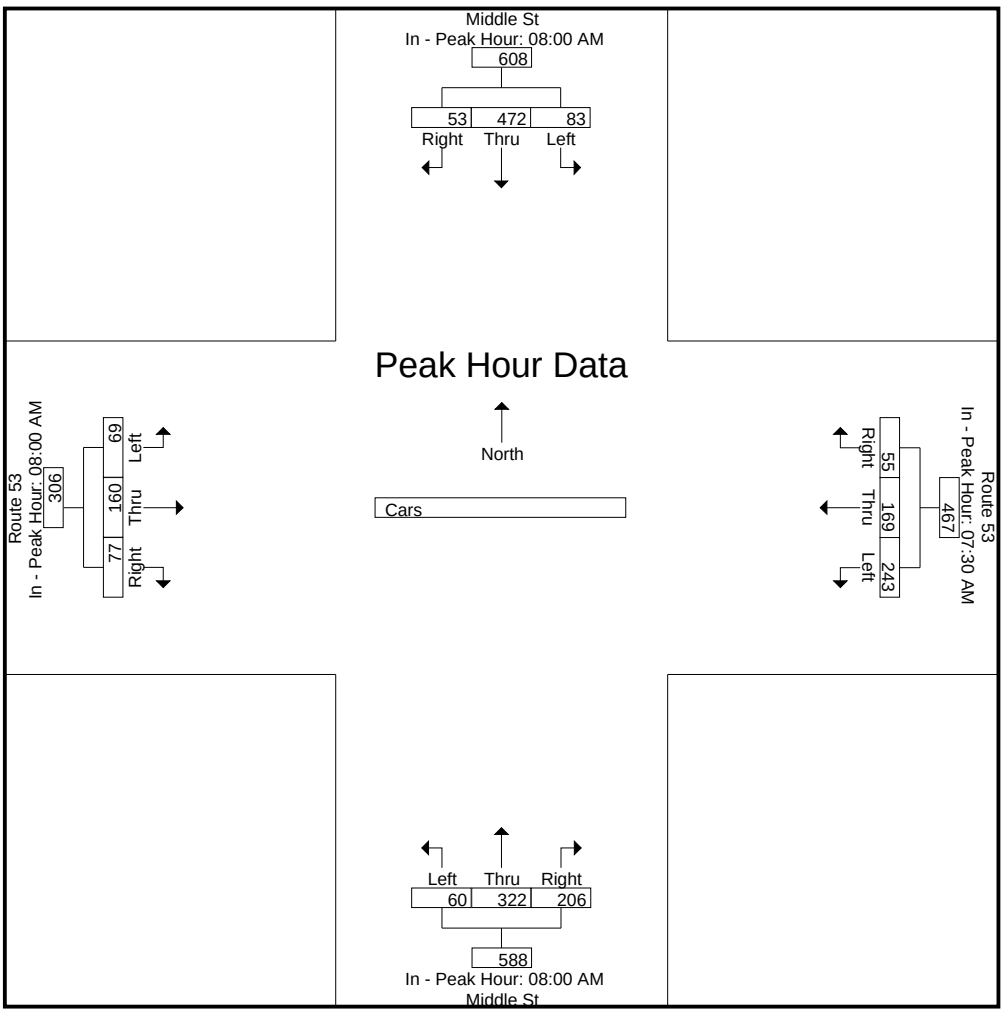
	08:00 AM				07:30 AM				08:00 AM				08:00 AM			
+0 mins.	21	90	**16**	127	**70**	36	14	120	12	82	48	142	11	41	15	67
+15 mins.	19	**145**	12	**176**	66	40	**18**	124	12	70	52	134	7	38	9	54
+30 mins.	18	105	11	134	44	42	12	98	14	77	42	133	25	**45**	22	92
+45 mins.	**25**	132	14	171	63	**51**	11	**125**	**22**	**93**	**64**	**179**	**26**	36	**31**	**93**
Total Volume	83	472	53	608	243	169	55	467	60	322	206	588	69	160	77	306
% App. Total	13.7	77.6	8.7		52	36.2	11.8		10.2	54.8	35		22.5	52.3	25.2	
PHF	.830	.814	.828	.864	.868	.828	.764	.934	.682	.866	.805	.821	.663	.889	.621	.823

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 7

Groups Printed- Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	2	0	3	3	1	1	1	2	0	1	1	15
07:15 AM	1	0	1	1	2	0	1	5	0	0	0	0	11
07:30 AM	0	0	1	2	0	0	2	2	2	0	2	2	13
07:45 AM	2	1	0	2	1	0	1	6	1	0	1	0	15
Total	3	3	2	8	6	1	5	14	5	0	4	3	54
08:00 AM	0	2	0	1	1	1	1	3	3	0	0	1	13
08:15 AM	1	3	1	2	2	0	0	2	2	0	1	1	15
08:30 AM	0	4	1	2	2	1	0	0	0	0	1	0	11
08:45 AM	0	4	0	0	2	0	2	1	2	1	1	2	15
Total	1	13	2	5	7	2	3	6	7	1	3	4	54
Grand Total	4	16	4	13	13	3	8	20	12	1	7	7	108
Apprch %	16.7	66.7	16.7	44.8	44.8	10.3	20	50	30	6.7	46.7	46.7	
Total %	3.7	14.8	3.7	12	12	2.8	7.4	18.5	11.1	0.9	6.5	6.5	

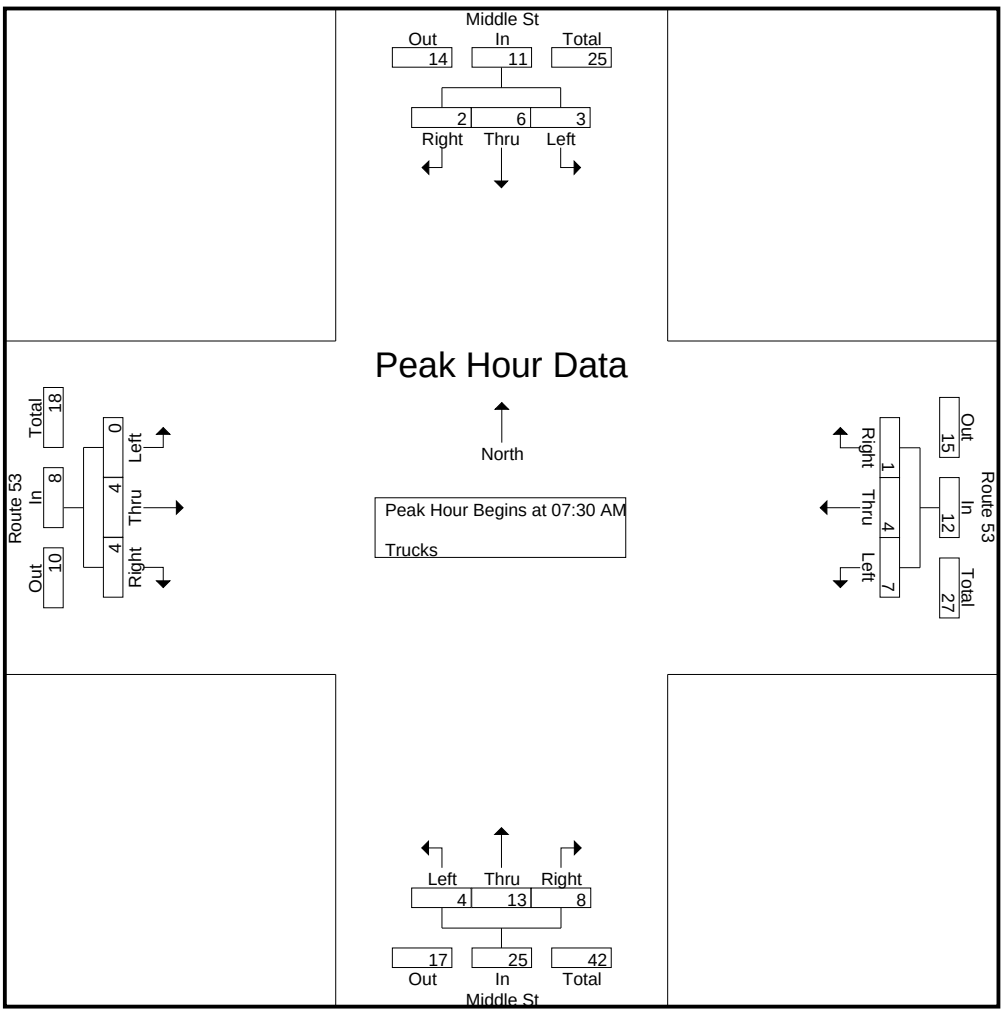
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**1**	1	**2**	0	0	2	**2**	2	2	6	0	**2**	**2**	**4**	13
07:45 AM	**2**	1	0	3	2	1	0	3	1	**6**	1	**8**	0	1	0	1	**15**
08:00 AM	0	2	0	2	1	1	**1**	3	1	3	**3**	7	0	0	1	1	13
08:15 AM	1	**3**	1	**5**	2	**2**	0	**4**	0	2	2	4	0	1	1	2	15
Total Volume	3	6	2	11	7	4	1	12	4	13	8	25	0	4	4	8	56
% App. Total	27.3	54.5	18.2		58.3	33.3	8.3		16	52	32		0	50	50		
PHF	.375	.500	.500	.550	.875	.500	.250	.750	.500	.542	.667	.781	.000	.500	.500	.500	.933

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 8



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

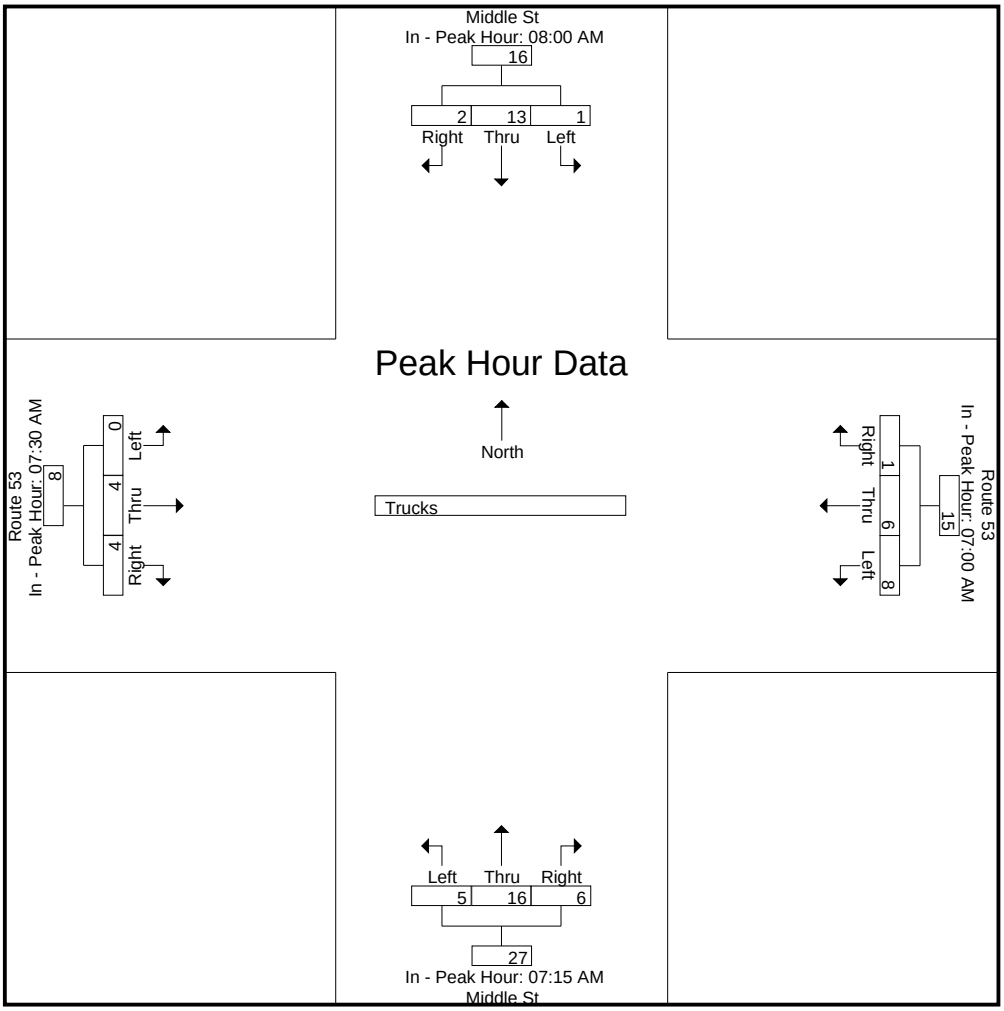
	08:00 AM				07:00 AM				07:15 AM				07:30 AM			
+0 mins.	0	2	0	2	**3**	**3**	**1**	**7**	1	5	0	6	0	**2**	**2**	**4**
+15 mins.	**1**	3	**1**	**5**	1	2	0	3	**2**	2	2	6	0	1	0	1
+30 mins.	0	**4**	1	5	2	0	0	2	1	**6**	1	**8**	0	0	1	1
+45 mins.	0	4	0	4	2	1	0	3	1	3	**3**	7	0	1	1	2
Total Volume	1	13	2	16	8	6	1	15	5	16	6	27	0	4	4	8
% App. Total	6.2	81.2	12.5		53.3	40	6.7		18.5	59.3	22.2		0	50	50	
PHF	.250	.813	.500	.800	.667	.500	.250	.536	.625	.667	.500	.844	.000	.500	.500	.500

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021

Groups Printed- Bikes Peds

	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	2	1	3
08:45 AM	0	0	0	1	0	0	0	2	0	0	0	3	0	0	0	0	6	0	6
Total	0	0	0	1	0	0	0	2	0	0	0	4	0	1	0	1	8	1	9
Grand Total	0	0	0	1	0	0	0	2	0	0	0	6	0	1	0	1	10	1	11
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0				
Total %	0	0	0		0	0	0		0	0	0		0	100	0		90.9	9.1	

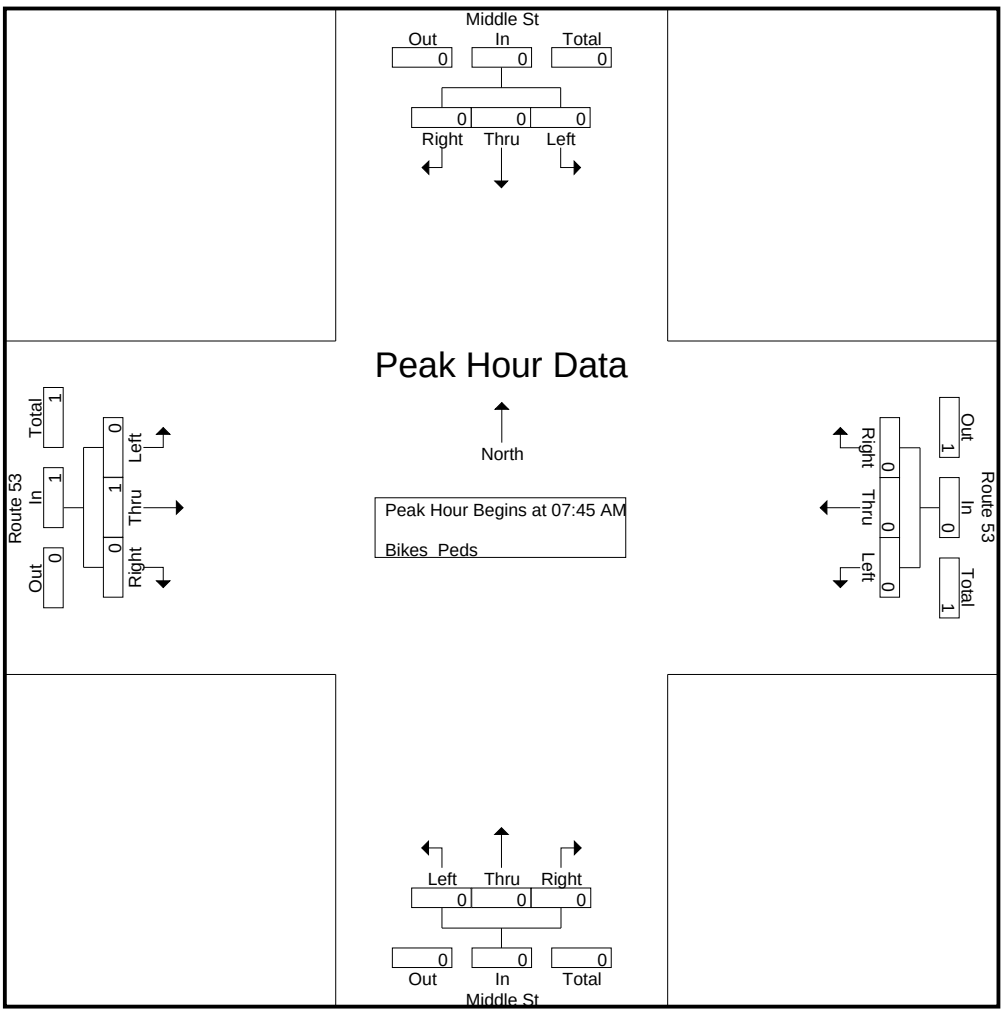
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 11

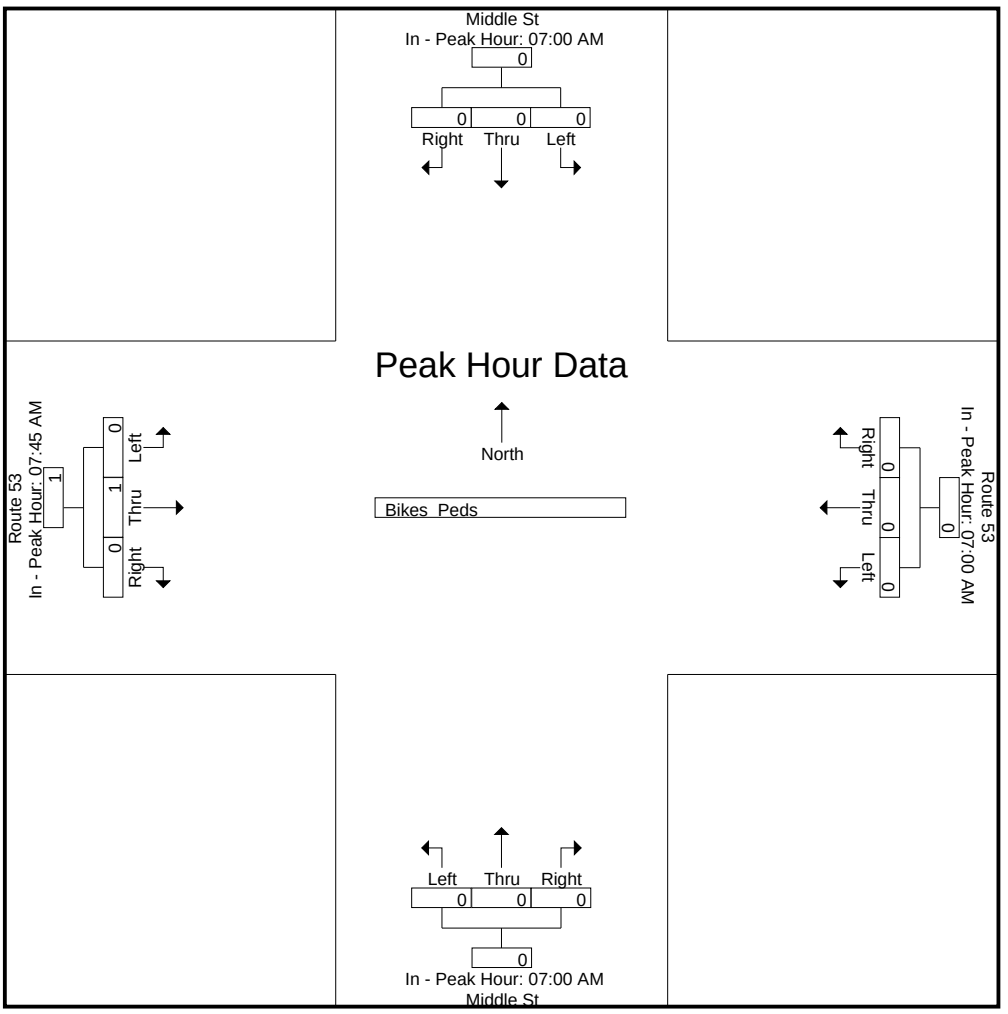


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 1

Groups Printed- Cars - Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	23	107	29	44	57	19	37	74	69	36	73	30	598
04:15 PM	30	102	25	48	55	10	21	102	80	34	92	23	622
04:30 PM	24	105	25	53	53	28	27	122	83	31	79	34	664
04:45 PM	26	80	21	56	57	17	34	81	77	45	69	25	588
Total	103	394	100	201	222	74	119	379	309	146	313	112	2472
05:00 PM	16	94	25	52	56	26	25	100	66	38	61	24	583
05:15 PM	23	81	19	45	75	19	22	129	71	31	65	19	599
05:30 PM	17	75	27	37	57	16	23	117	63	30	52	23	537
05:45 PM	15	81	27	55	54	14	23	97	67	32	58	23	546
Total	71	331	98	189	242	75	93	443	267	131	236	89	2265
Grand Total	174	725	198	390	464	149	212	822	576	277	549	201	4737
Apprch %	15.9	66.1	18	38.9	46.3	14.9	13.2	51.1	35.8	27	53.5	19.6	
Total %	3.7	15.3	4.2	8.2	9.8	3.1	4.5	17.4	12.2	5.8	11.6	4.2	
Cars	174	722	198	387	461	149	209	821	572	276	544	197	4710
% Cars	100	99.6	100	99.2	99.4	100	98.6	99.9	99.3	99.6	99.1	98	99.4
Trucks	0	3	0	3	3	0	3	1	4	1	5	4	27
% Trucks	0	0.4	0	0.8	0.6	0	1.4	0.1	0.7	0.4	0.9	2	0.6

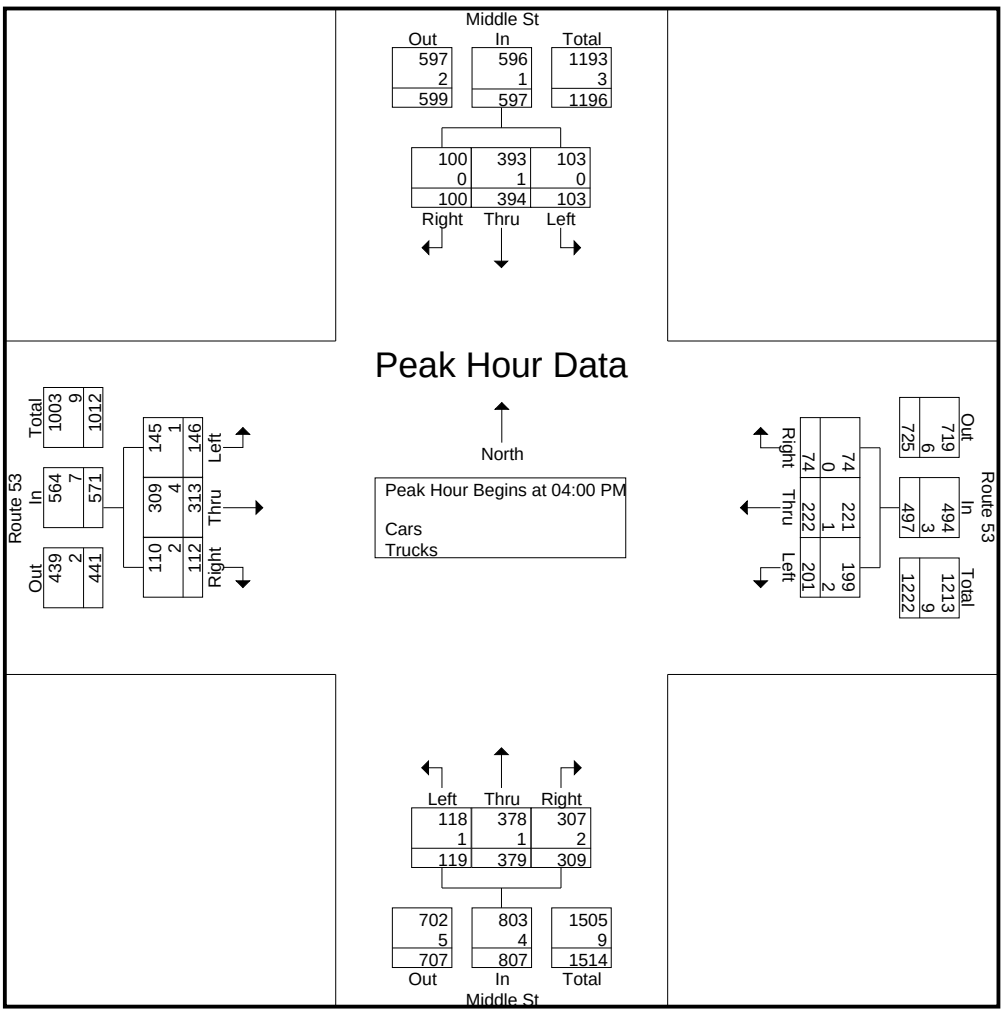
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	23	**107**	**29**	**159**	44	**57**	19	120	**37**	74	69	180	36	73	30	139	598
04:15 PM	**30**	102	25	157	48	55	10	113	21	102	80	203	34	**92**	23	**149**	622
04:30 PM	24	105	25	154	53	53	**28**	**134**	27	**122**	**83**	**232**	31	79	**34**	144	**664**
04:45 PM	26	80	21	127	**56**	57	17	130	34	81	77	192	**45**	69	25	139	588
Total Volume	103	394	100	597	201	222	74	497	119	379	309	807	146	313	112	571	2472
% App. Total	17.3	66	16.8		40.4	44.7	14.9		14.7	47	38.3		25.6	54.8	19.6		
PHF	.858	.921	.862	.939	.897	.974	.661	.927	.804	.777	.931	.870	.811	.851	.824	.958	.931
Cars	103	393	100	596	199	221	74	494	118	378	307	803	145	309	110	564	2457
% Cars	100	99.7	100	99.8	99.0	99.5	100	99.4	99.2	99.7	99.4	99.5	99.3	98.7	98.2	98.8	99.4
Trucks	0	1	0	1	2	1	0	3	1	1	2	4	1	4	2	7	15
% Trucks	0	0.3	0	0.2	1.0	0.5	0	0.6	0.8	0.3	0.6	0.5	0.7	1.3	1.8	1.2	0.6

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 2



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

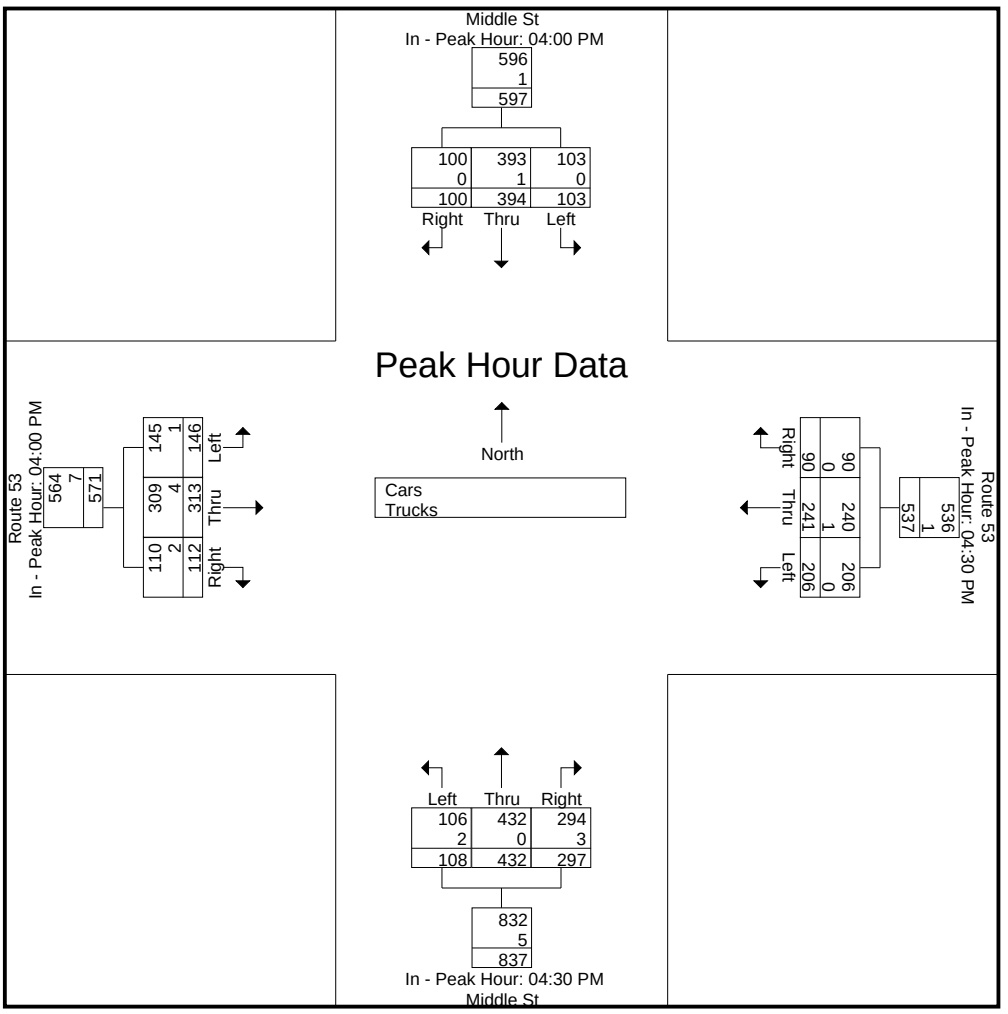
	04:00 PM				04:30 PM				04:30 PM				04:00 PM			
+0 mins.	23	**107**	**29**	**159**	53	53	**28**	134	27	122	**83**	**232**	36	73	30	139
+15 mins.	**30**	102	25	157	**56**	57	17	130	**34**	81	77	192	34	**92**	23	**149**
+30 mins.	24	105	25	154	52	56	26	134	25	100	66	191	31	79	**34**	144
+45 mins.	26	80	21	127	45	**75**	19	**139**	22	**129**	71	222	**45**	69	25	139
Total Volume	103	394	100	597	206	241	90	537	108	432	297	837	146	313	112	571
% App. Total	17.3	66	16.8		38.4	44.9	16.8		12.9	51.6	35.5		25.6	54.8	19.6	
PHF	.858	.921	.862	.939	.920	.803	.804	.966	.794	.837	.895	.902	.811	.851	.824	.958
Cars	103	393	100	596	206	240	90	536	106	432	294	832	145	309	110	564
% Cars	100	99.7	100	99.8	100	99.6	100	99.8	98.1	100	99	99.4	99.3	98.7	98.2	98.8
Trucks	0	1	0	1	0	1	0	1	2	0	3	5	1	4	2	7
% Trucks	0	0.3	0	0.2	0	0.4	0	0.2	1.9	0	1	0.6	0.7	1.3	1.8	1.2

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021

Groups Printed- Cars

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	23	107	29	44	56	19	37	73	68	36	73	29	594
04:15 PM	30	101	25	46	55	10	21	102	80	33	90	23	616
04:30 PM	24	105	25	53	53	28	26	122	82	31	79	33	661
04:45 PM	26	80	21	56	57	17	34	81	77	45	67	25	586
Total	103	393	100	199	221	74	118	378	307	145	309	110	2457
05:00 PM	16	93	25	52	55	26	25	100	64	38	61	24	579
05:15 PM	23	80	19	45	75	19	21	129	71	31	65	18	596
05:30 PM	17	75	27	37	56	16	23	117	63	30	52	23	536
05:45 PM	15	81	27	54	54	14	22	97	67	32	57	22	542
Total	71	329	98	188	240	75	91	443	265	131	235	87	2253
Grand Total	174	722	198	387	461	149	209	821	572	276	544	197	4710
Apprch %	15.9	66	18.1	38.8	46.2	14.9	13	51.2	35.7	27.1	53.5	19.4	
Total %	3.7	15.3	4.2	8.2	9.8	3.2	4.4	17.4	12.1	5.9	11.5	4.2	

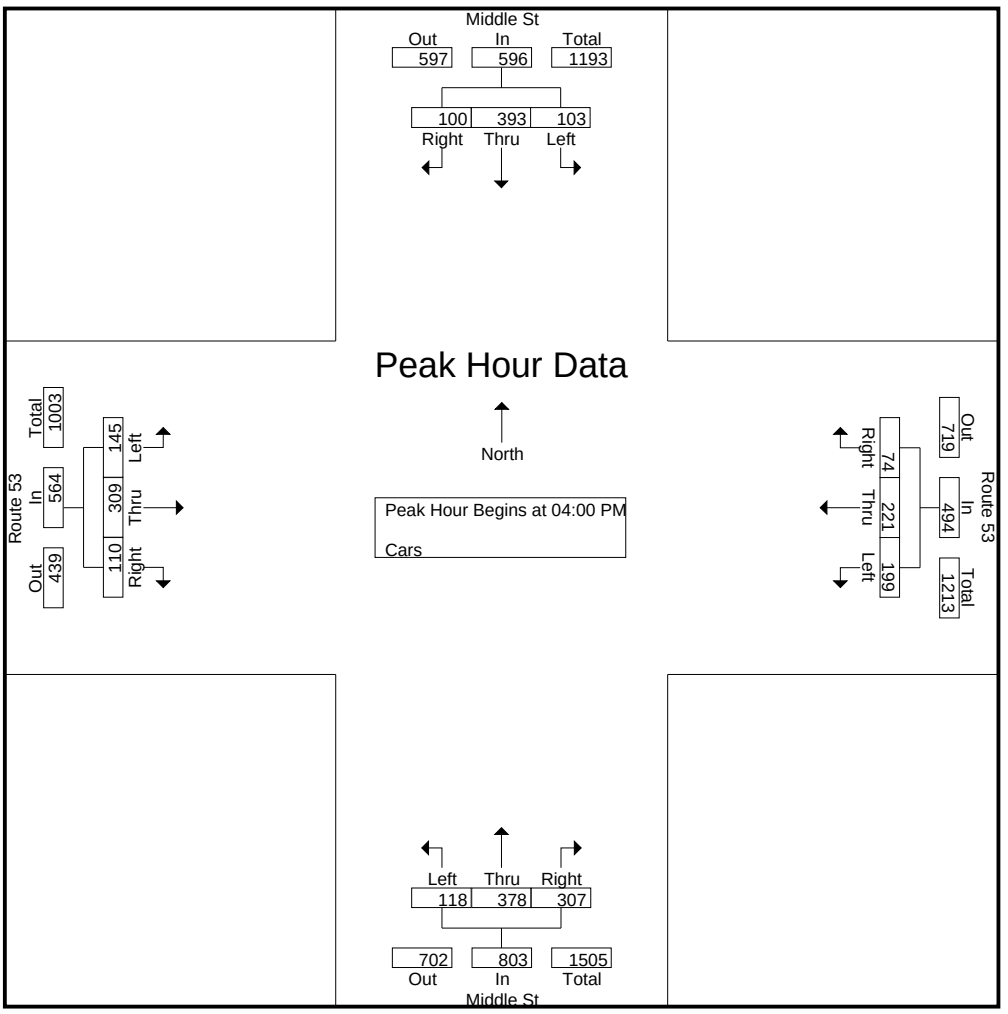
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	23	**107**	**29**	**159**	44	56	19	119	**37**	73	68	178	36	73	29	138	594
04:15 PM	**30**	101	25	156	46	55	10	111	21	102	80	203	33	**90**	23	**146**	616
04:30 PM	24	105	25	154	53	53	**28**	**134**	26	**122**	**82**	**230**	31	79	**33**	143	**661**
04:45 PM	26	80	21	127	**56**	**57**	17	130	34	81	77	192	**45**	67	25	137	586
Total Volume	103	393	100	596	199	221	74	494	118	378	307	803	145	309	110	564	2457
% App. Total	17.3	65.9	16.8		40.3	44.7	15		14.7	47.1	38.2		25.7	54.8	19.5		
PHF	.858	.918	.862	.937	.888	.969	.661	.922	.797	.775	.936	.873	.806	.858	.833	.966	.929

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 5



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

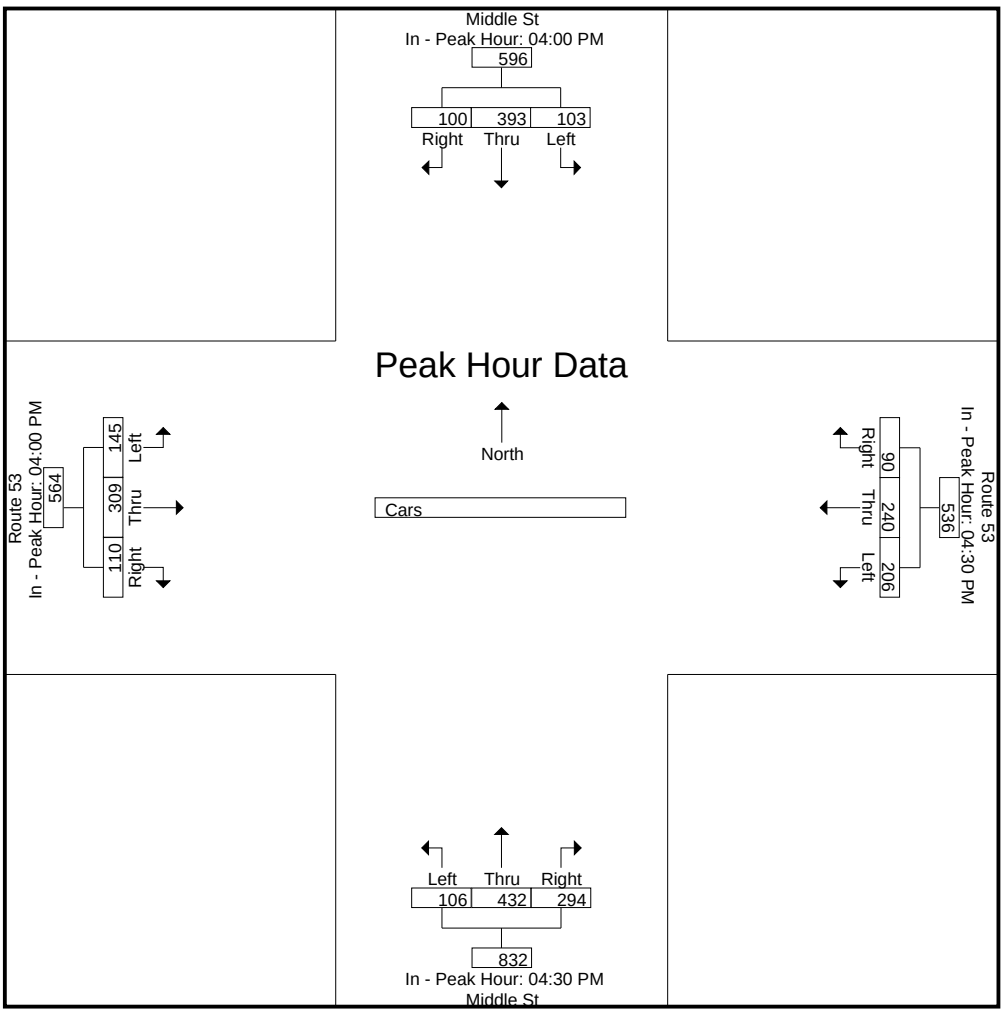
	04:00 PM				04:30 PM				04:30 PM				04:00 PM			
+0 mins.	23	**107**	**29**	**159**	53	53	**28**	134	26	122	**82**	**230**	36	73	29	138
+15 mins.	**30**	101	25	156	**56**	57	17	130	**34**	81	77	192	33	**90**	23	**146**
+30 mins.	24	105	25	154	52	55	26	133	25	100	64	189	31	79	**33**	143
+45 mins.	26	80	21	127	45	**75**	19	**139**	21	**129**	71	221	**45**	67	25	137
Total Volume	103	393	100	596	206	240	90	536	106	432	294	832	145	309	110	564
% App. Total	17.3	65.9	16.8		38.4	44.8	16.8		12.7	51.9	35.3		25.7	54.8	19.5	
PHF	.858	.918	.862	.937	.920	.800	.804	.964	.779	.837	.896	.904	.806	.858	.833	.966

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 7

Groups Printed- Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	0	1	1	0	0	1	4
04:15 PM	0	1	0	2	0	0	0	0	0	1	2	0	6
04:30 PM	0	0	0	0	0	0	1	0	1	0	0	1	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	1	0	2	1	0	1	1	2	1	4	2	15
05:00 PM	0	1	0	0	1	0	0	0	2	0	0	0	4
05:15 PM	0	1	0	0	0	0	1	0	0	0	0	1	3
05:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	1	0	0	1	0	0	0	1	1	4
Total	0	2	0	1	2	0	2	0	2	0	1	2	12
Grand Total	0	3	0	3	3	0	3	1	4	1	5	4	27
Apprch %	0	100	0	50	50	0	37.5	12.5	50	10	50	40	
Total %	0	11.1	0	11.1	11.1	0	11.1	3.7	14.8	3.7	18.5	14.8	

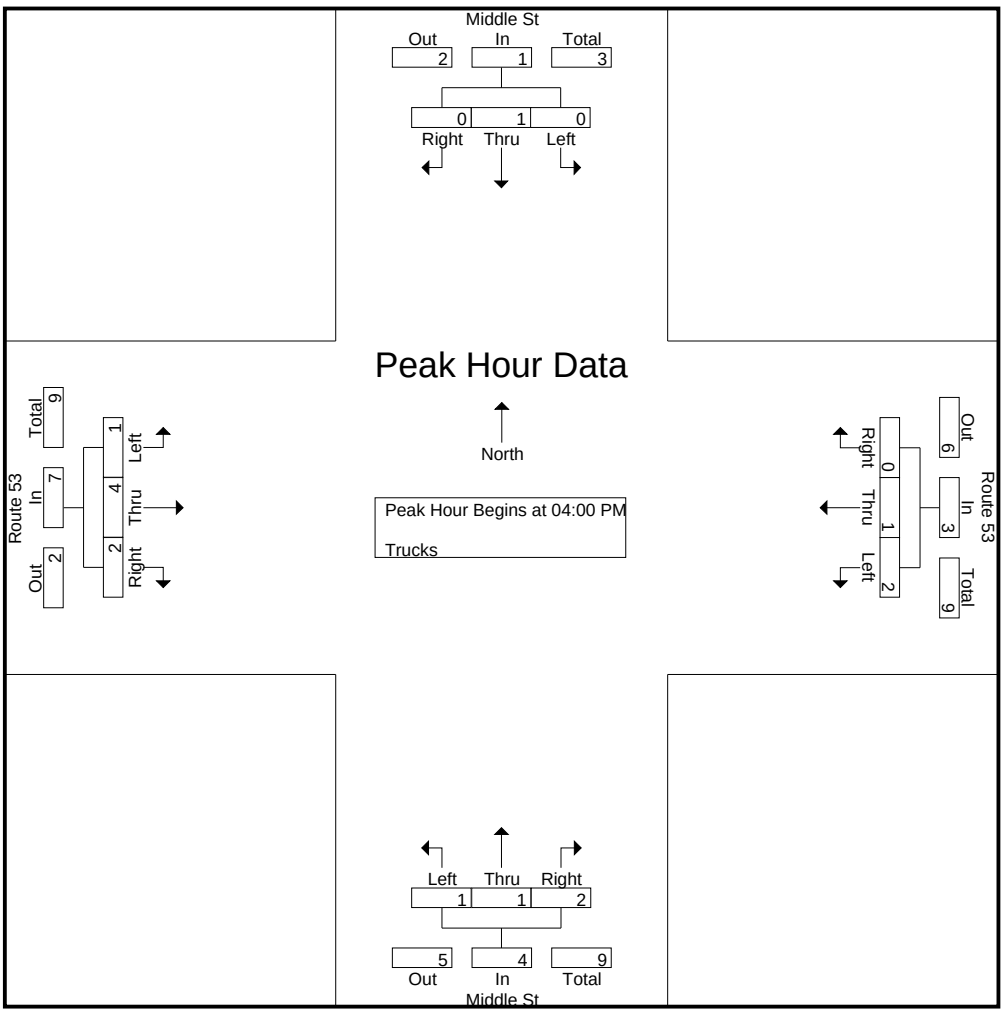
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**1**	0	1	0	**1**	**1**	**2**	0	0	**1**	1	4
04:15 PM	0	**1**	0	**1**	**2**	0	0	**2**	0	0	0	0	**1**	**2**	0	**3**	**6**
04:30 PM	0	0	0	0	0	0	0	0	**1**	0	1	2	0	0	1	1	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	0	1	0	1	2	1	0	3	1	1	2	4	1	4	2	7	15
% App. Total	0	100	0		66.7	33.3	0		25	25	50		14.3	57.1	28.6		
PHF	.000	.250	.000	.250	.250	.250	.000	.375	.250	.250	.500	.500	.250	.500	.500	.583	.625

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 8



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

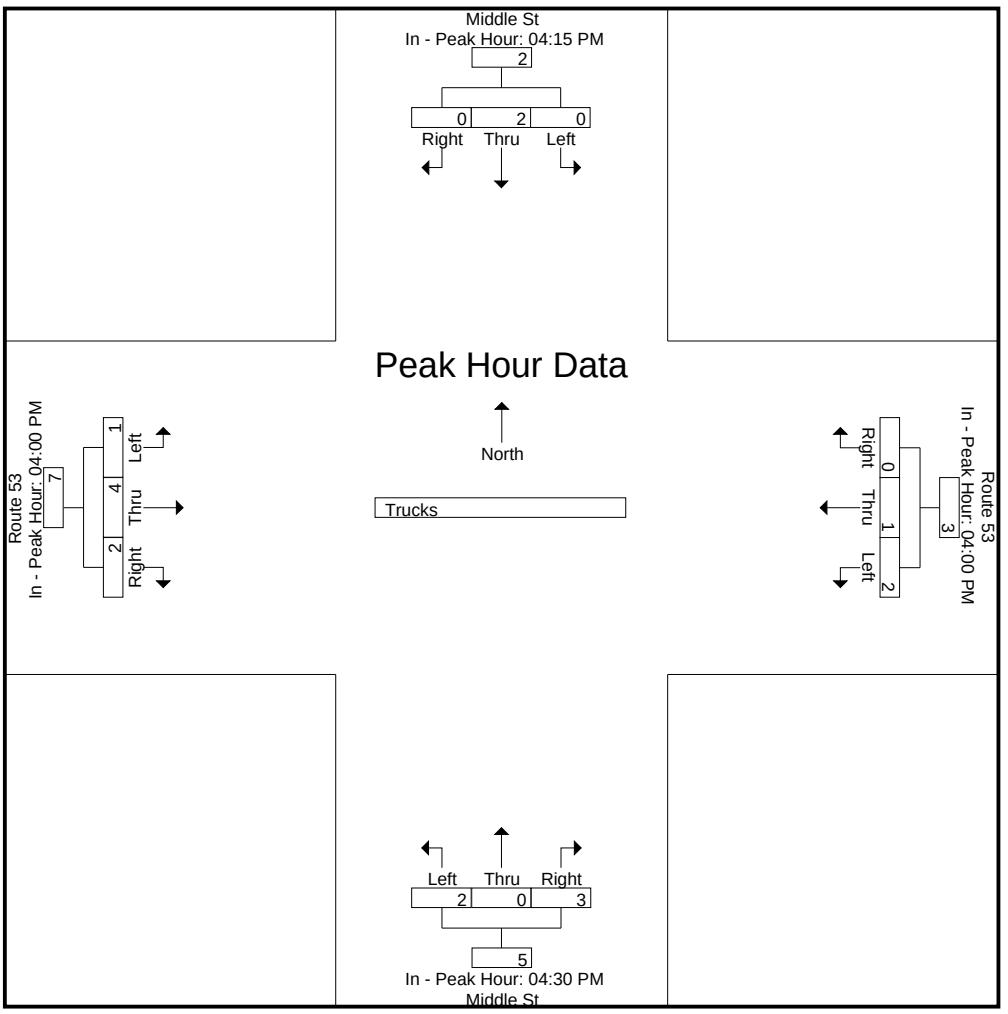
	04:15 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	0	**1**	0	**1**	0	**1**	0	1	**1**	0	1	**2**	0	0	**1**	1
+15 mins.	0	0	0	0	**2**	0	0	**2**	0	0	0	0	**1**	**2**	0	**3**
+30 mins.	0	0	0	0	0	0	0	0	0	0	**2**	2	0	0	1	1
+45 mins.	0	1	0	1	0	0	0	0	1	0	0	1	0	2	0	2
Total Volume	0	2	0	2	2	1	0	3	2	0	3	5	1	4	2	7
% App. Total	0	100	0		66.7	33.3	0		40	0	60		14.3	57.1	28.6	
PHF	.000	.500	.000	.500	.250	.250	.000	.375	.500	.000	.375	.625	.250	.500	.500	.583

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021

Groups Printed- Bikes Peds

	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	4	0	4
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	2
05:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	2	0	0	0	3	0	0	0	1	0	0	0	1	7	0	7
Grand Total	0	0	0	3	0	0	0	3	0	0	0	1	0	0	0	1	8	0	8
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

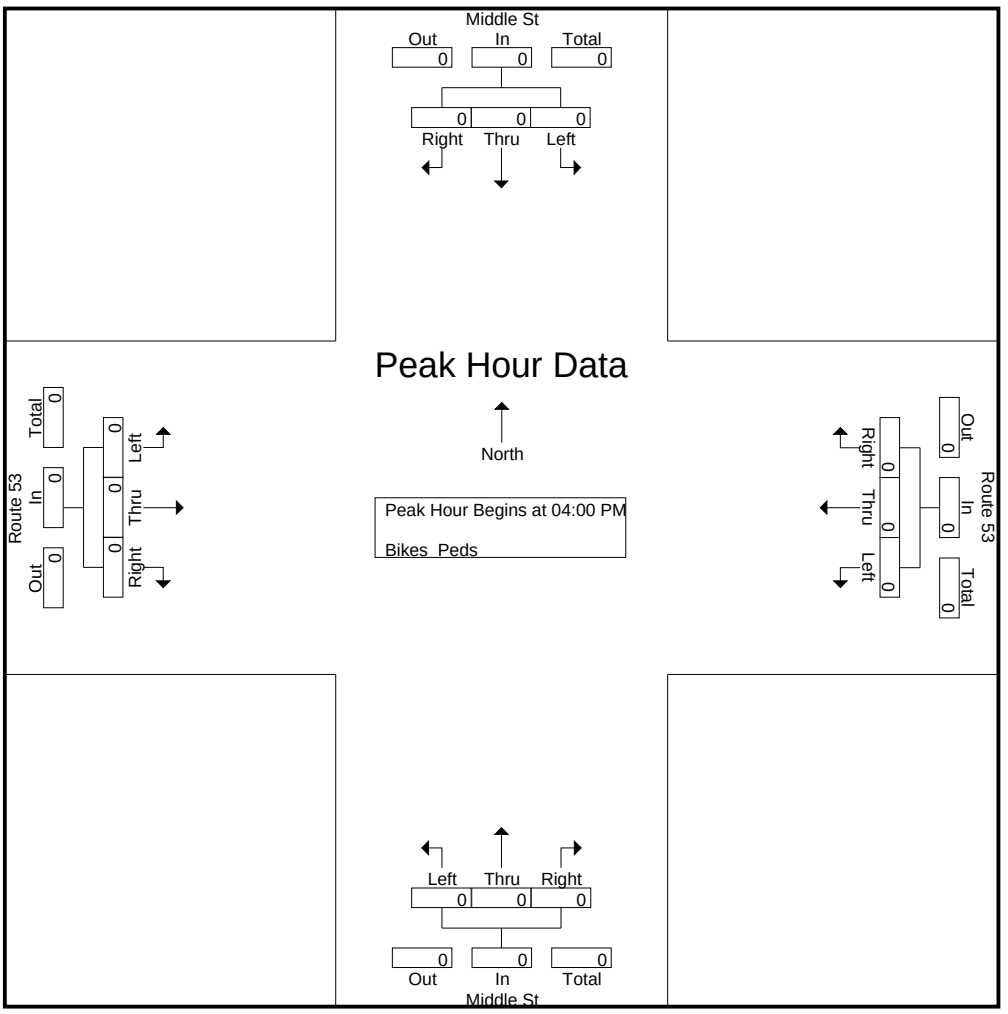
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 11



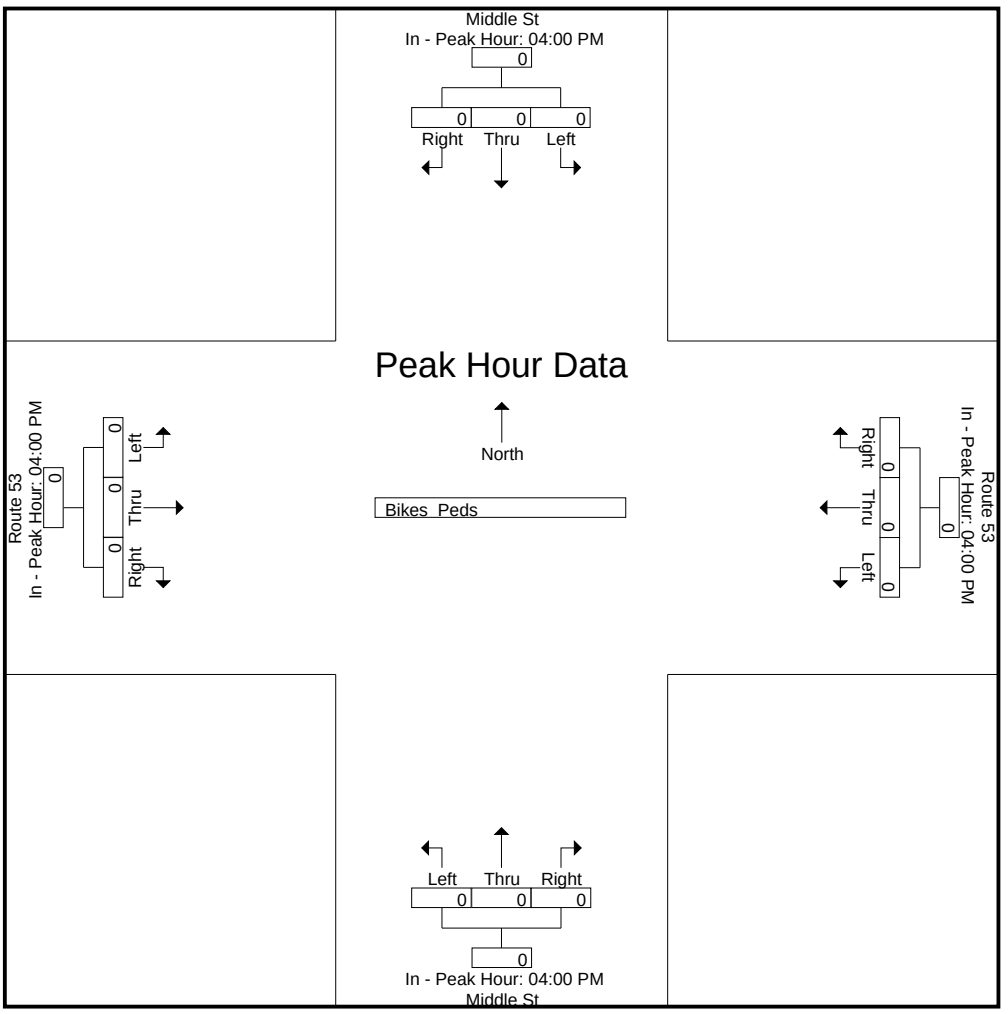
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260002
Site Code : 88260002
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 1

Groups Printed- Cars - Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	23	70	19	50	60	14	24	79	50	22	51	20	482
11:15 AM	20	83	20	59	64	13	20	70	48	30	64	30	521
11:30 AM	24	79	13	47	55	21	30	107	57	39	52	23	547
11:45 AM	28	89	26	46	56	11	26	101	53	18	59	22	535
Total	95	321	78	202	235	59	100	357	208	109	226	95	2085
12:00 PM	26	113	18	67	81	17	27	98	38	30	78	22	615
12:15 PM	24	113	32	55	67	20	31	98	57	29	77	17	620
12:30 PM	25	98	25	50	81	16	37	93	49	29	63	25	591
12:45 PM	22	87	25	55	81	18	45	90	57	35	88	24	627
Total	97	411	100	227	310	71	140	379	201	123	306	88	2453
01:00 PM	17	91	28	56	66	20	37	104	63	32	76	29	619
01:15 PM	22	89	27	54	64	18	42	96	54	36	58	28	588
01:30 PM	27	79	33	60	69	20	48	99	58	33	87	36	649
01:45 PM	26	106	33	68	67	18	31	88	65	39	71	40	652
Total	92	365	121	238	266	76	158	387	240	140	292	133	2508
Grand Total	284	1097	299	667	811	206	398	1123	649	372	824	316	7046
Apprch %	16.9	65.3	17.8	39.6	48.2	12.2	18.3	51.8	29.9	24.6	54.5	20.9	
Total %	4	15.6	4.2	9.5	11.5	2.9	5.6	15.9	9.2	5.3	11.7	4.5	
Cars	284	1093	299	660	810	205	394	1121	646	371	822	313	7018
% Cars	100	99.6	100	99	99.9	99.5	99	99.8	99.5	99.7	99.8	99.1	99.6
Trucks	0	4	0	7	1	1	4	2	3	1	2	3	28
% Trucks	0	0.4	0	1	0.1	0.5	1	0.2	0.5	0.3	0.2	0.9	0.4

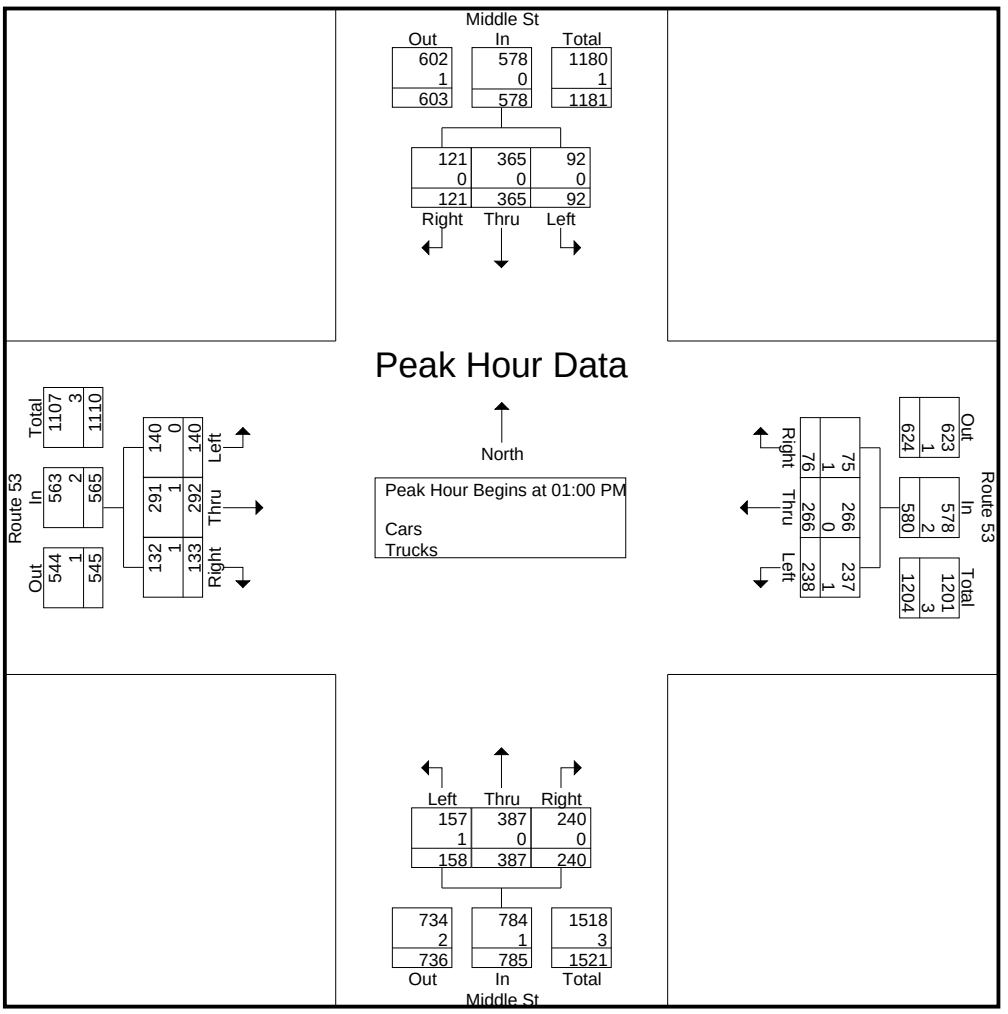
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	17	91	28	136	56	66	**20**	142	37	**104**	63	204	32	76	29	137	619
01:15 PM	22	89	27	138	54	64	18	136	42	96	54	192	36	58	28	122	588
01:30 PM	**27**	79	**33**	139	60	**69**	20	149	**48**	99	58	**205**	33	**87**	36	**156**	649
01:45 PM	26	**106**	33	**165**	**68**	67	18	**153**	31	88	**65**	184	**39**	71	**40**	150	**652**
Total Volume	92	365	121	578	238	266	76	580	158	387	240	785	140	292	133	565	2508
% App. Total	15.9	63.1	20.9		41	45.9	13.1		20.1	49.3	30.6		24.8	51.7	23.5		
PHF	.852	.861	.917	.876	.875	.964	.950	.948	.823	.930	.923	.957	.897	.839	.831	.905	.962
Cars	92	365	121	578	237	266	75	578	157	387	240	784	140	291	132	563	2503
% Cars	100	100	100	100	99.6	100	98.7	99.7	99.4	100	100	99.9	100	99.7	99.2	99.6	99.8
Trucks	0	0	0	0	1	0	1	2	1	0	0	1	0	1	1	2	5
% Trucks	0	0	0	0	0.4	0	1.3	0.3	0.6	0	0	0.1	0	0.3	0.8	0.4	0.2

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 2



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

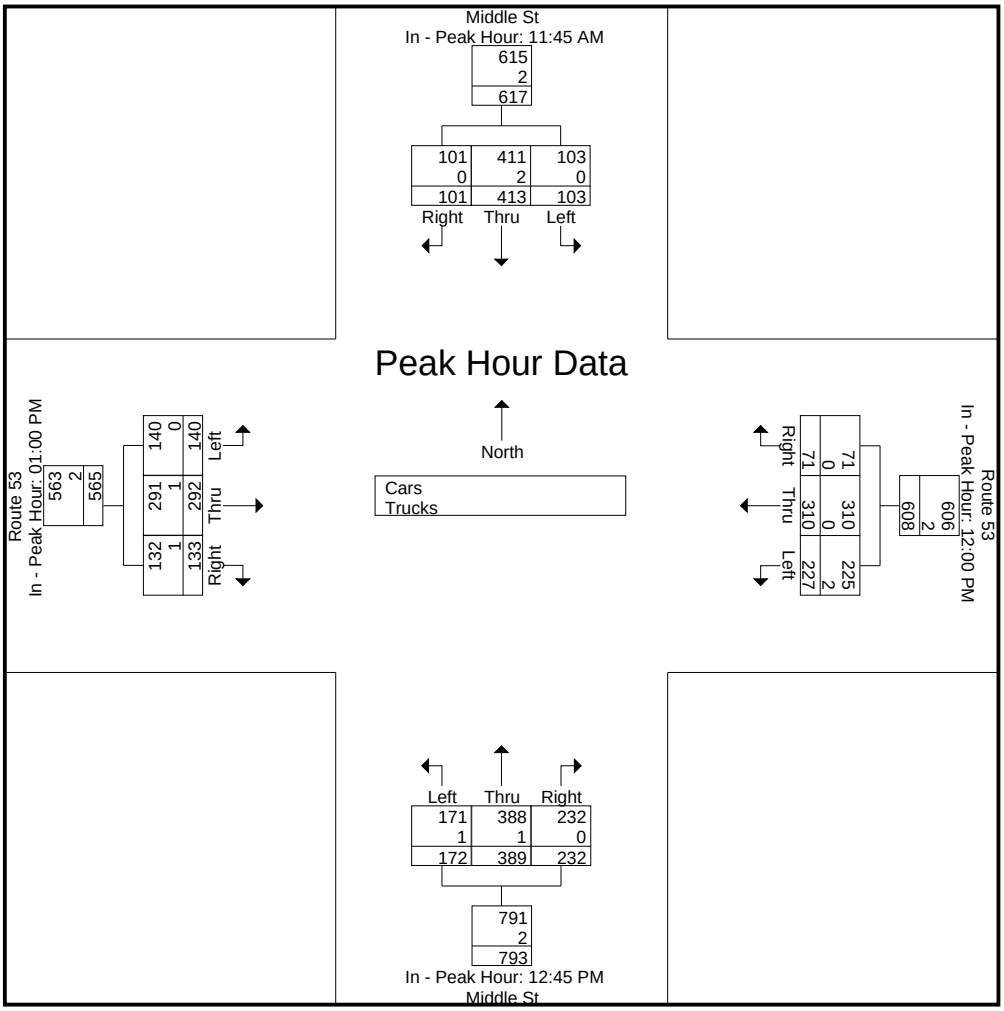
	11:45 AM				12:00 PM				12:45 PM				01:00 PM			
+0 mins.	**28**	89	26	143	**67**	**81**	17	**165**	45	90	57	192	32	76	29	137
+15 mins.	26	**113**	18	157	55	67	**20**	142	37	**104**	**63**	204	36	58	28	122
+30 mins.	24	113	**32**	**169**	50	81	16	147	42	96	54	192	33	**87**	36	**156**
+45 mins.	25	98	25	148	55	81	18	154	**48**	99	58	**205**	**39**	71	**40**	150
Total Volume	103	413	101	617	227	310	71	608	172	389	232	793	140	292	133	565
% App. Total	16.7	66.9	16.4		37.3	51	11.7		21.7	49.1	29.3		24.8	51.7	23.5	
PHF	.920	.914	.789	.913	.847	.957	.888	.921	.896	.935	.921	.967	.897	.839	.831	.905
Cars	103	411	101	615	225	310	71	606	171	388	232	791	140	291	132	563
% Cars	100	99.5	100	99.7	99.1	100	100	99.7	99.4	99.7	100	99.7	100	99.7	99.2	99.6
Trucks	0	2	0	2	2	0	0	2	1	1	0	2	0	1	1	2
% Trucks	0	0.5	0	0.3	0.9	0	0	0.3	0.6	0.3	0	0.3	0	0.3	0.8	0.4

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 4

Groups Printed- Cars

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	23	70	19	48	60	14	24	78	50	22	51	20	479
11:15 AM	20	83	20	59	63	13	20	70	48	30	64	29	519
11:30 AM	24	78	13	47	55	21	28	107	55	39	52	23	542
11:45 AM	28	87	26	44	56	11	26	101	53	18	59	22	531
Total	95	318	78	198	234	59	98	356	206	109	226	94	2071
12:00 PM	26	113	18	66	81	17	27	98	37	29	77	22	611
12:15 PM	24	113	32	55	67	20	31	98	57	29	77	16	619
12:30 PM	25	98	25	49	81	16	36	93	49	29	63	25	589
12:45 PM	22	86	25	55	81	18	45	89	57	35	88	24	625
Total	97	410	100	225	310	71	139	378	200	122	305	87	2444
01:00 PM	17	91	28	56	66	20	37	104	63	32	75	29	618
01:15 PM	22	89	27	54	64	17	42	96	54	36	58	27	586
01:30 PM	27	79	33	60	69	20	47	99	58	33	87	36	648
01:45 PM	26	106	33	67	67	18	31	88	65	39	71	40	651
Total	92	365	121	237	266	75	157	387	240	140	291	132	2503
Grand Total	284	1093	299	660	810	205	394	1121	646	371	822	313	7018
Apprch %	16.9	65.2	17.8	39.4	48.4	12.2	18.2	51.9	29.9	24.6	54.6	20.8	
Total %	4	15.6	4.3	9.4	11.5	2.9	5.6	16	9.2	5.3	11.7	4.5	

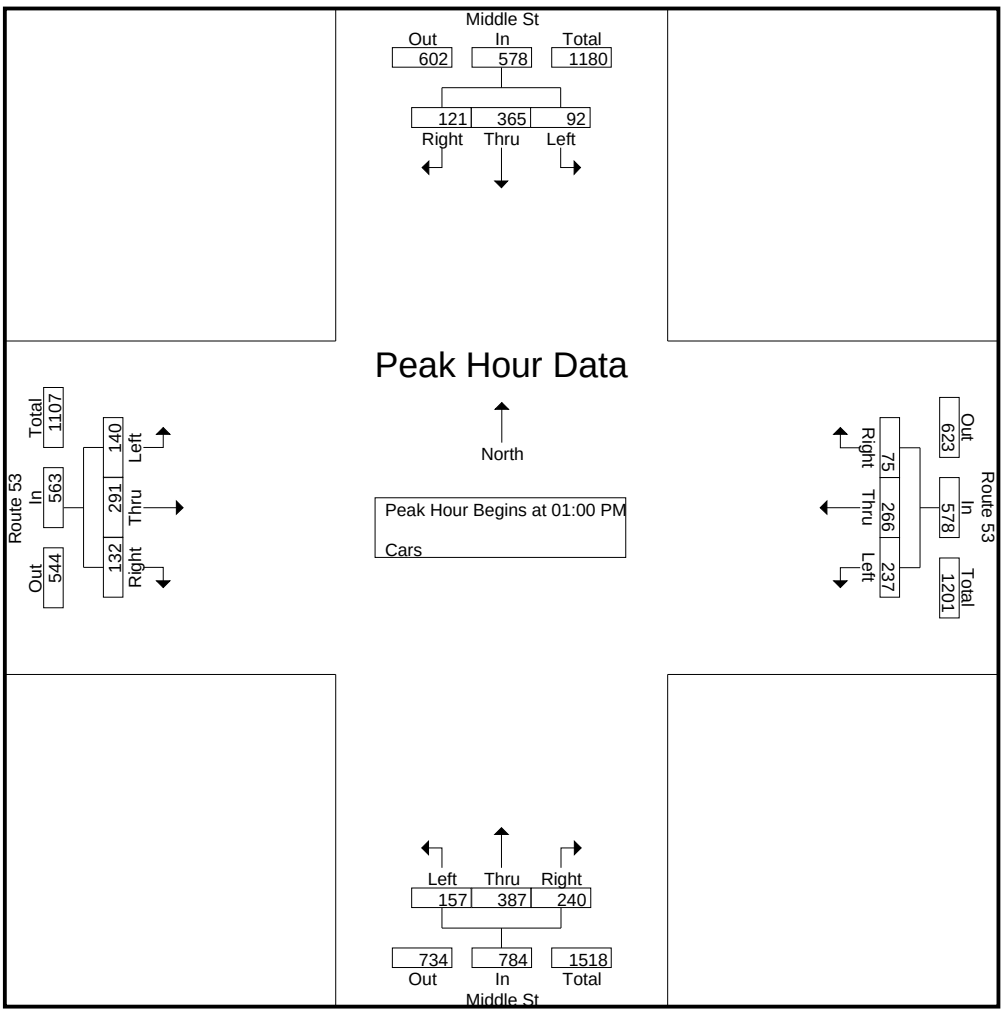
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	17	91	28	136	56	66	**20**	142	37	**104**	63	**204**	32	75	29	136	618
01:15 PM	22	89	27	138	54	64	17	135	42	96	54	192	36	58	27	121	586
01:30 PM	**27**	79	**33**	139	60	**69**	20	149	**47**	99	58	204	33	**87**	36	**156**	648
01:45 PM	26	**106**	33	**165**	**67**	67	18	**152**	31	88	**65**	184	**39**	71	**40**	150	**651**
Total Volume	92	365	121	578	237	266	75	578	157	387	240	784	140	291	132	563	2503
% App. Total	15.9	63.1	20.9		41	46	13		20	49.4	30.6		24.9	51.7	23.4		
PHF	.852	.861	.917	.876	.884	.964	.938	.951	.835	.930	.923	.961	.897	.836	.825	.902	.961

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 5



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

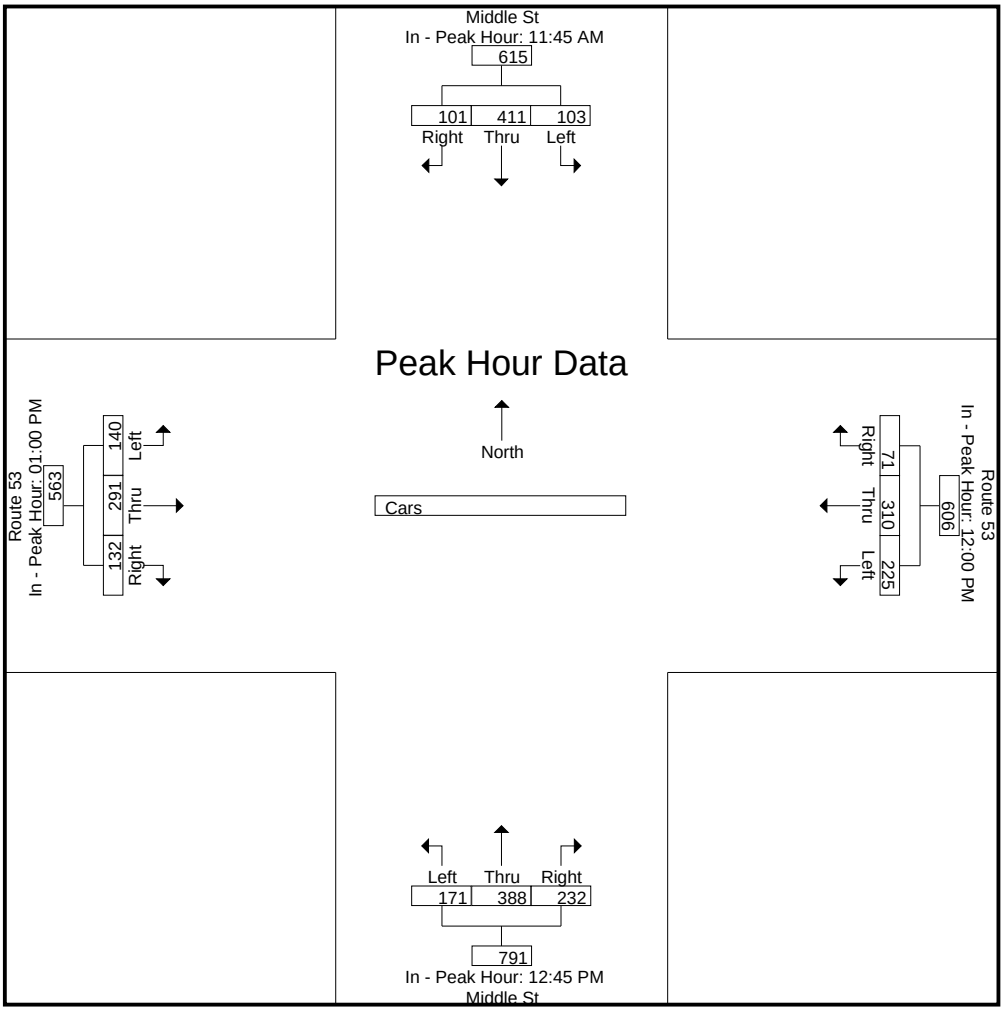
	11:45 AM				12:00 PM				12:45 PM				01:00 PM			
+0 mins.	**28**	87	26	141	**66**	**81**	17	**164**	45	89	57	191	32	75	29	136
+15 mins.	26	**113**	18	157	55	67	**20**	142	37	**104**	**63**	**204**	36	58	27	121
+30 mins.	24	113	**32**	**169**	49	81	16	146	42	96	54	192	33	**87**	36	**156**
+45 mins.	25	98	25	148	55	81	18	154	**47**	99	58	204	**39**	71	**40**	150
Total Volume	103	411	101	615	225	310	71	606	171	388	232	791	140	291	132	563
% App. Total	16.7	66.8	16.4		37.1	51.2	11.7		21.6	49.1	29.3		24.9	51.7	23.4	
PHF	.920	.909	.789	.910	.852	.957	.888	.924	.910	.933	.921	.969	.897	.836	.825	.902

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 7

Groups Printed- Trucks

	Middle St From North			Route 53 From East			Middle St From South			Route 53 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	0	0	0	2	0	0	0	1	0	0	0	0	3
11:15 AM	0	0	0	0	1	0	0	0	0	0	0	1	2
11:30 AM	0	1	0	0	0	0	2	0	2	0	0	0	5
11:45 AM	0	2	0	2	0	0	0	0	0	0	0	0	4
Total	0	3	0	4	1	0	2	1	2	0	0	1	14
12:00 PM	0	0	0	1	0	0	0	0	1	1	1	0	4
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
12:30 PM	0	0	0	1	0	0	1	0	0	0	0	0	2
12:45 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
Total	0	1	0	2	0	0	1	1	1	1	1	1	9
01:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
01:15 PM	0	0	0	0	0	1	0	0	0	0	0	1	2
01:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
01:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	0	1	1	0	0	0	1	1	5
Grand Total	0	4	0	7	1	1	4	2	3	1	2	3	28
Apprch %	0	100	0	77.8	11.1	11.1	44.4	22.2	33.3	16.7	33.3	50	
Total %	0	14.3	0	25	3.6	3.6	14.3	7.1	10.7	3.6	7.1	10.7	

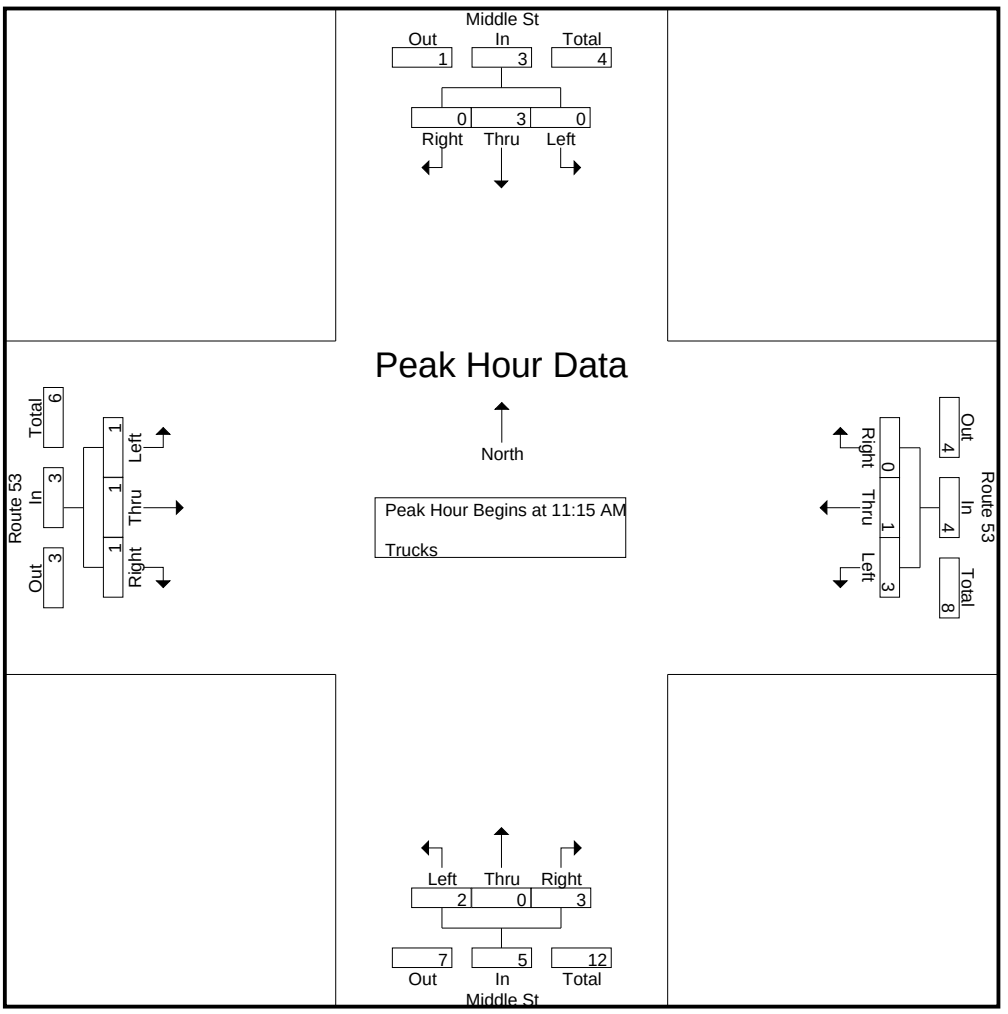
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	**1**	1	2
11:30 AM	0	1	0	1	0	0	0	0	**2**	0	**2**	**4**	0	0	0	0	**5**
11:45 AM	0	**2**	0	**2**	**2**	0	0	**2**	0	0	0	0	0	0	0	0	4
12:00 PM	0	0	0	0	1	0	0	1	0	0	1	1	**1**	**1**	0	**2**	4
Total Volume	0	3	0	3	3	1	0	4	2	0	3	5	1	1	1	3	15
% App. Total	0	100	0		75	25	0		40	0	60		33.3	33.3	33.3		
PHF	.000	.375	.000	.375	.375	.250	.000	.500	.250	.000	.375	.313	.250	.250	.250	.375	.750

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 8



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

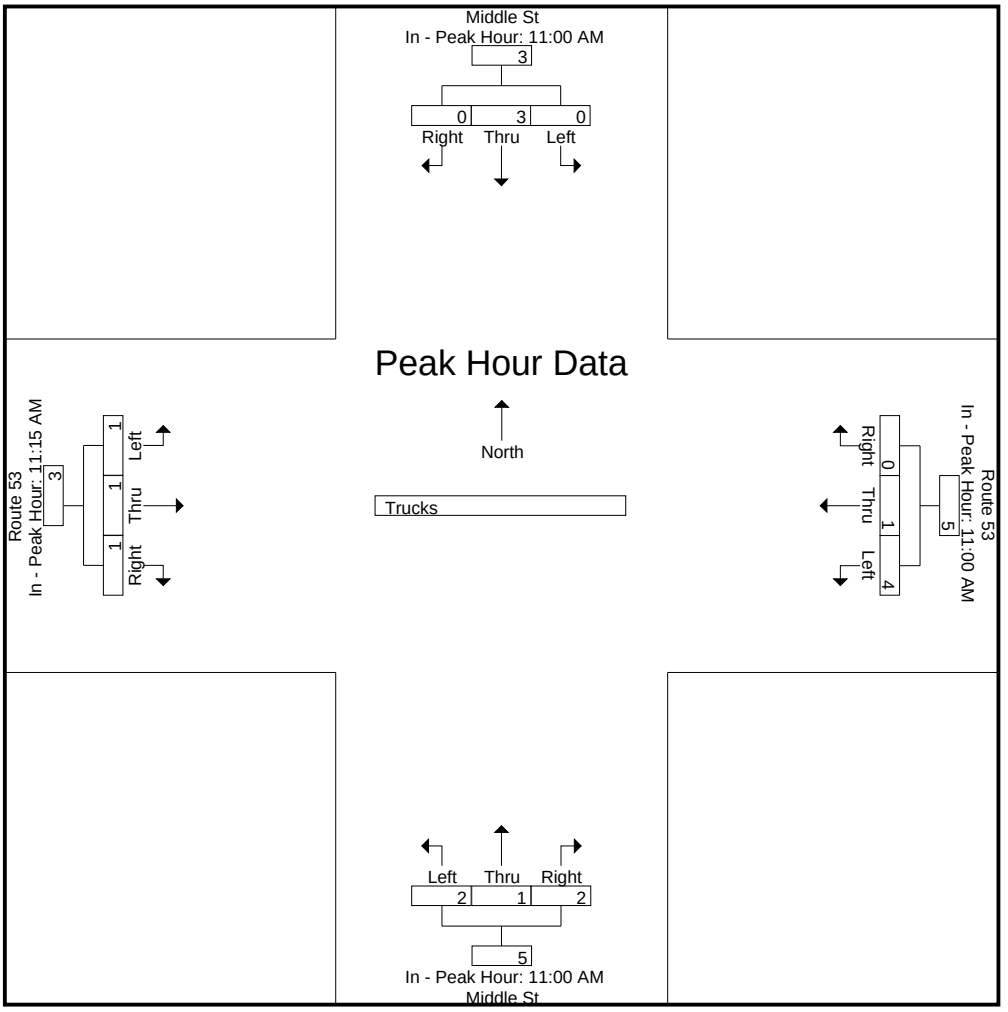
	11:00 AM				11:00 AM				11:00 AM				11:15 AM			
+0 mins.	0	0	0	0	**2**	0	0	**2**	0	**1**	0	1	0	0	**1**	1
+15 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	**2**	0	**2**	**4**	0	0	0	0
+45 mins.	0	**2**	0	**2**	2	0	0	2	0	0	0	0	**1**	**1**	0	**2**
Total Volume	0	3	0	3	4	1	0	5	2	1	2	5	1	1	1	3
% App. Total	0	100	0		80	20	0		40	20	40		33.3	33.3	33.3	
PHF	.000	.375	.000	.375	.500	.250	.000	.625	.250	.250	.250	.313	.250	.250	.250	.375

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021

Groups Printed- Bikes Peds

	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	6	0	6
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	6	0	6
12:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
12:15 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	5	0	5
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	3	7	0	7
01:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
Grand Total	0	0	0	6	0	0	0	2	0	0	0	0	0	0	0	7	15	0	15
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

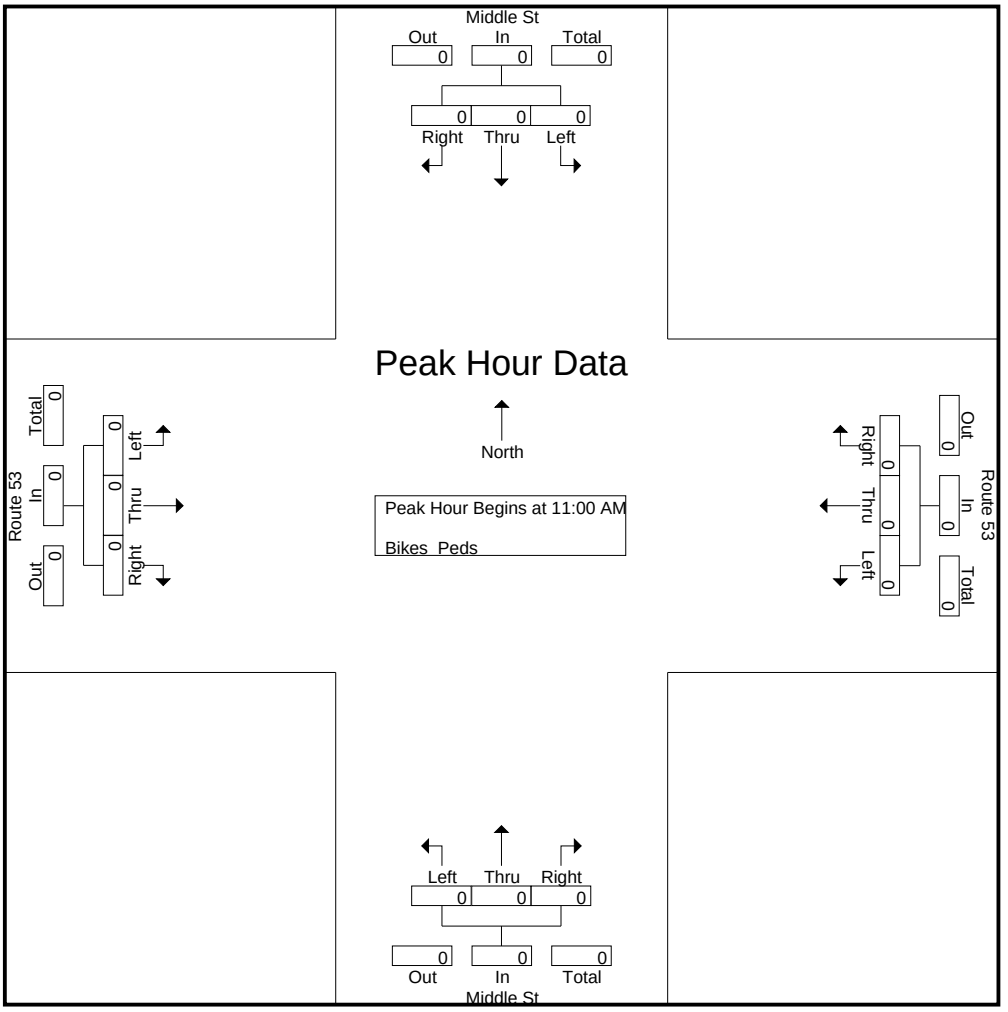
	Middle St From North				Route 53 From East				Middle St From South				Route 53 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 11



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

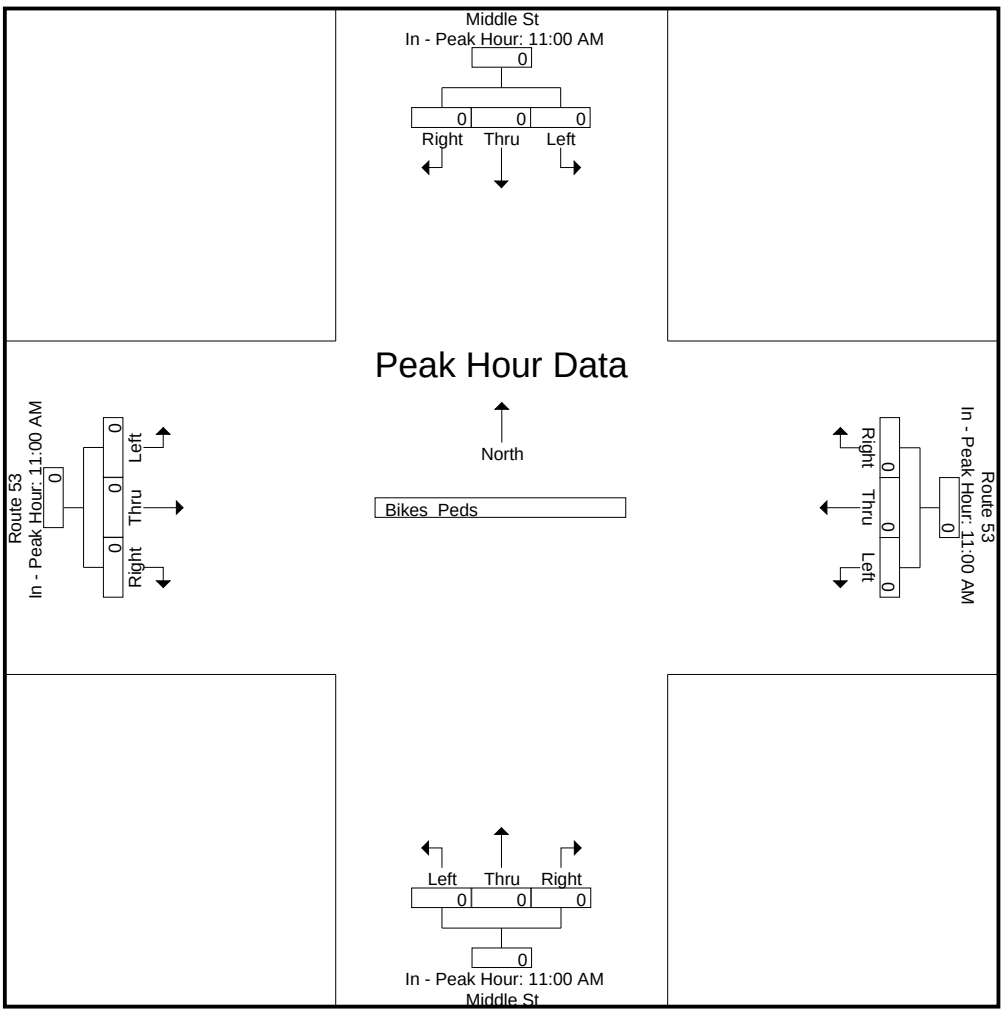
Peak Hour for Each Approach Begins at:

	11:00 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Middle Street
E/W Street : Route 53
City/State : Weymouth, MA
Weather : Rain

File Name : 882600S2
Site Code : 88260002
Start Date : 1/16/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 1

Groups Printed- Caras - Trucks

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	55	104	19	47	67	22	314
07:15 AM	52	121	20	56	85	13	347
07:30 AM	65	142	26	63	73	15	384
07:45 AM	65	136	17	88	61	17	384
Total	237	503	82	254	286	67	1429
08:00 AM	61	88	14	74	77	24	338
08:15 AM	88	130	15	59	70	32	394
08:30 AM	84	112	18	71	66	30	381
08:45 AM	125	109	20	93	87	23	457
Total	358	439	67	297	300	109	1570
Grand Total	595	942	149	551	586	176	2999
Apprch %	38.7	61.3	21.3	78.7	76.9	23.1	
Total %	19.8	31.4	5	18.4	19.5	5.9	
Caras	575	927	148	535	566	173	2924
% Caras	96.6	98.4	99.3	97.1	96.6	98.3	97.5
Trucks	20	15	1	16	20	3	75
% Trucks	3.4	1.6	0.7	2.9	3.4	1.7	2.5

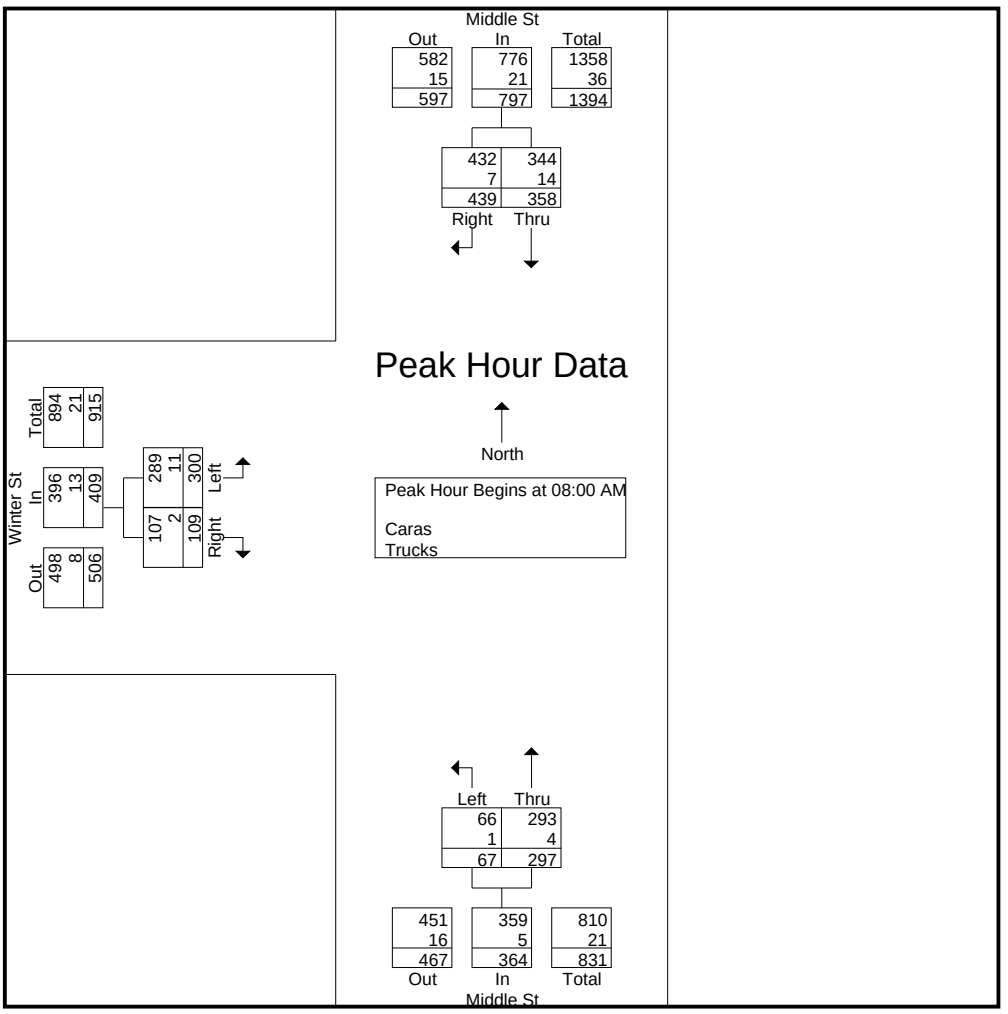
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	61	88	149	14	74	88	77	24	101	338
08:15 AM	88	**130**	218	15	59	74	70	**32**	102	394
08:30 AM	84	112	196	18	71	89	66	30	96	381
08:45 AM	**125**	109	**234**	**20**	**93**	**113**	**87**	23	**110**	**457**
Total Volume	358	439	797	67	297	364	300	109	409	1570
% App. Total	44.9	55.1		18.4	81.6		73.3	26.7		
PHF	.716	.844	.851	.838	.798	.805	.862	.852	.930	.859
Caras	344	432	776	66	293	359	289	107	396	1531
% Caras	96.1	98.4	97.4	98.5	98.7	98.6	96.3	98.2	96.8	97.5
Trucks	14	7	21	1	4	5	11	2	13	39
% Trucks	3.9	1.6	2.6	1.5	1.3	1.4	3.7	1.8	3.2	2.5

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 2



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

Peak Hour for Each Approach Begins at:

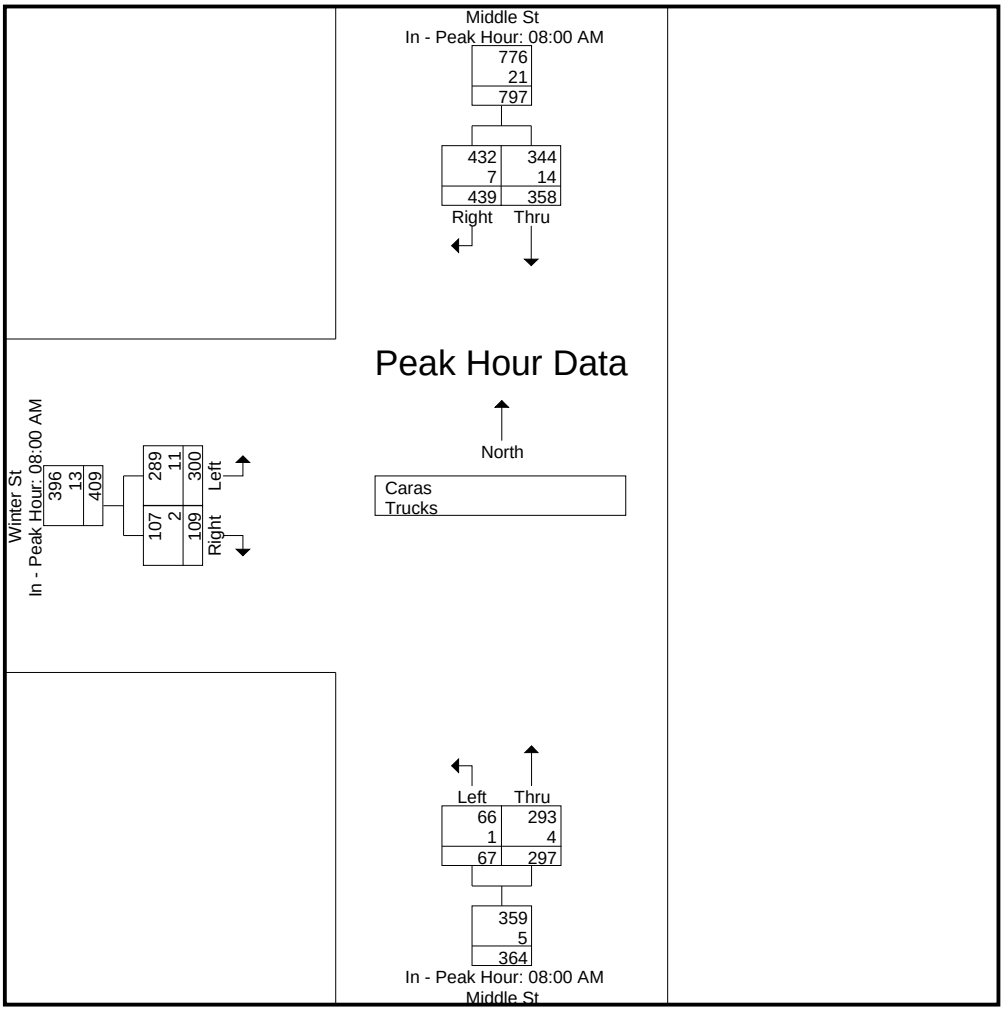
	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	61	88	149	14	74	88	77	24	101
+15 mins.	88	**130**	218	15	59	74	70	**32**	102
+30 mins.	84	112	196	18	71	89	66	30	96
+45 mins.	**125**	109	**234**	**20**	**93**	**113**	**87**	23	**110**
Total Volume	358	439	797	67	297	364	300	109	409
% App. Total	44.9	55.1		18.4	81.6		73.3	26.7	
PHF	.716	.844	.851	.838	.798	.805	.862	.852	.930
Caras	344	432	776	66	293	359	289	107	396
% Caras	96.1	98.4	97.4	98.5	98.7	98.6	96.3	98.2	96.8
Trucks	14	7	21	1	4	5	11	2	13
% Trucks	3.9	1.6	2.6	1.5	1.3	1.4	3.7	1.8	3.2

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 4

Groups Printed- Caras

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	52	101	19	45	65	22	304
07:15 AM	51	121	20	55	81	13	341
07:30 AM	64	139	26	60	70	15	374
07:45 AM	64	134	17	82	61	16	374
Total	231	495	82	242	277	66	1393
08:00 AM	58	88	13	72	73	23	327
08:15 AM	85	127	15	58	67	31	383
08:30 AM	80	111	18	71	66	30	376
08:45 AM	121	106	20	92	83	23	445
Total	344	432	66	293	289	107	1531
Grand Total	575	927	148	535	566	173	2924
Apprch %	38.3	61.7	21.7	78.3	76.6	23.4	
Total %	19.7	31.7	5.1	18.3	19.4	5.9	

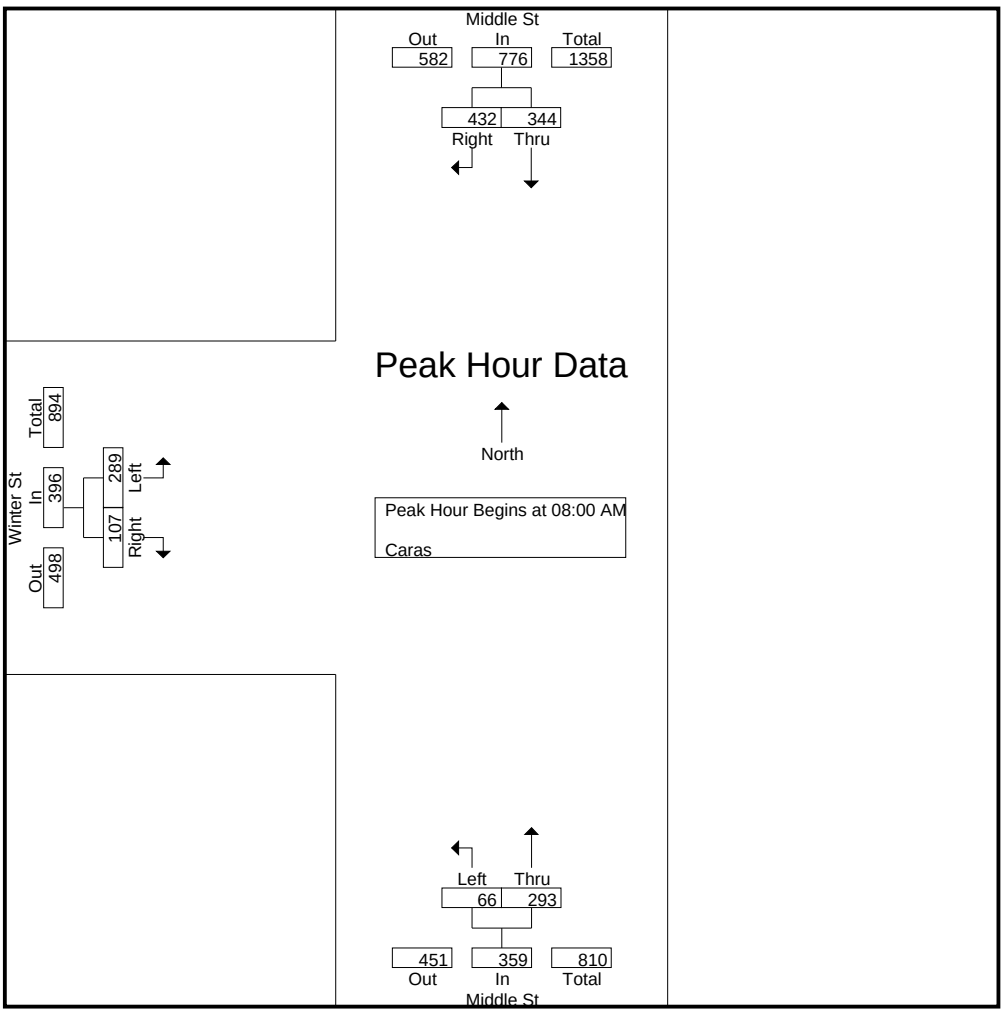
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	58	88	146	13	72	85	73	23	96	327
08:15 AM	85	**127**	212	15	58	73	67	**31**	98	383
08:30 AM	80	111	191	18	71	89	66	30	96	376
08:45 AM	**121**	106	**227**	**20**	**92**	**112**	**83**	23	**106**	**445**
Total Volume	344	432	776	66	293	359	289	107	396	1531
% App. Total	44.3	55.7		18.4	81.6		73	27		
PHF	.711	.850	.855	.825	.796	.801	.870	.863	.934	.860

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 5



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

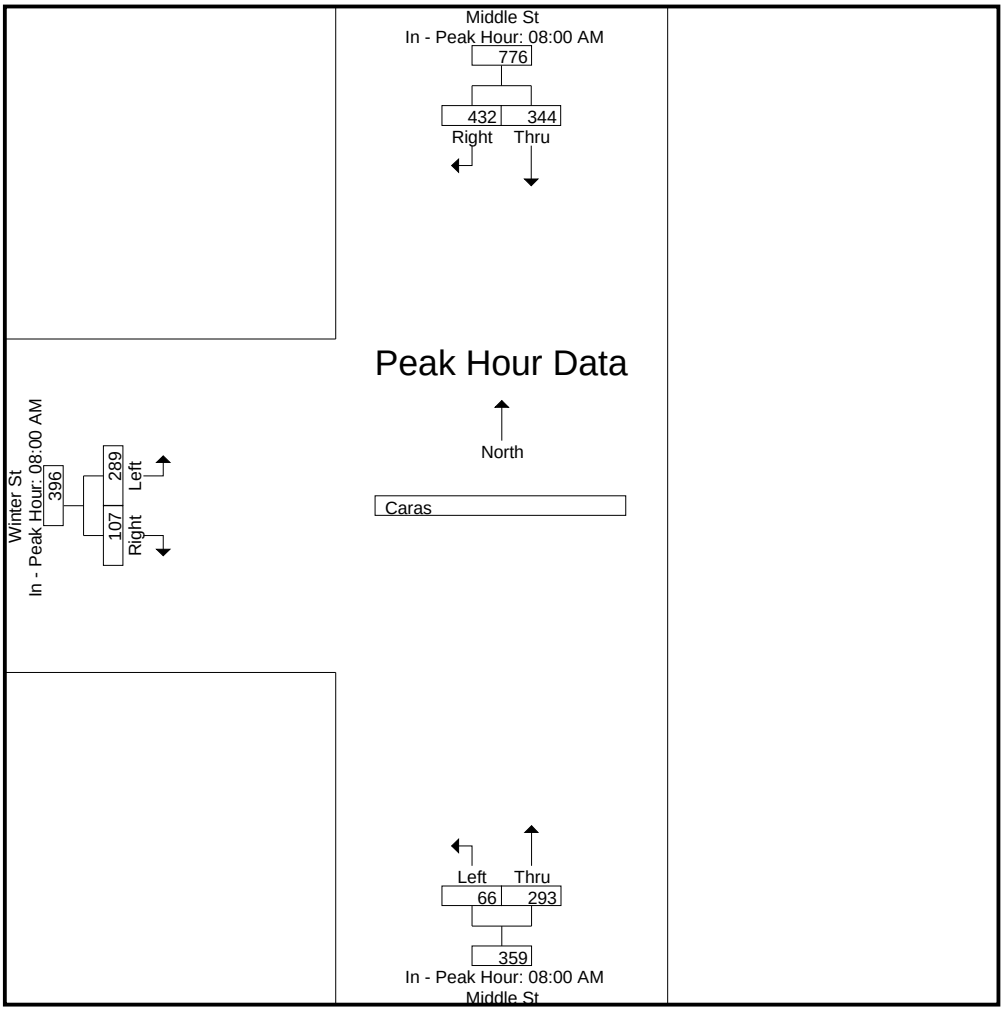
	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	58	88	146	13	72	85	73	23	96
+15 mins.	85	**127**	212	15	58	73	67	**31**	98
+30 mins.	80	111	191	18	71	89	66	30	96
+45 mins.	**121**	106	**227**	**20**	**92**	**112**	**83**	23	**106**
Total Volume	344	432	776	66	293	359	289	107	396
% App. Total	44.3	55.7		18.4	81.6		73	27	
PHF	.711	.850	.855	.825	.796	.801	.870	.863	.934

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 7

Groups Printed- Trucks

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	3	3	0	2	2	0	10
07:15 AM	1	0	0	1	4	0	6
07:30 AM	1	3	0	3	3	0	10
07:45 AM	1	2	0	6	0	1	10
Total	6	8	0	12	9	1	36
08:00 AM	3	0	1	2	4	1	11
08:15 AM	3	3	0	1	3	1	11
08:30 AM	4	1	0	0	0	0	5
08:45 AM	4	3	0	1	4	0	12
Total	14	7	1	4	11	2	39
Grand Total	20	15	1	16	20	3	75
Apprch %	57.1	42.9	5.9	94.1	87	13	
Total %	26.7	20	1.3	21.3	26.7	4	

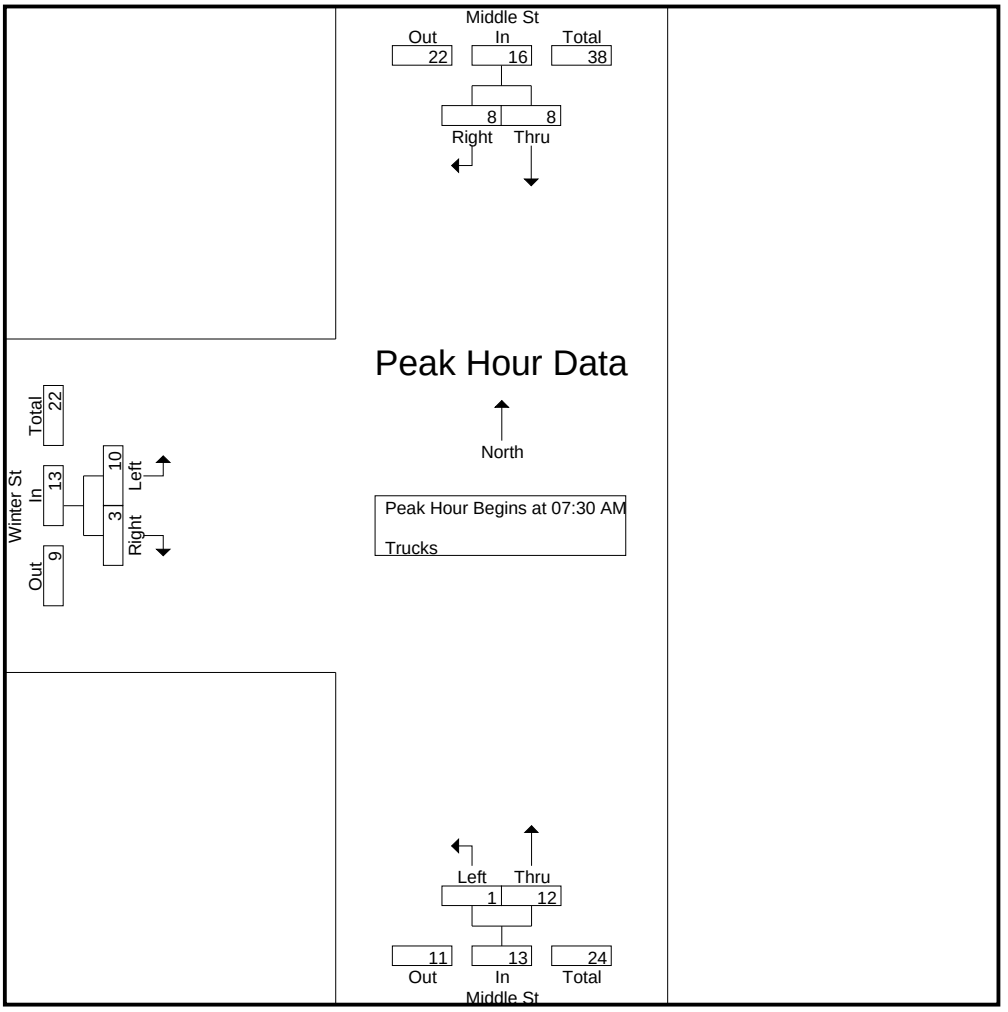
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	**3**	4	0	3	3	3	0	3	10
07:45 AM	1	2	3	0	**6**	**6**	0	**1**	1	10
08:00 AM	**3**	0	3	**1**	2	3	**4**	1	**5**	**11**
08:15 AM	3	3	**6**	0	1	1	3	1	4	11
Total Volume	8	8	16	1	12	13	10	3	13	42
% App. Total	50	50		7.7	92.3		76.9	23.1		
PHF	.667	.667	.667	.250	.500	.542	.625	.750	.650	.955

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 8



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

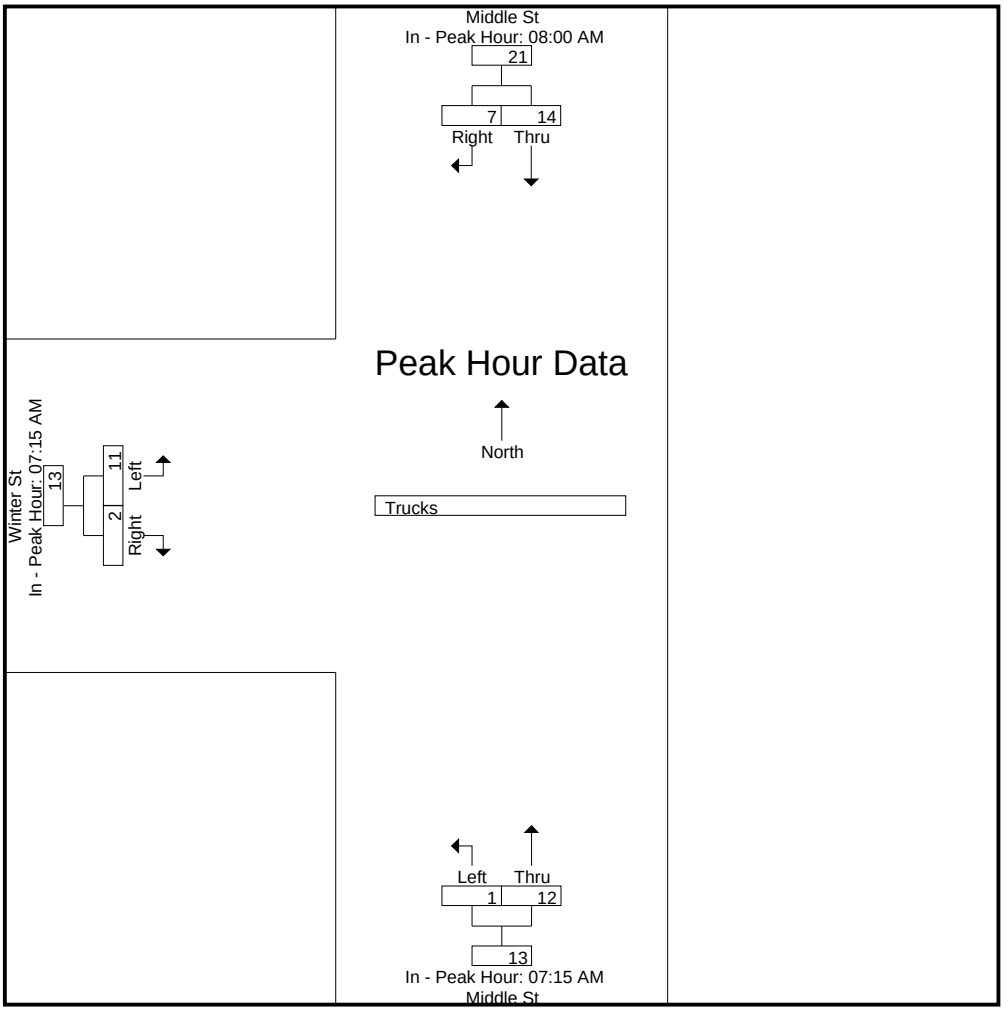
	08:00 AM			07:15 AM			07:15 AM		
+0 mins.	3	0	3	0	1	1	**4**	0	4
+15 mins.	3	**3**	6	0	3	3	3	0	3
+30 mins.	**4**	1	5	0	**6**	**6**	0	**1**	1
+45 mins.	4	3	**7**	**1**	2	3	4	1	**5**
Total Volume	14	7	21	1	12	13	11	2	13
% App. Total	66.7	33.3		7.7	92.3		84.6	15.4	
PHF	.875	.583	.750	.250	.500	.542	.688	.500	.650

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021

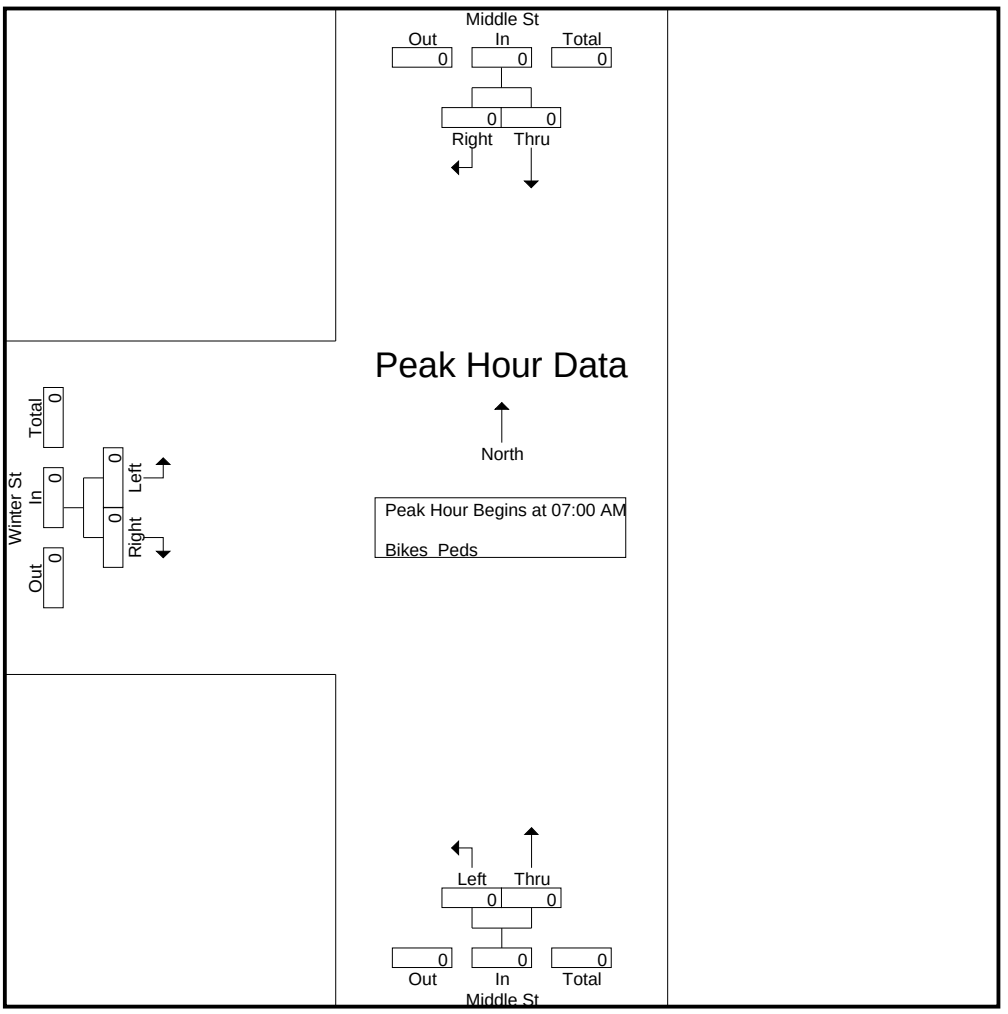
Groups Printed- Bikes Peds

	Middle St From North			Middle St From South			Winter St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	0	0	1	0	1
Apprch %	0	0		0	0		0	0				
Total %										100	0	

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

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 11



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

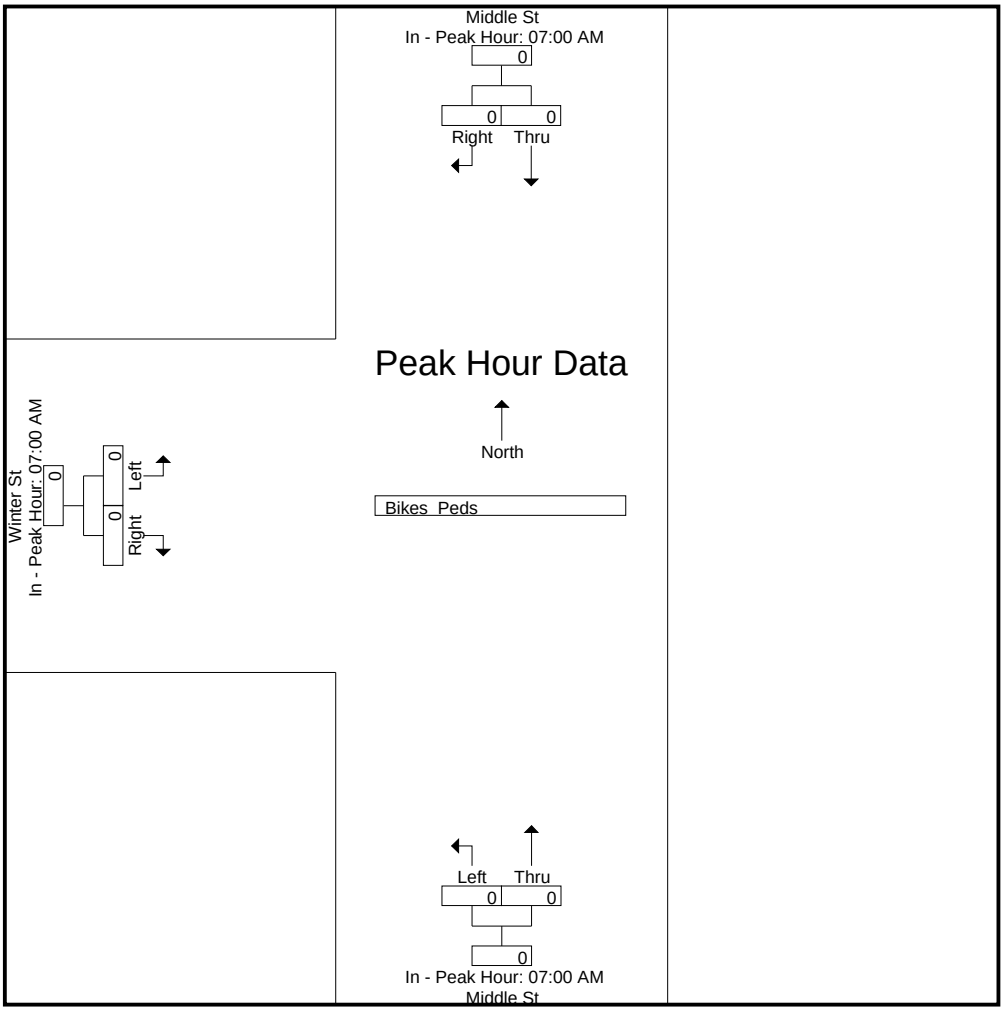
	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 1

Groups Printed- Caras - Trucks

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	104	81	21	105	84	30	425
04:15 PM	83	87	23	123	92	24	432
04:30 PM	101	89	10	126	112	32	470
04:45 PM	90	81	29	113	81	31	425
Total	378	338	83	467	369	117	1752
05:00 PM	90	83	22	114	75	29	413
05:15 PM	83	66	28	107	118	25	427
05:30 PM	63	72	15	120	90	24	384
05:45 PM	91	75	20	96	87	25	394
Total	327	296	85	437	370	103	1618
Grand Total	705	634	168	904	739	220	3370
Apprch %	52.7	47.3	15.7	84.3	77.1	22.9	
Total %	20.9	18.8	5	26.8	21.9	6.5	
Caras	701	630	166	901	732	218	3348
% Caras	99.4	99.4	98.8	99.7	99.1	99.1	99.3
Trucks	4	4	2	3	7	2	22
% Trucks	0.6	0.6	1.2	0.3	0.9	0.9	0.7

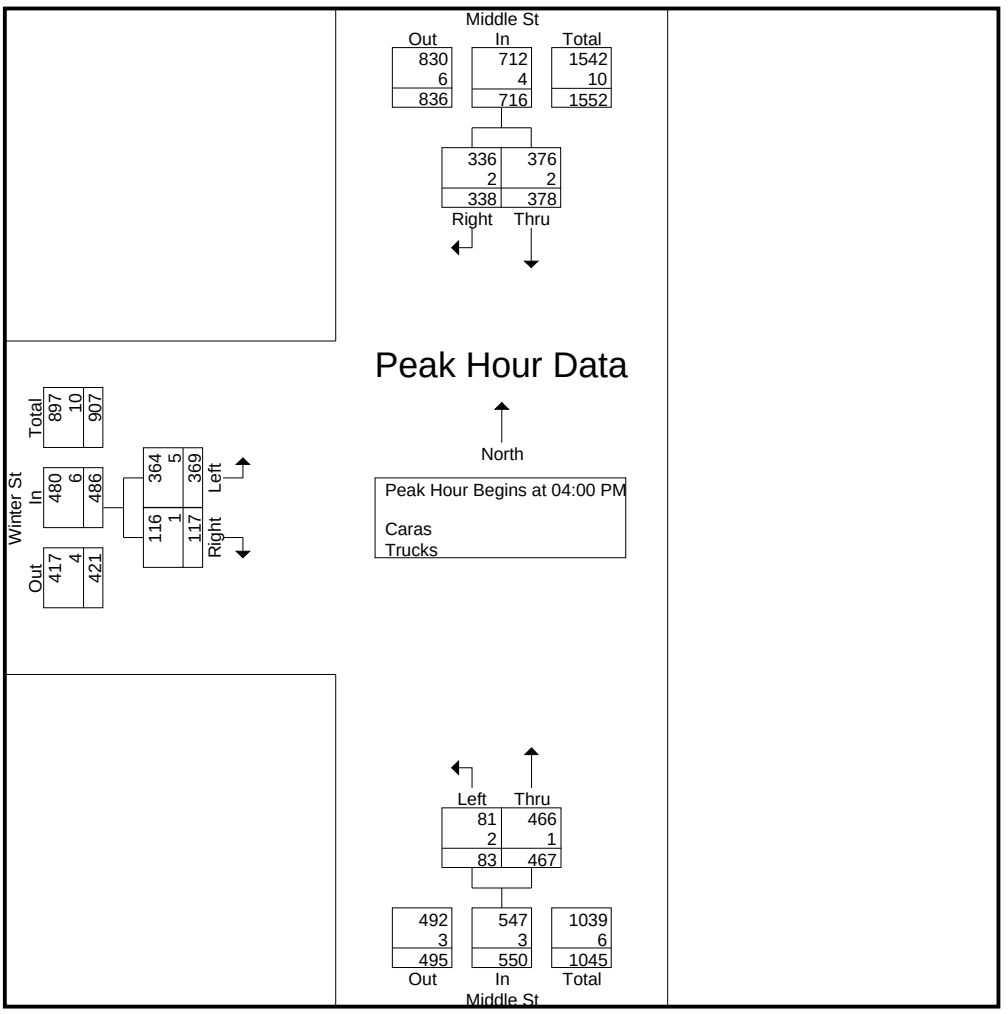
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**104**	81	185	21	105	126	84	30	114	425
04:15 PM	83	87	170	23	123	**146**	92	24	116	432
04:30 PM	101	**89**	**190**	10	**126**	136	**112**	**32**	**144**	**470**
04:45 PM	90	81	171	**29**	113	142	81	31	112	425
Total Volume	378	338	716	83	467	550	369	117	486	1752
% App. Total	52.8	47.2		15.1	84.9		75.9	24.1		
PHF	.909	.949	.942	.716	.927	.942	.824	.914	.844	.932
Caras	376	336	712	81	466	547	364	116	480	1739
% Caras	99.5	99.4	99.4	97.6	99.8	99.5	98.6	99.1	98.8	99.3
Trucks	2	2	4	2	1	3	5	1	6	13
% Trucks	0.5	0.6	0.6	2.4	0.2	0.5	1.4	0.9	1.2	0.7

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 2



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

Peak Hour for Each Approach Begins at:

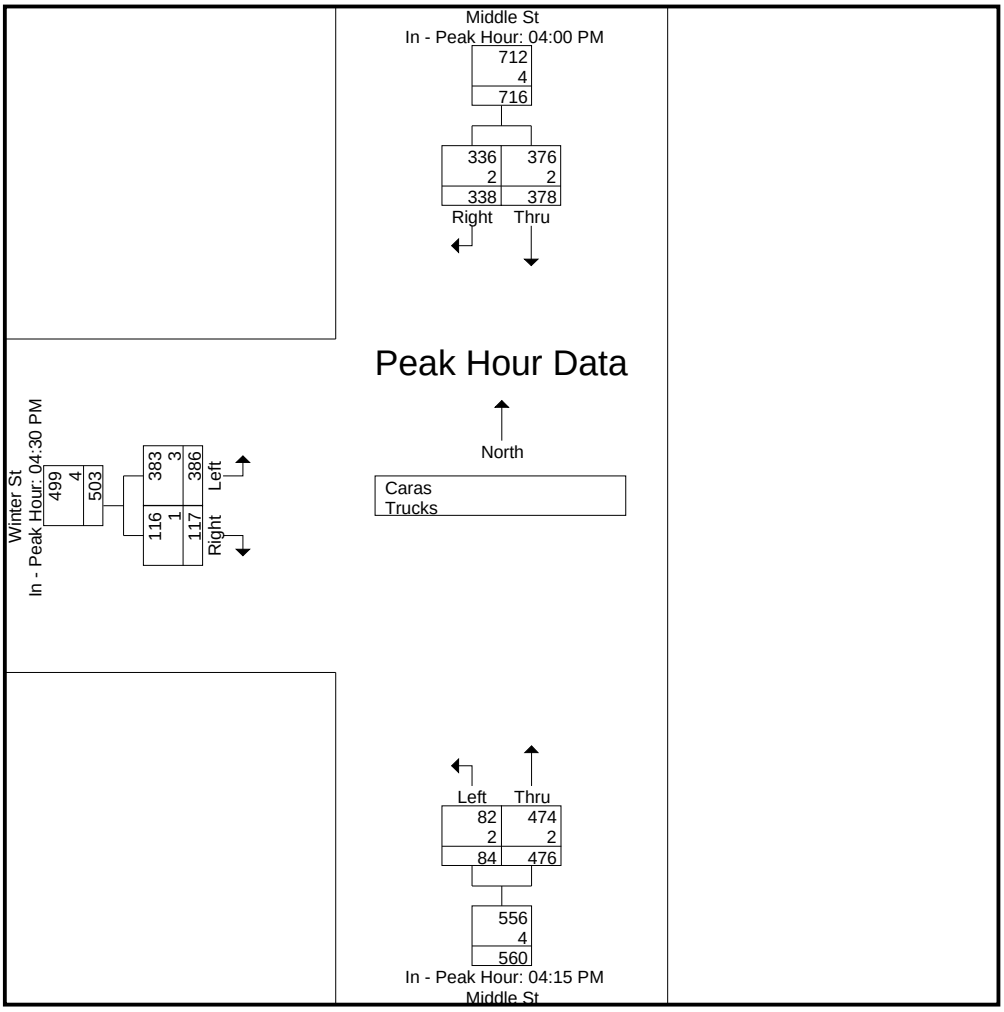
	04:00 PM			04:15 PM			04:30 PM		
+0 mins.	**104**	81	185	23	123	**146**	112	**32**	**144**
+15 mins.	83	87	170	10	**126**	136	81	31	112
+30 mins.	101	**89**	**190**	**29**	113	142	75	29	104
+45 mins.	90	81	171	22	114	136	**118**	25	143
Total Volume	378	338	716	84	476	560	386	117	503
% App. Total	52.8	47.2		15	85		76.7	23.3	
PHF	.909	.949	.942	.724	.944	.959	.818	.914	.873
Caras	376	336	712	82	474	556	383	116	499
% Caras	99.5	99.4	99.4	97.6	99.6	99.3	99.2	99.1	99.2
Trucks	2	2	4	2	2	4	3	1	4
% Trucks	0.5	0.6	0.6	2.4	0.4	0.7	0.8	0.9	0.8

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 4

Groups Printed- Caras

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	103	81	21	105	82	30	422
04:15 PM	83	85	22	123	90	24	427
04:30 PM	100	89	10	125	111	32	467
04:45 PM	90	81	28	113	81	30	423
Total	376	336	81	466	364	116	1739
05:00 PM	90	82	22	113	73	29	409
05:15 PM	82	65	28	107	118	25	425
05:30 PM	63	72	15	120	90	24	384
05:45 PM	90	75	20	95	87	24	391
Total	325	294	85	435	368	102	1609
Grand Total	701	630	166	901	732	218	3348
Apprch %	52.7	47.3	15.6	84.4	77.1	22.9	
Total %	20.9	18.8	5	26.9	21.9	6.5	

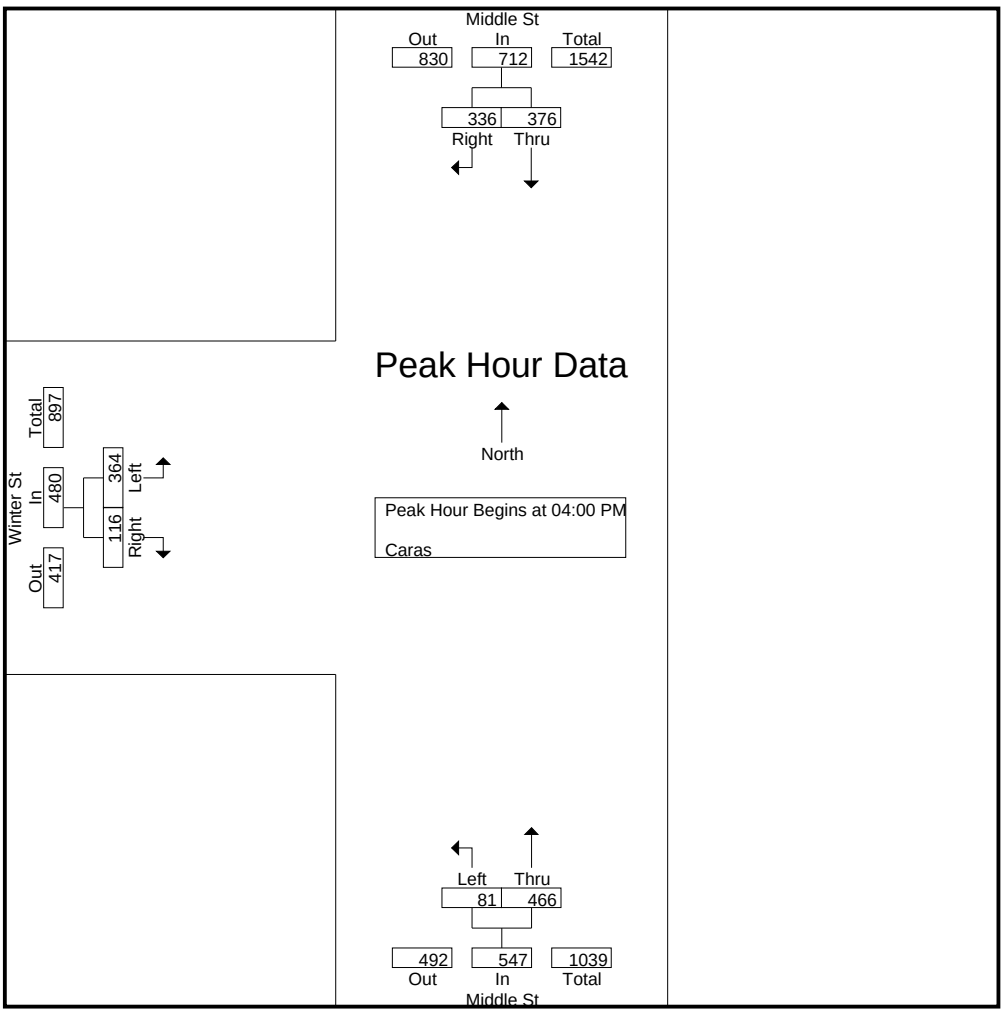
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**103**	81	184	21	105	126	82	30	112	422
04:15 PM	83	85	168	22	123	**145**	90	24	114	427
04:30 PM	100	**89**	**189**	10	**125**	135	**111**	**32**	**143**	**467**
04:45 PM	90	81	171	**28**	113	141	81	30	111	423
Total Volume	376	336	712	81	466	547	364	116	480	1739
% App. Total	52.8	47.2		14.8	85.2		75.8	24.2		
PHF	.913	.944	.942	.723	.932	.943	.820	.906	.839	.931

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 5



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

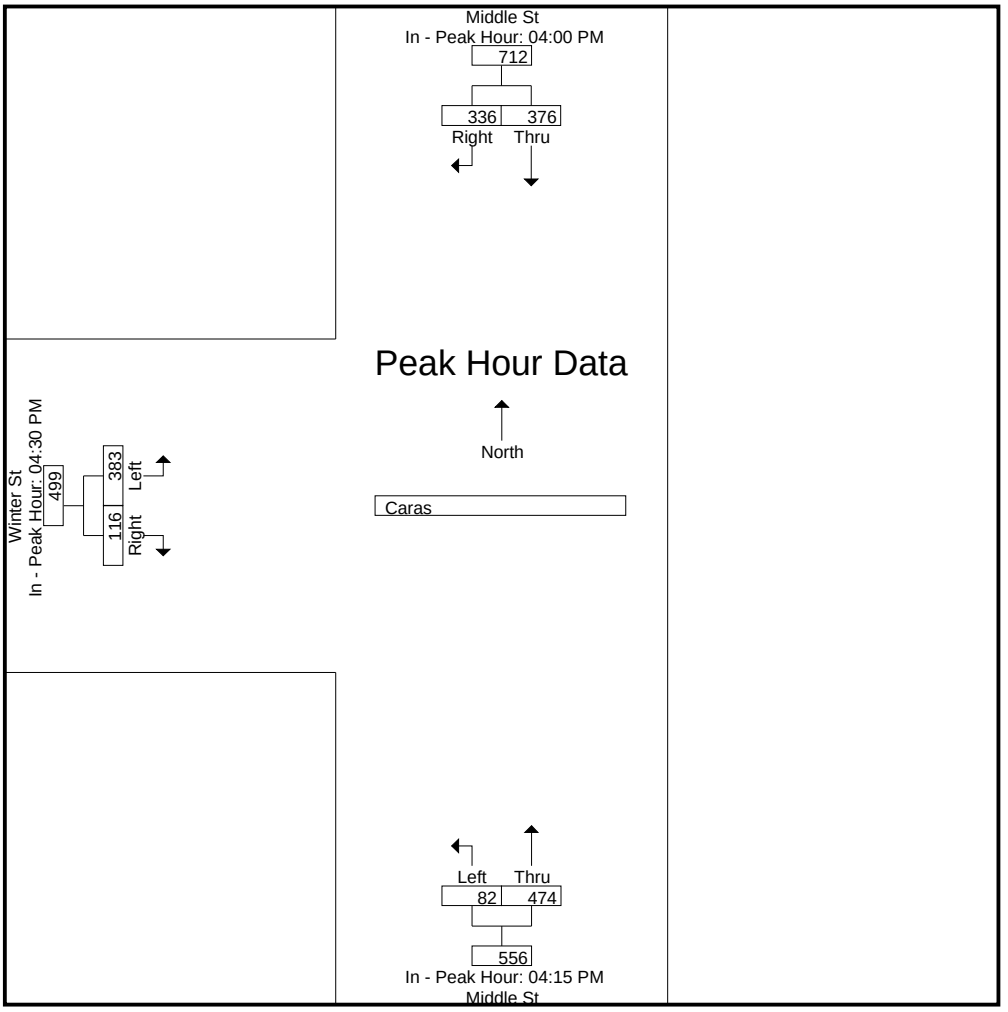
	04:00 PM			04:15 PM			04:30 PM		
+0 mins.	**103**	81	184	22	123	**145**	111	**32**	**143**
+15 mins.	83	85	168	10	**125**	135	81	30	111
+30 mins.	100	**89**	**189**	**28**	113	141	73	29	102
+45 mins.	90	81	171	22	113	135	**118**	25	143
Total Volume	376	336	712	82	474	556	383	116	499
% App. Total	52.8	47.2		14.7	85.3		76.8	23.2	
PHF	.913	.944	.942	.732	.948	.959	.811	.906	.872

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 7

Groups Printed- Trucks

	Middle St From North		Middle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	1	0	0	0	2	0	3
04:15 PM	0	2	1	0	2	0	5
04:30 PM	1	0	0	1	1	0	3
04:45 PM	0	0	1	0	0	1	2
Total	2	2	2	1	5	1	13
05:00 PM	0	1	0	1	2	0	4
05:15 PM	1	1	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0
05:45 PM	1	0	0	1	0	1	3
Total	2	2	0	2	2	1	9
Grand Total	4	4	2	3	7	2	22
Apprch %	50	50	40	60	77.8	22.2	
Total %	18.2	18.2	9.1	13.6	31.8	9.1	

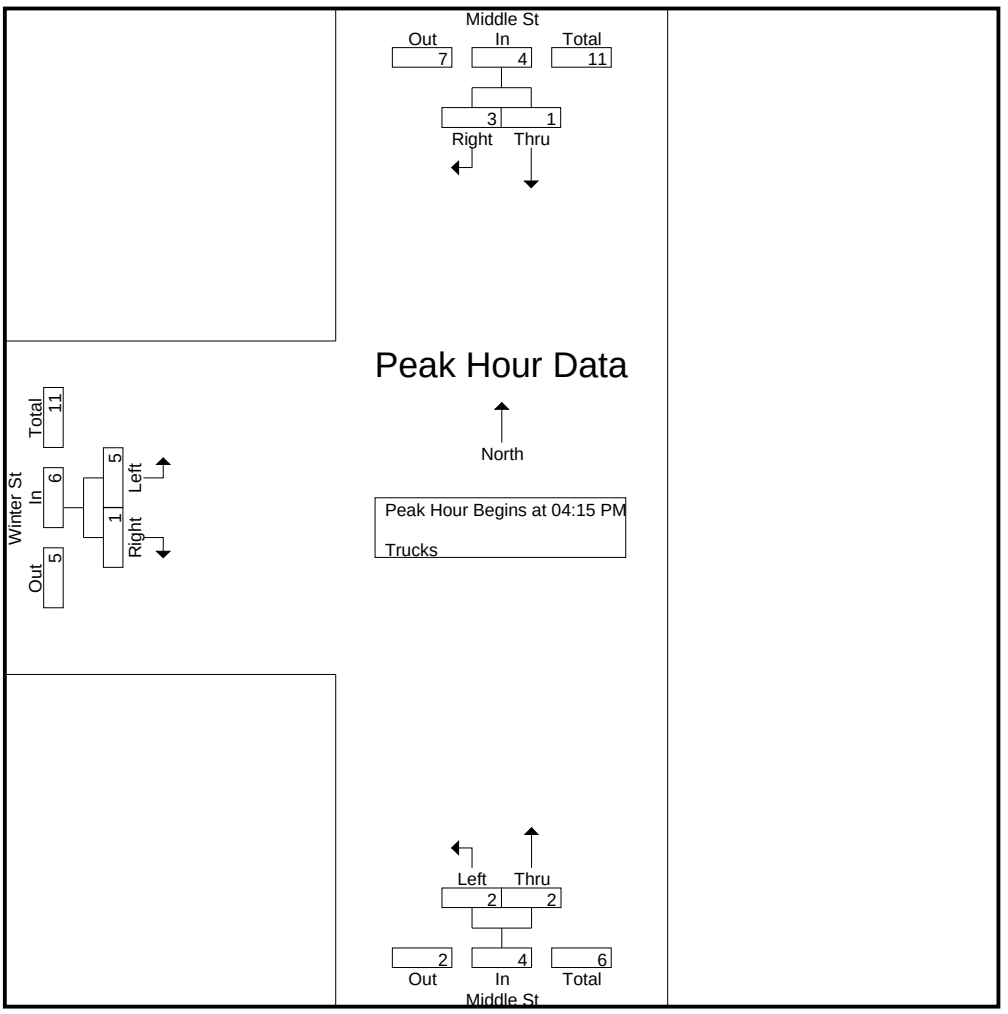
	Middle St From North			Middle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	**2**	**2**	**1**	0	**1**	**2**	0	**2**	**5**
04:30 PM	**1**	0	1	0	**1**	1	1	0	1	3
04:45 PM	0	0	0	1	0	1	0	**1**	1	2
05:00 PM	0	1	1	0	1	1	2	0	2	4
Total Volume	1	3	4	2	2	4	5	1	6	14
% App. Total	25	75		50	50		83.3	16.7		
PHF	.250	.375	.500	.500	.500	1.00	.625	.250	.750	.700

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 8

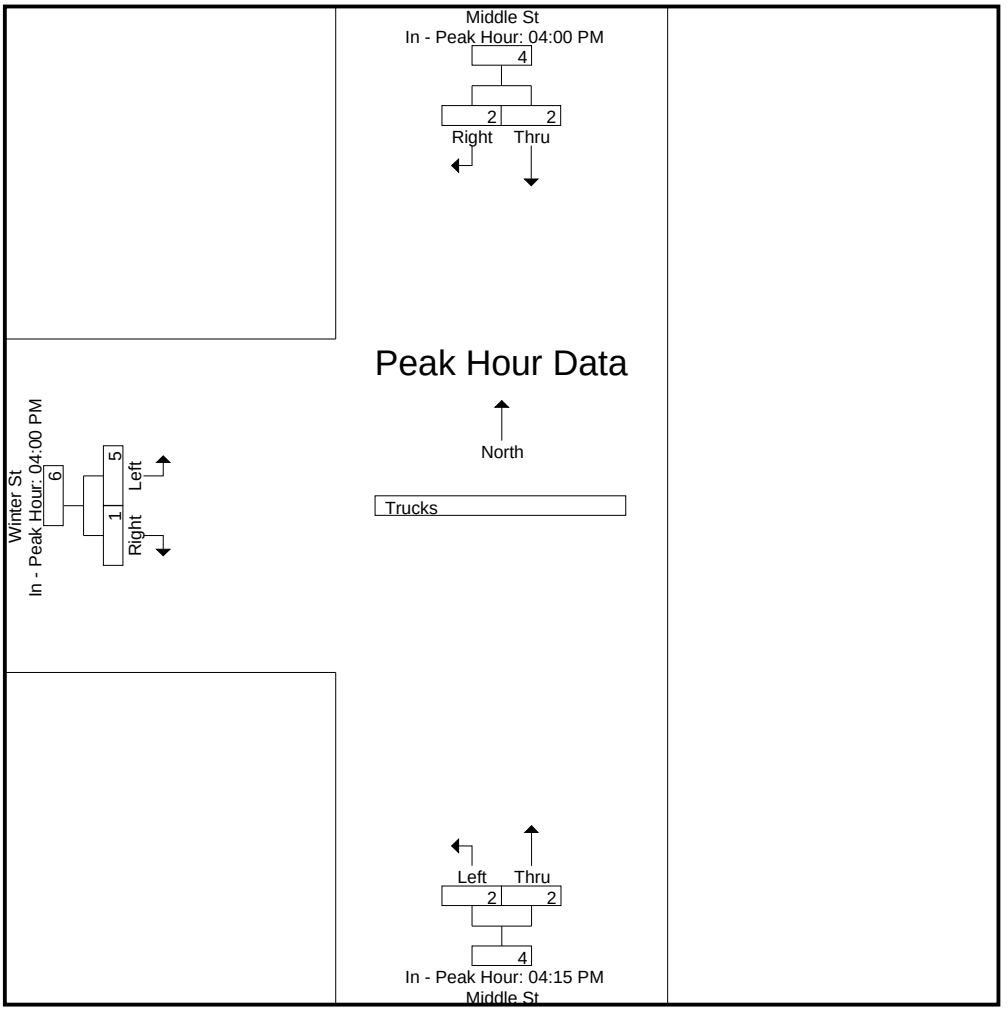


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:00 PM		
+0 mins.	**1**	0	1	**1**	0	**1**	**2**	0	**2**
+15 mins.	0	**2**	**2**	0	**1**	1	2	0	2
+30 mins.	1	0	1	1	0	1	1	0	1
+45 mins.	0	0	0	0	1	1	0	**1**	1
Total Volume	2	2	4	2	2	4	5	1	6
% App. Total	50	50		50	50		83.3	16.7	
PHF	.500	.250	.500	.500	.500	1.000	.625	.250	.750

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021

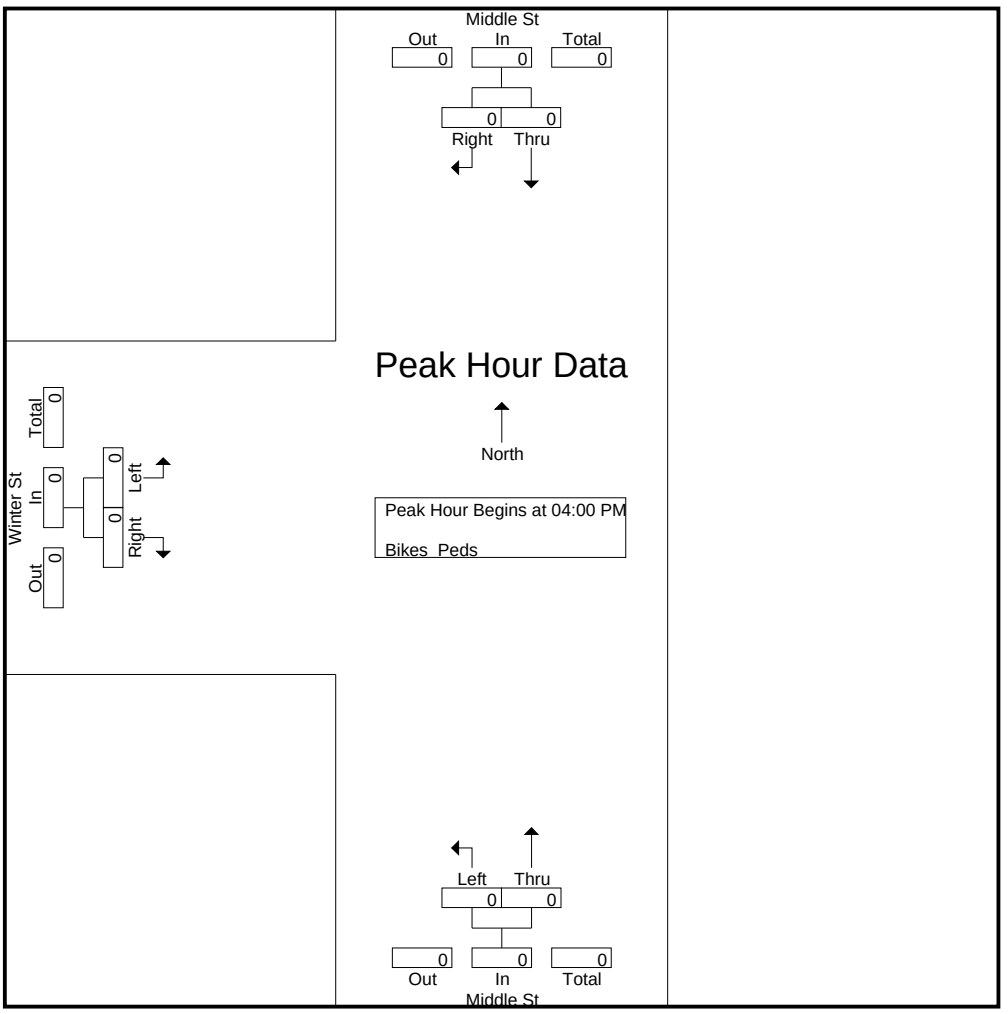
Groups Printed- Bikes Peds

	Middle St From North			Middle St From South			Winter St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	0	0	0	0	0	3	3	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	3	3	0	3
Apprch %	0	0		0	0		0	0				
Total %										100	0	

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

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 11



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

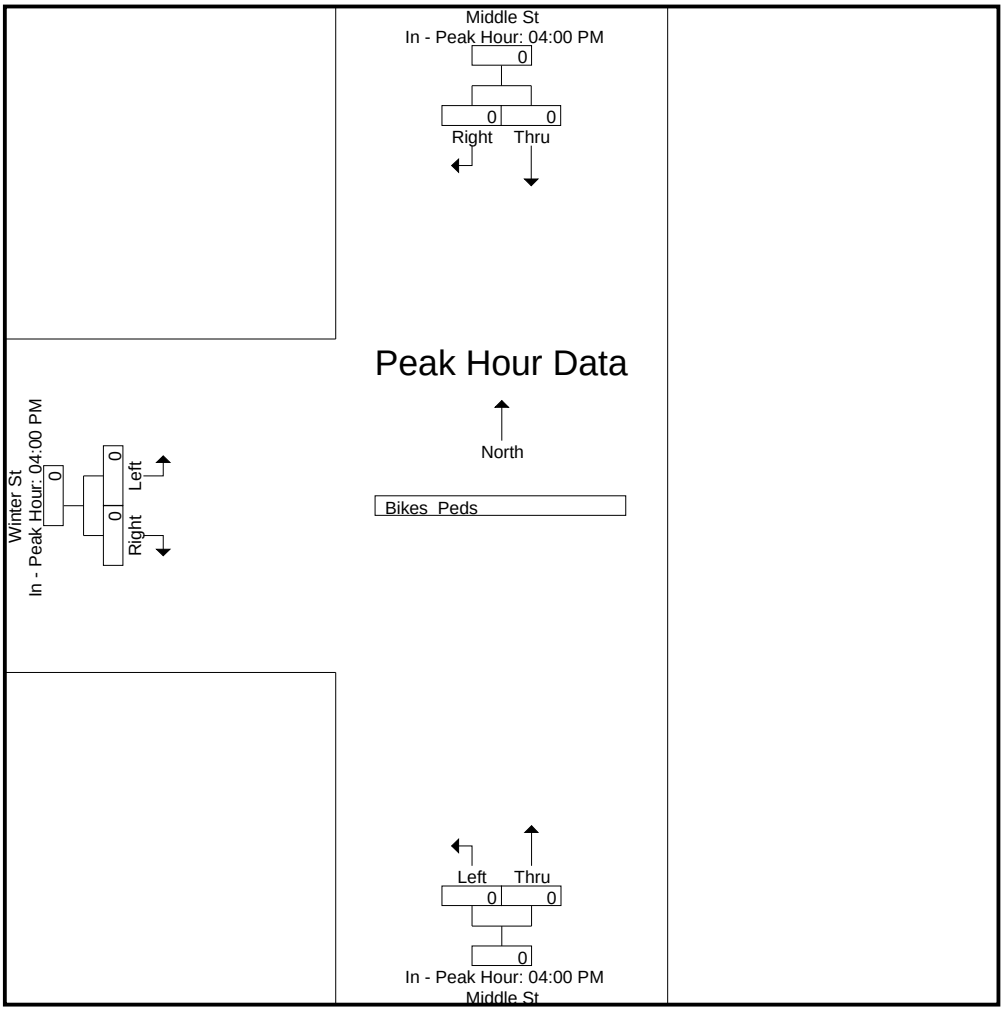
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 88260003
Site Code : 88260003
Start Date : 1/14/2021
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 1

Groups Printed- Cars - Trucks

	Middlle St From North		Middlle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
11:00 AM	57	81	25	78	75	22	338
11:15 AM	77	93	18	72	68	25	353
11:30 AM	76	79	16	110	80	29	390
11:45 AM	75	82	20	103	89	27	396
Total	285	335	79	363	312	103	1477
12:00 PM	98	102	18	76	76	23	393
12:15 PM	78	107	28	88	95	16	412
12:30 PM	83	94	18	102	85	34	416
12:45 PM	74	93	33	109	90	25	424
Total	333	396	97	375	346	98	1645
01:00 PM	90	83	17	118	81	22	411
01:15 PM	90	87	24	108	82	36	427
01:30 PM	88	87	14	113	94	24	420
01:45 PM	112	102	24	103	92	25	458
Total	380	359	79	442	349	107	1716
Grand Total	998	1090	255	1180	1007	308	4838
Apprch %	47.8	52.2	17.8	82.2	76.6	23.4	
Total %	20.6	22.5	5.3	24.4	20.8	6.4	
Cars	989	1085	254	1175	1003	305	4811
% Cars	99.1	99.5	99.6	99.6	99.6	99	99.4
Trucks	9	5	1	5	4	3	27
% Trucks	0.9	0.5	0.4	0.4	0.4	1	0.6

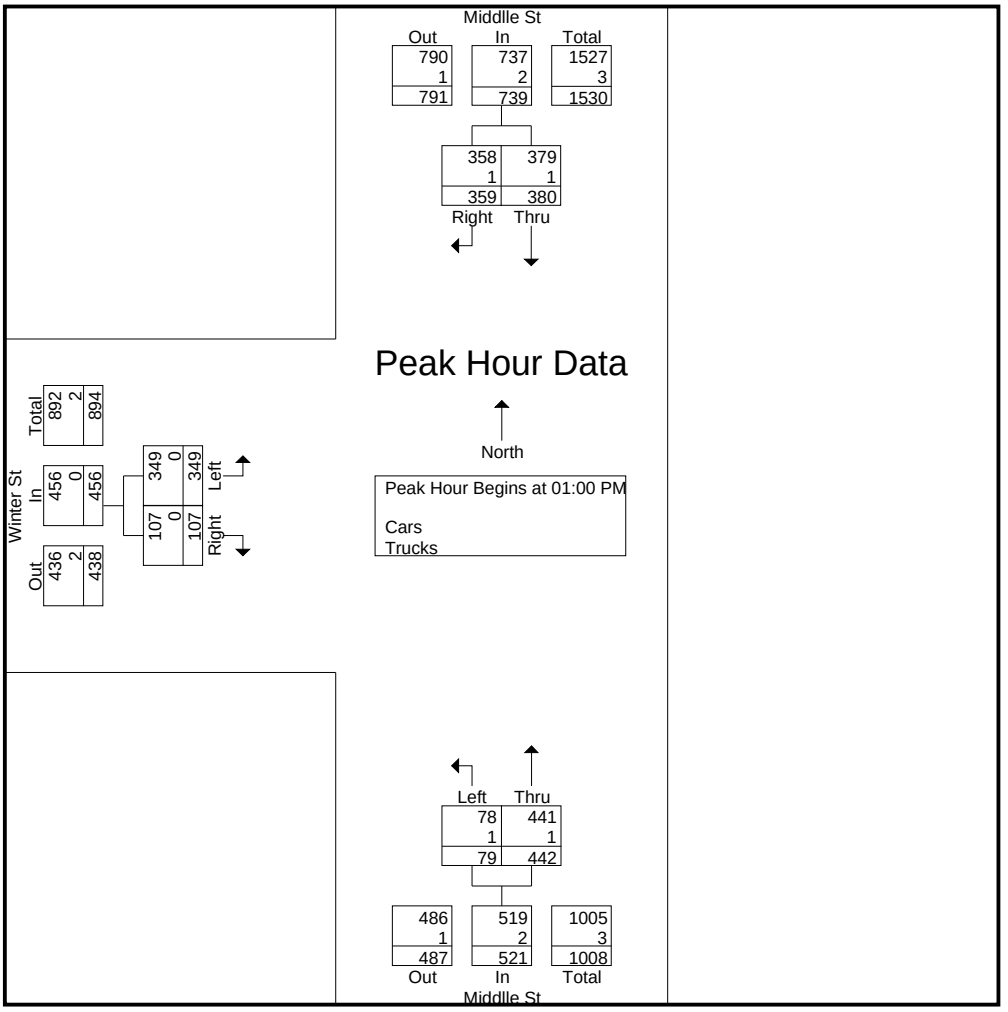
	Middlle St From North			Middlle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:00 PM										
01:00 PM	90	83	173	17	**118**	**135**	81	22	103	411
01:15 PM	90	87	177	**24**	108	132	82	**36**	**118**	427
01:30 PM	88	87	175	14	113	127	**94**	24	118	420
01:45 PM	**112**	**102**	**214**	24	103	127	92	25	117	**458**
Total Volume	380	359	739	79	442	521	349	107	456	1716
% App. Total	51.4	48.6		15.2	84.8		76.5	23.5		
PHF	.848	.880	.863	.823	.936	.965	.928	.743	.966	.937
Cars	379	358	737	78	441	519	349	107	456	1712
% Cars	99.7	99.7	99.7	98.7	99.8	99.6	100	100	100	99.8
Trucks	1	1	2	1	1	2	0	0	0	4
% Trucks	0.3	0.3	0.3	1.3	0.2	0.4	0	0	0	0.2

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 2



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

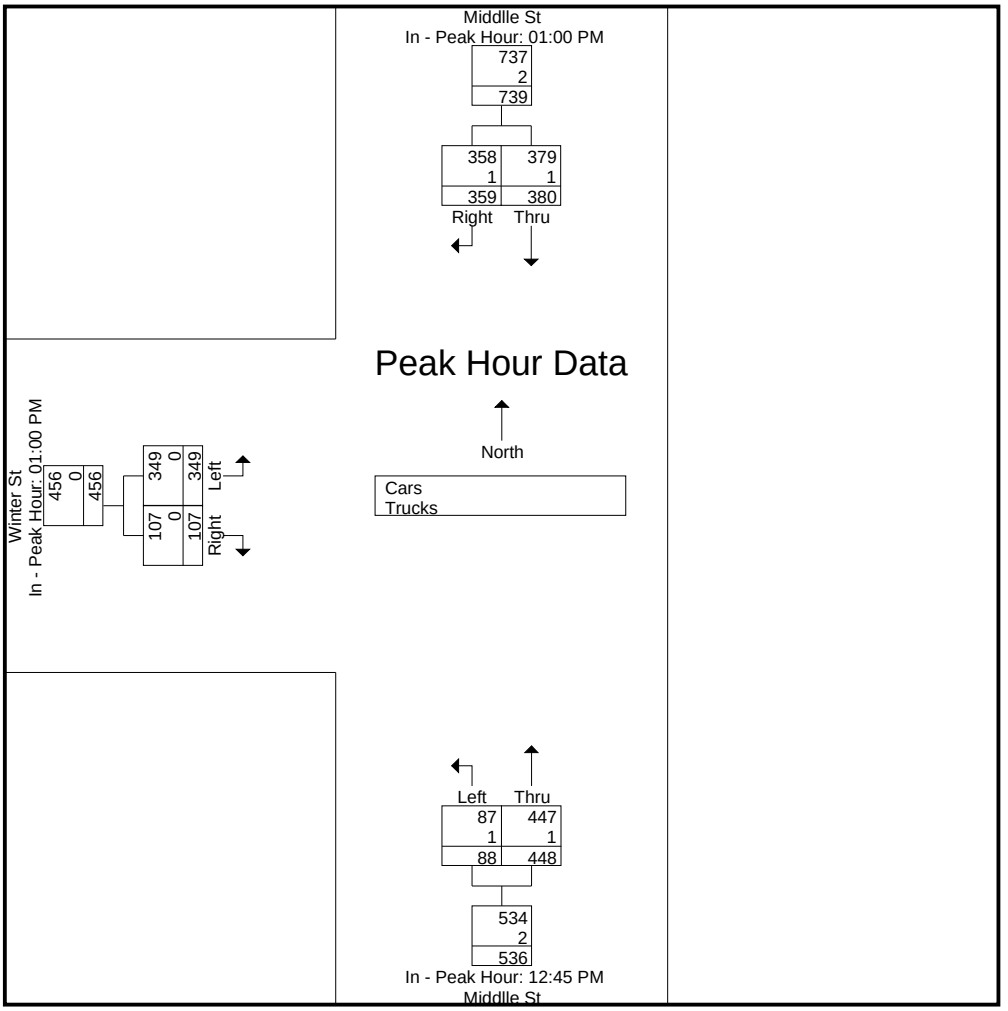
	01:00 PM			12:45 PM			01:00 PM		
+0 mins.	90	83	173	**33**	109	**142**	81	22	103
+15 mins.	90	87	177	17	**118**	135	82	**36**	**118**
+30 mins.	88	87	175	24	108	132	**94**	24	118
+45 mins.	**112**	**102**	**214**	14	113	127	92	25	117
Total Volume	380	359	739	88	448	536	349	107	456
% App. Total	51.4	48.6		16.4	83.6		76.5	23.5	
PHF	.848	.880	.863	.667	.949	.944	.928	.743	.966
Cars	379	358	737	87	447	534	349	107	456
% Cars	99.7	99.7	99.7	98.9	99.8	99.6	100	100	100
Trucks	1	1	2	1	1	2	0	0	0
% Trucks	0.3	0.3	0.3	1.1	0.2	0.4	0	0	0

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021

Groups Printed- Cars

	Middlle St From North		Middlle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
11:00 AM	57	80	25	78	74	22	336
11:15 AM	75	93	18	72	68	25	351
11:30 AM	75	79	16	107	79	29	385
11:45 AM	73	80	20	103	89	27	392
Total	280	332	79	360	310	103	1464
12:00 PM	97	102	18	76	75	23	391
12:15 PM	77	107	28	88	95	16	411
12:30 PM	83	93	18	101	85	32	412
12:45 PM	73	93	33	109	89	24	421
Total	330	395	97	374	344	95	1635
01:00 PM	90	83	17	118	81	22	411
01:15 PM	89	87	23	108	82	36	425
01:30 PM	88	87	14	112	94	24	419
01:45 PM	112	101	24	103	92	25	457
Total	379	358	78	441	349	107	1712
Grand Total	989	1085	254	1175	1003	305	4811
Apprch %	47.7	52.3	17.8	82.2	76.7	23.3	
Total %	20.6	22.6	5.3	24.4	20.8	6.3	

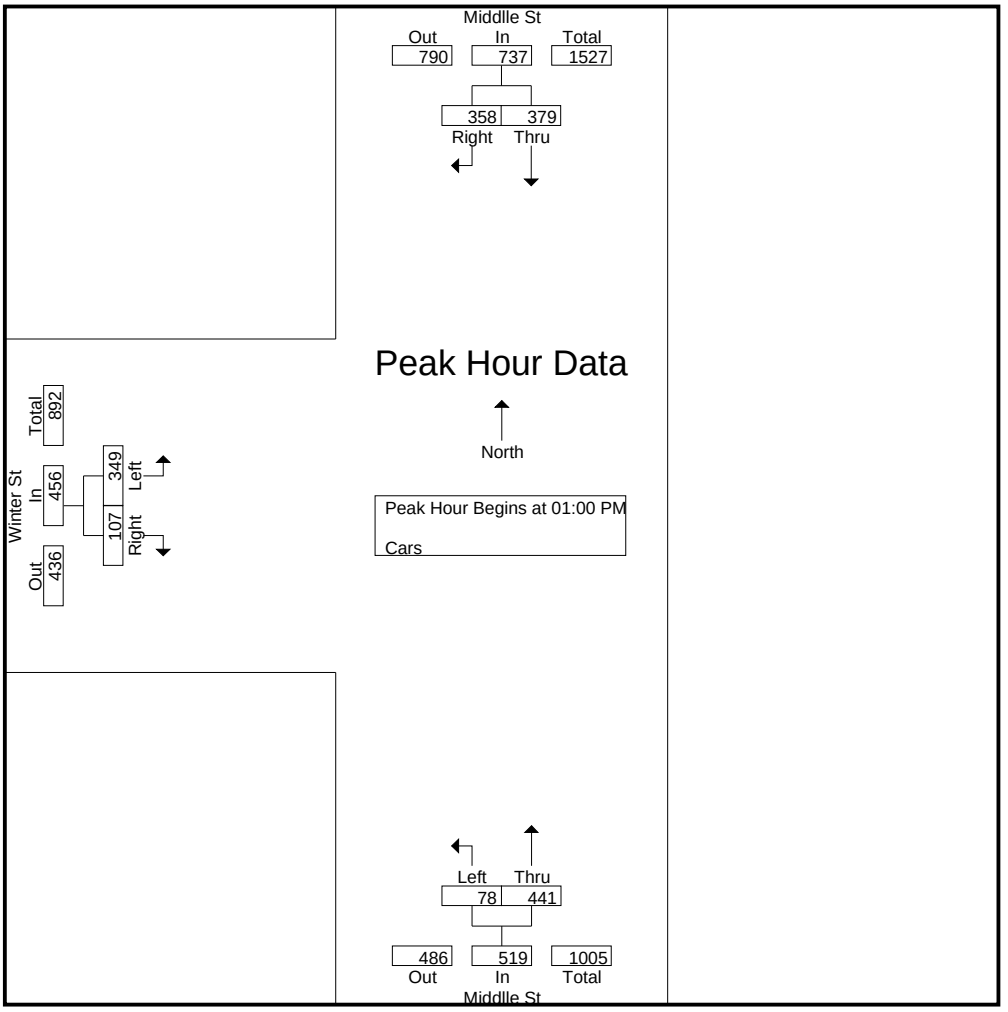
	Middlle St From North			Middlle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:00 PM										
01:00 PM	90	83	173	17	**118**	**135**	81	22	103	411
01:15 PM	89	87	176	23	108	131	82	**36**	**118**	425
01:30 PM	88	87	175	14	112	126	**94**	24	118	419
01:45 PM	**112**	**101**	**213**	**24**	103	127	92	25	117	**457**
Total Volume	379	358	737	78	441	519	349	107	456	1712
% App. Total	51.4	48.6		15	85		76.5	23.5		
PHF	.846	.886	.865	.813	.934	.961	.928	.743	.966	.937

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 5



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

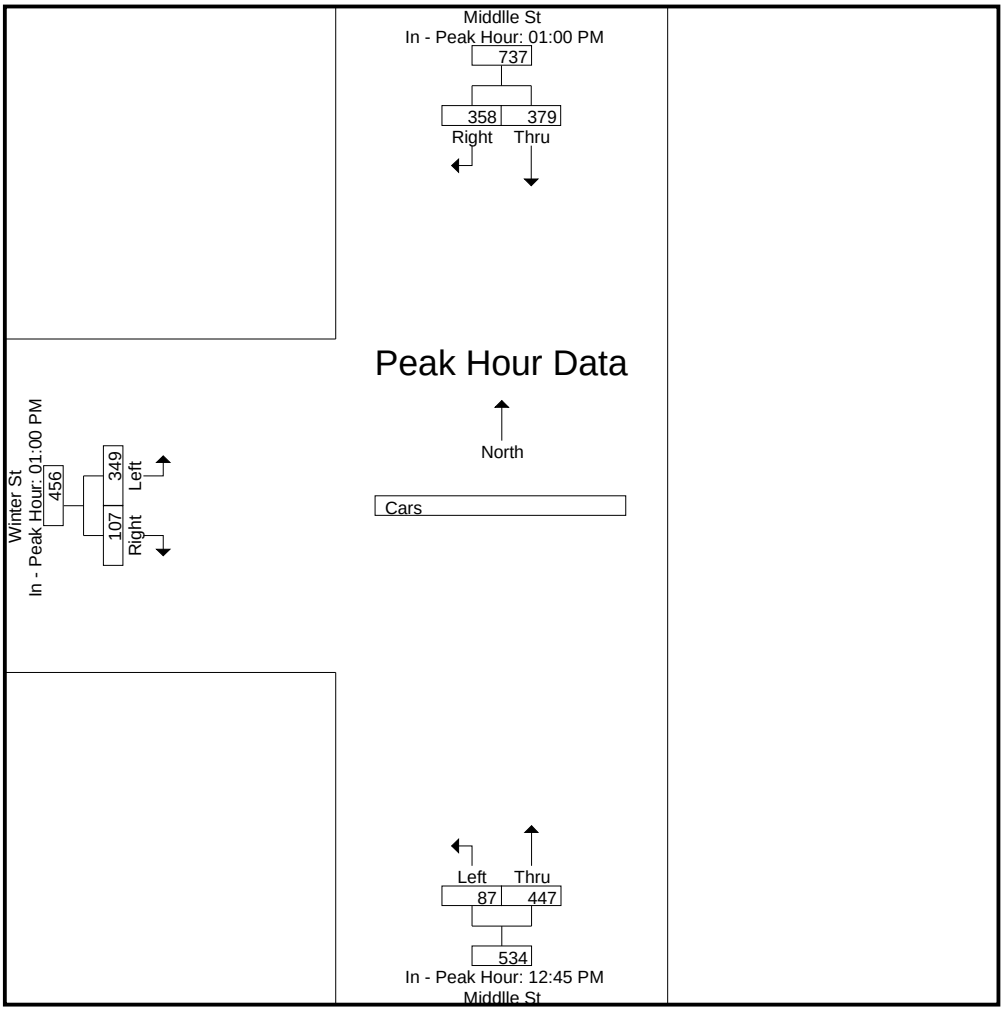
	01:00 PM			12:45 PM			01:00 PM		
+0 mins.	90	83	173	**33**	109	**142**	81	22	103
+15 mins.	89	87	176	17	**118**	135	82	**36**	**118**
+30 mins.	88	87	175	23	108	131	**94**	24	118
+45 mins.	**112**	**101**	**213**	14	112	126	92	25	117
Total Volume	379	358	737	87	447	534	349	107	456
% App. Total	51.4	48.6		16.3	83.7		76.5	23.5	
PHF	.846	.886	.865	.659	.947	.940	.928	.743	.966

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 7

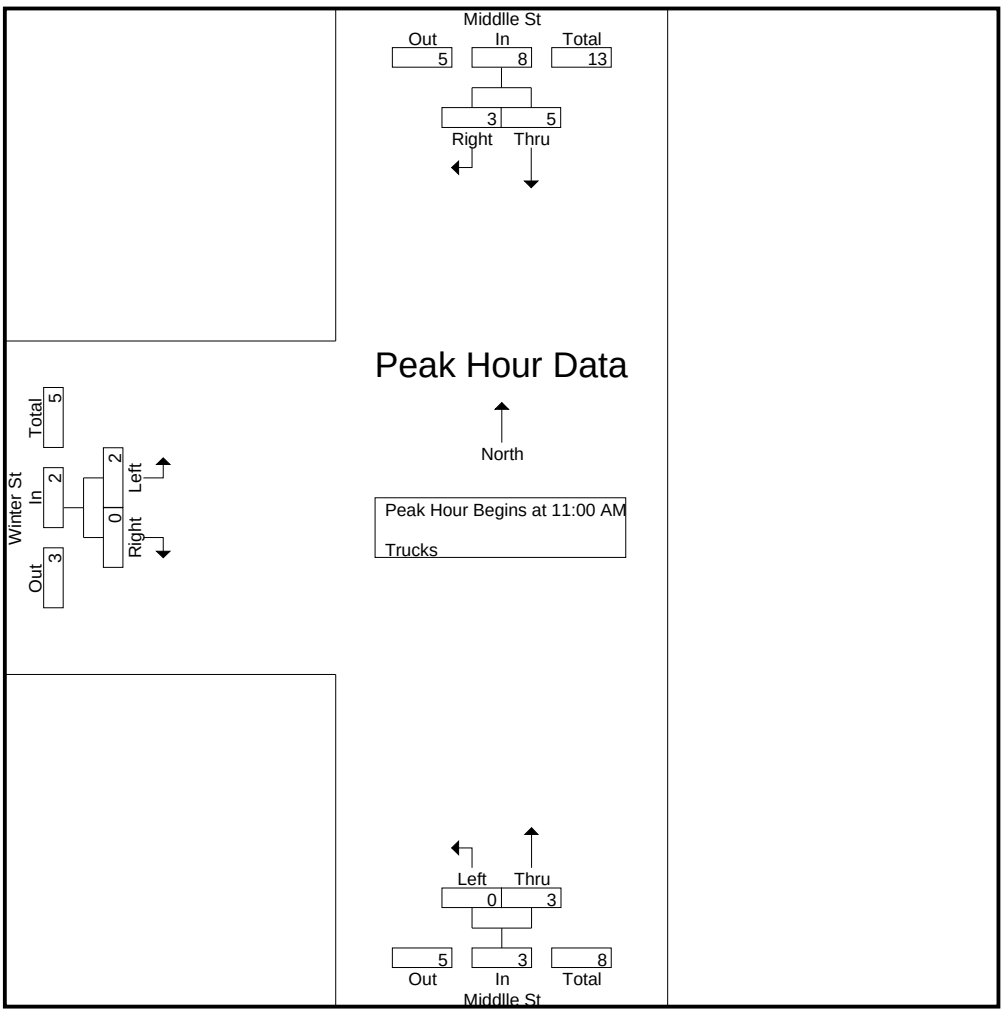
Groups Printed- Trucks

	Middlle St From North		Middlle St From South		Winter St From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
11:00 AM	0	1	0	0	1	0	2
11:15 AM	2	0	0	0	0	0	2
11:30 AM	1	0	0	3	1	0	5
11:45 AM	2	2	0	0	0	0	4
Total	5	3	0	3	2	0	13
12:00 PM	1	0	0	0	1	0	2
12:15 PM	1	0	0	0	0	0	1
12:30 PM	0	1	0	1	0	2	4
12:45 PM	1	0	0	0	1	1	3
Total	3	1	0	1	2	3	10
01:00 PM	0	0	0	0	0	0	0
01:15 PM	1	0	1	0	0	0	2
01:30 PM	0	0	0	1	0	0	1
01:45 PM	0	1	0	0	0	0	1
Total	1	1	1	1	0	0	4
Grand Total	9	5	1	5	4	3	27
Apprch %	64.3	35.7	16.7	83.3	57.1	42.9	
Total %	33.3	18.5	3.7	18.5	14.8	11.1	

	Middlle St From North			Middlle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	1	1	0	0	0	**1**	0	**1**	2
11:15 AM	**2**	0	2	0	0	0	0	0	0	2
11:30 AM	1	0	1	0	**3**	**3**	1	0	1	**5**
11:45 AM	2	**2**	**4**	0	0	0	0	0	0	4
Total Volume	5	3	8	0	3	3	2	0	2	13
% App. Total	62.5	37.5		0	100		100	0		
PHF	.625	.375	.500	.000	.250	.250	.500	.000	.500	.650

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 8



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

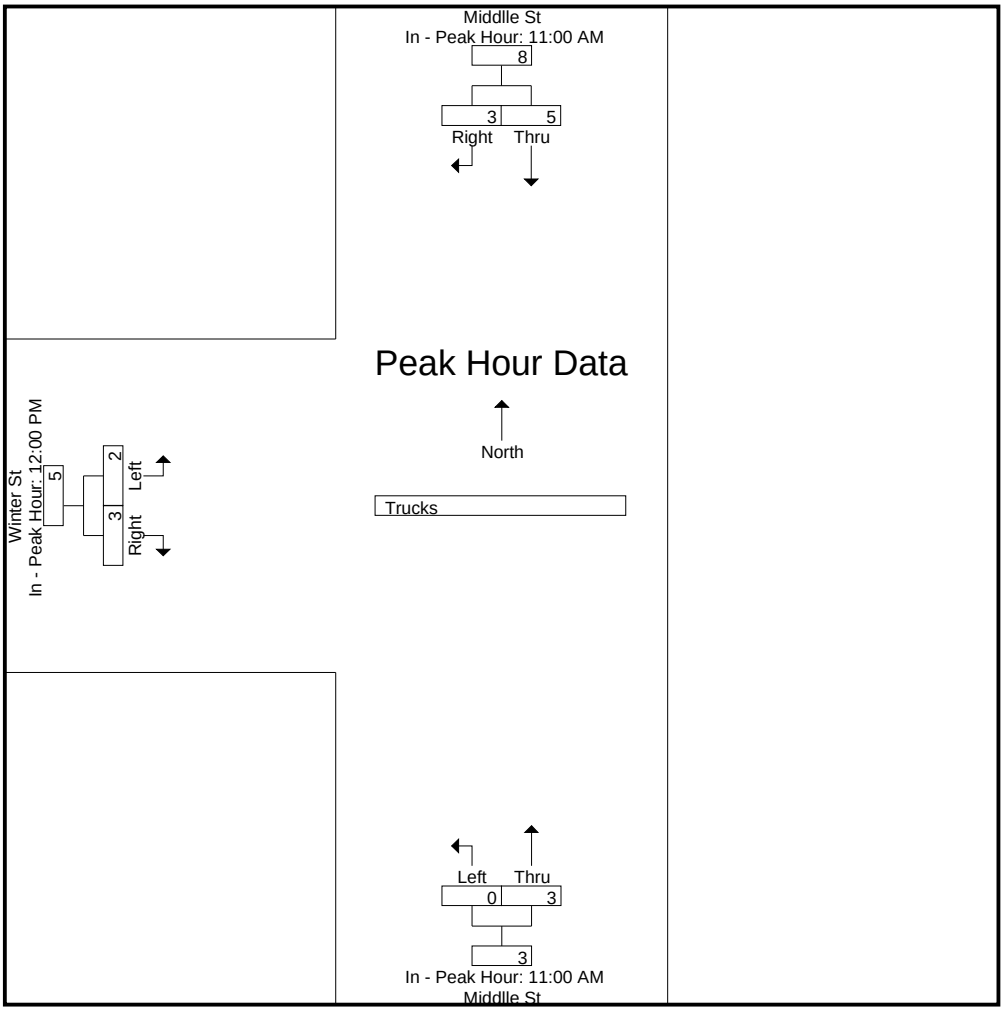
	11:00 AM			11:00 AM			12:00 PM		
+0 mins.	0	1	1	0	0	0	**1**	0	1
+15 mins.	**2**	0	2	0	0	0	0	0	0
+30 mins.	1	0	1	0	**3**	**3**	0	**2**	**2**
+45 mins.	2	**2**	**4**	0	0	0	1	1	2
Total Volume	5	3	8	0	3	3	2	3	5
% App. Total	62.5	37.5		0	100		40	60	
PHF	.625	.375	.500	.000	.250	.250	.500	.375	.625

Accurate Counts

978-664-2565

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 9



N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 10

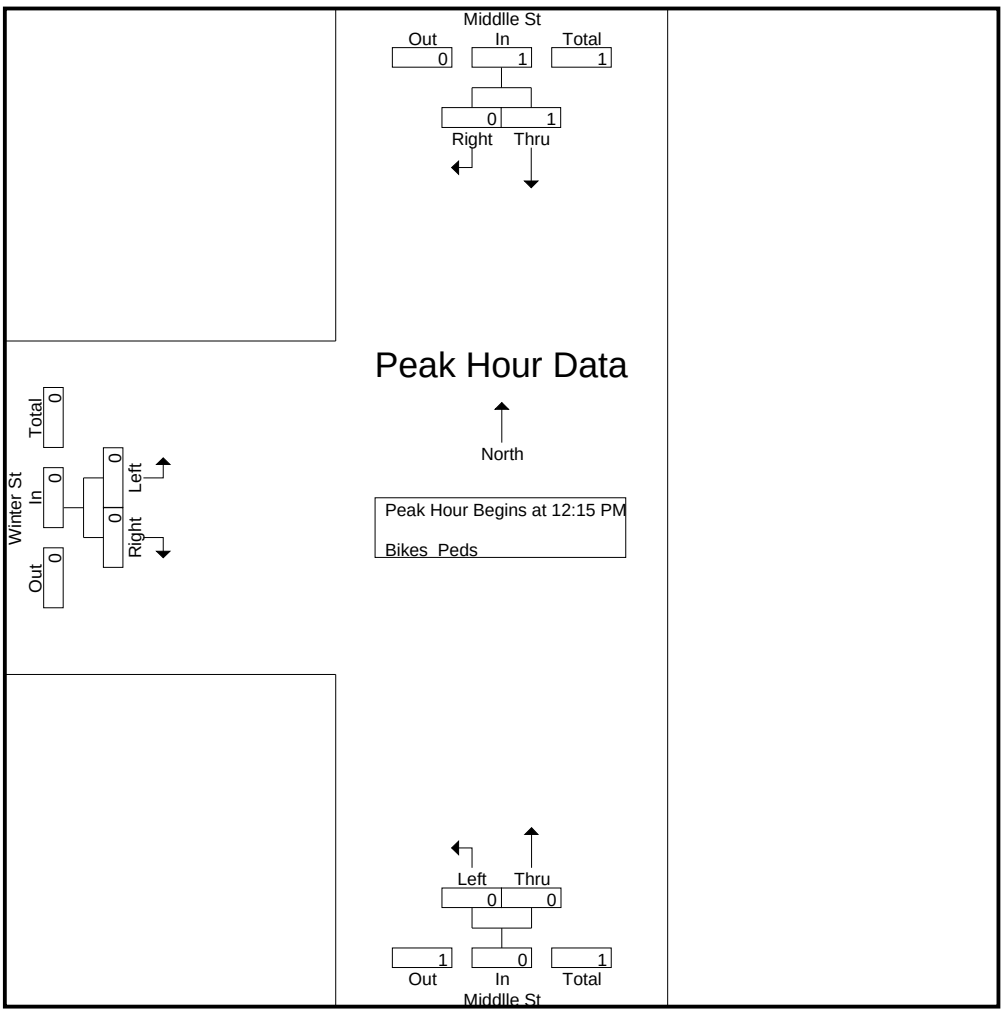
Groups Printed- Bikes Peds

	Middlle St From North			Middlle St From South			Winter St From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	1	0	0	0	1	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	1	0	0	0	1	0	1
Total	0	0	0	0	0	1	0	0	0	1	0	1
01:00 PM	1	0	0	0	0	0	0	0	0	0	1	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	2	0	0	2	4	0	4
Total	1	0	0	0	0	2	0	0	2	4	1	5
Grand Total	1	0	0	0	0	4	0	0	2	6	1	7
Apprch %	100	0		0	0		0	0				
Total %	100	0		0	0		0	0		85.7	14.3	

	Middlle St From North			Middlle St From South			Winter St From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:15 PM										
12:15 PM	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0
01:00 PM	**1**	0	**1**	0	0	0	0	0	0	**1**
Total Volume	1	0	1	0	0	0	0	0	0	1
% App. Total	100	0		0	0		0	0		
PHF	.250	.000	.250	.000	.000	.000	.000	.000	.000	.250

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 11

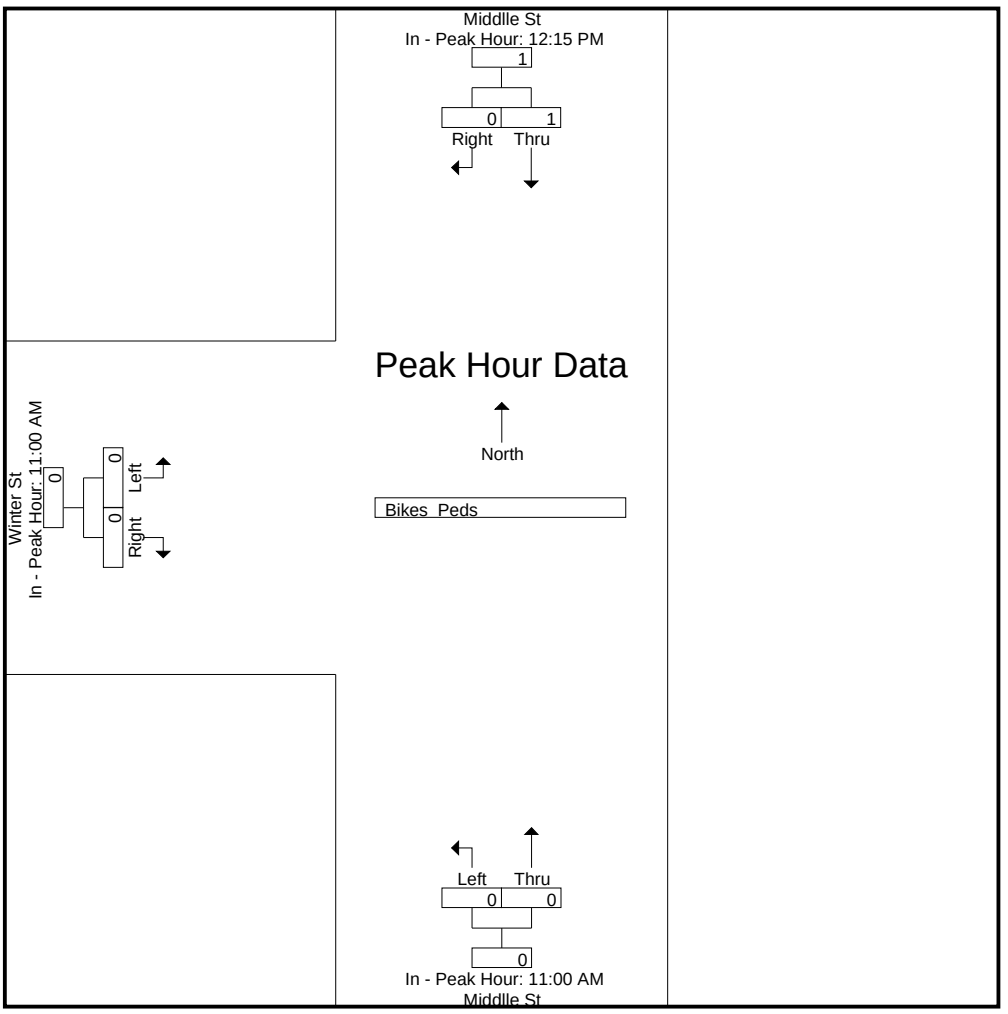


Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:15 PM			11:00 AM			11:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	**1**	0	**1**	0	0	0	0	0	0
Total Volume	1	0	1	0	0	0	0	0	0
% App. Total	100	0		0	0		0	0	
PHF	.250	.000	.250	.000	.000	.000	.000	.000	.000

N/S Street : Middle Street
E/W Street : Winter Street
City/State : Weymouth, MA
Weather : Cloudy

File Name : 882600S3
Site Code : 88260003
Start Date : 1/16/2021
Page No : 12



SEASONAL AND COVID ADJUSTMENT DATA

Massachusetts Highway Department

6255: Monthly Hourly Volume for January 2018

Location ID: 6255
County: Norfolk
Funcationl Class 2
Location: PILGRIM HIGHWAY

Seasonal Factor Group: U2
Daily Factor Group:
Axle Factor Group: U2
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	1987	2286	1327	1082	789	952	1603	1778	2253	3324	4945	6473	7415	7349	7301	7083	6410	5613	4727	3935	3212	2399	1986	1491	87720	Accepted
2	890	498	398	591	1935	6166	7733	8488	8180	7473	7117	7147	7354	6610	8173	8287	8269	8458	7318	5557	4250	3377	2516	1796	128581	Accepted
3	1021	674	557	635	2040	6504	8194	8244	8277	8640	8042	8091	8082	8147	8585	8244	8503	8827	6536	7115	5776	4364	3436	2628	141162	Accepted
4																										
5	562	367	368	493	1209	3634	5190	5978	6321	5980	5731	5921	6051	6443	7126	6989	7133	7536	6417	4402	3963	3244	3057	2226	106341	Accepted
6	1357	945	685	587	955	2061	2901	4018	5059	5990	6766	7543	7489	7750	7919	7691	7461	6738	5942	4752	3819	3581	3539	2616	108164	Accepted
7	1723	1119	774	631	677	1077	2139	2567	3464	4727	5835	6695	7646	7531	7258	7289	6964	6369	5508	4579	3686	2722	2063	1705	94748	Accepted
8	1032	686	484	641	2027	6415	7803	7993	8171	7789	6888	6804	7081	7343	7956	8146	8134	8007	6880	5876	4457	3221	2395	1733	127962	Accepted
9	1037	585	479	586	1962	6245	7652	8034	7543	7964	7202	7179	7505	7453	8133	8526	8382	8485	7531	6130	5073	3699	2633	1833	131851	Accepted
10	1091	600	458	590	2187	6342	8060	8443	8287	7907	7291	7398	7220	7643	8215	8333	8249	8484	7596	6536	5268	3963	2796	2071	135028	Accepted
11																										
12	1274	770	565	642	1830	5817	7557	8643	8404	7479	7485	7760	7596	7862	7965	8176	8118	8137	7550	6153	5001	3895	3569	2668	134916	Accepted
13	1673	1105	787	605	882	1859	3028	4066	5485	6663	7574	7938	8292	8142	8328	8205	7842	7298	6331	4993	3839	2944	2921	3120	113920	Accepted
14	3069	1722	995	545	732	1102	2051	2751	3875	5527	6656	7882	8312	8149	7804	7600	7416	7131	6008	4741	4321	3500	2783	2040	106712	Accepted
15	1196	610	496	681	1891	4418	5673	6344	6378	6595	7376	7862	7979	7627	8056	8460	8027	7930	6148	4773	3860	2997	2339	1345	119061	Accepted
16	1128	745	412	562	1953	6202	6860	7135	7234	8080	7437	7550	7537	7720	8408	8580	8449	8638	7435	6082	4676	3600	2775	2132	131330	Accepted
17	1084	580	478	699	1896	5336	6860	7641	6695	5693	5340	5413	5652	5992	7114	7491	7693	7887	6242	5087	4176	3215	2782	2070	113116	Accepted
18	1141	688	430	617	1947	6564	7938	8061	8463	8222	7640	7707	7582	7808	8491	8492	8636	8507	7482	6159	4973	4142	3272	2181	137143	Accepted
19	1435	973	699	716	2044	6165	8202	8851	8760	7795	7580	7841	7761	7777	8733	8690	8526	8640	7966	5968	4824	4154	3505	2718	140323	Accepted
20	1632	1144	705	637	975	2269	3465	4658	5905	6965	7948	8629	8939	8453	8759	8812	8357	7982	7066	5443	4580	3955	3691	2793	123762	Accepted
21	1776	1448	952	556	577	932	2052	2904	3999	5754	7030	7964	8355	8657	8688	6491	5175	4486	5161	5783	4570	3163	2209	1449	100131	Accepted
22	818	593	422	524	2067	6370	7601	7980	7864	7518	6804	7116	7307	7205	7940	8102	7951	8078	7122	5328	4206	3217	2370	1612	126115	Accepted
23	884	541	412	584	1875	6143	7824	8215	7897	7397	7107	6826	6937	6943	7572	7661	7935	8114	7351	5749	4469	3451	2869	1974	126730	Accepted
24	906	512	430	556	1909	6441	7281	8251	8371	7792	7371	7475	7433	7818	8349	8555	8278	8494	7714	6225	5036	3869	2710	1881	133657	Accepted
25	1059	613	627	769	1971	6445	8159	8873	8446	7942	7447	7584	7441	7914	8418	8055	8306	8630	7633	6003	4919	4429	3122	2109	136914	Accepted
26	1287	915	559	804	1983	6094	7908	8713	8397	7842	7564	7727	7871	8100	8644	8045	8219	8578	7705	5929	4935	4070	3565	2707	138161	Accepted
27	1722	1095	807	614	882	2159	3396	4557	5929	7060	8044	8690	8708	8843	8742	8732	8411	7800	7035	5416	4136	3701	3706	2859	123044	Accepted
28	1951	1244	835	520	565	905	1832	2525	3531	5015	6441	7707	8345	8208	8164	8022	7640	7070	5775	4863	4025	2884	2101	1540	101708	Accepted
29	852	516	391	581	2053	6128	8068	8622	8477	7457	7022	6883	6887	7188	8086	8324	8232	8222	6948	5209	4203	3172	2211	1606	127338	Accepted
30	912	560	451	650	1571	5396	5903	5793	5932	5954	5094	5465	5631	6015	7290	7678	7633	7714	6479	4856	3998	3181	2674	1716	108546	Accepted
31	993	681	614	761	2151	6367	8061	8338	8040	7868	7517	7368	6882	7764	8283	8343	8169	8434	7654	6485	5106	3885	3040	2205	135009	Accepted

Average Monthly = 122041.1

Average yearly = 133238

Seasonal Adjustment Factor = 1.092

Massachusetts Highway Department

6255: Monthly Hourly Volume for January 2021

Location ID:	**6255**	**Seasonal Factor Group:**	**U2**
County:	**Norfolk**	**Daily Factor Group:**	
Funcationl Class	**2**	**Axle Factor Group:**	**U2**
Location:	**PILGRIM HIGHWAY**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	887	734	503	345	360	701	1357	1540	1862	2808	4234	5375	6251	6786	6648	6212	5499	4743	3873	2938	2236	1806	1373	1002	70073	Accepted
2	534	305	241	237	431	969	1985	2776	3544	4556	5973	7353	8086	8433	8640	8184	7213	6263	4888	3658	2742	2289	1716	1197	92213	Accepted
3	570	363	233	221	350	768	1738	2223	2720	4077	5209	6837	7659	7787	7382	7056	6486	5214	4272	3118	2285	1634	1127	855	80184	Accepted
4	466	241	256	419	1568	4709	6143	7366	6540	5658	5788	5974	6426	6917	7851	8201	8274	7640	5388	3831	2623	1853	1331	985	106448	Accepted
5	481	236	258	393	1564	4697	6434	7773	7169	6292	6032	6224	6510	7019	8093	8456	8331	7759	5582	3790	2743	2042	1349	968	110195	Accepted
6	488	285	251	424	1518	4670	6365	7549	7354	6208	6308	6590	6995	7376	8577	8961	8580	8239	6018	4102	2889	2210	1391	1043	114391	Accepted
7	472	284	282	405	1582	4742	6491	7787	7476	6582	6349	6787	7128	7455	8809	8531	8704	8671	6363	4390	2993	2244	1430	1176	117133	Accepted
8	514	328	265	392	1472	4489	6195	7389	7170	6506	6534	7052	7403	8155	9024	9093	9031	8519	6496	4624	3143	2464	1877	1307	119442	Accepted
9	705	437	271	291	538	1464	2851	3737	4887	6110	7351	8307	8900	8661	8730	8338	7438	6294	5034	3850	2946	2397	1838	1303	102678	Accepted
10	731	354	258	220	339	815	1713	2178	2988	4356	5767	7060	8009	8001	7829	7661	7055	5933	4764	3566	2752	1857	1308	873	86387	Accepted
11	434	254	234	382	1527	4751	6534	8203	7398	6005	6117	6002	6434	7128	8220	9019	8364	7940	5731	3902	2591	1878	1266	991	111305	Accepted
12	478	280	244	415	1599	4839	6480	8348	7461	6326	6251	6414	6875	7284	8261	8503	8667	8394	6027	4192	2764	2125	1382	1056	114665	Accepted
13	475	262	240	384	1591	4737	6481	8279	7661	6634	6316	6607	6890	7767	8597	9121	8993	8037	6266	4319	3295	2392	1497	1069	117910	Accepted
14	471	298	258	406	1606	4769	6403	8337	7728	6682	6418	6562	7050	7420	8577	8748	8704	8351	6348	4458	2982	2146	1539	1150	117411	Accepted
15	524	288	265	386	1532	4560	6299	7906	7473	6618	6847	7014	7537	8028	9215	9737	9343	8756	6761	4005	4011	2552	1953	1398	123008	Accepted
16	678	393	300	294	585	1308	2260	3135	3994	4842	6068	7072	7778	8063	7937	7735	7114	5971	4796	3664	2872	2357	1895	1349	92460	Accepted
17	654	378	243	246	302	740	1740	2302	3131	4763	6337	7770	8470	8516	8361	7800	6966	5755	4657	3364	2577	1902	1709	1013	89696	Accepted
18	494	249	218	331	1285	3664	4750	5530	5599	6140	7140	7997	8453	8996	9189	9484	8622	7754	5366	4041	2801	1950	1331	936	112320	Accepted
19	435	254	269	407	1619	4786	6749	8263	7632	6396	6115	6161	6797	7423	8693	9309	8820	8237	5956	4159	2867	2065	1347	995	115754	Accepted
20	473	267	231	377	1551	4752	6455	7894	7340	6350	6182	6086	6533	7252	8346	9003	8517	8078	5983	4184	2932	2281	1426	1046	113539	Accepted
21	488	254	267	399	1610	4740	6654	8119	7852	6642	6615	6823	6944	7429	8823	9340	8885	8307	6261	4263	3116	2184	1531	1117	118663	Accepted
22	489	259	255	427	1541	4579	6435	7927	7501	6725	6784	6905	7859	8244	9349	9399	8877	8678	6464	4764	3293	2545	1990	1339	122628	Accepted
23	703	391	275	311	605	1445	2756	3777	4871	6368	7746	8218	9234	8476	9303	8308	7827	6801	5384	4168	3020	2506	1873	1261	105627	Accepted
24	702	597	319	284	308	683	1670	2207	2867	4382	6005	7053	7980	8178	8059	7059	5897	5085	4620	3701	2663	2028	1485	904	84736	Accepted
25	427	235	248	390	1552	4767	6701	8165	7589	6192	6233	6375	6610	7142	8238	8738	8509	8040	5795	3942	2760	1884	1359	1055	112946	Accepted
26	509	269	244	407	1603	4810	6707	8433	7806	6459	6298	6771	6864	6031	8394	9293	8053	7954	5266	3348	2633	1840	1182	1014	112188	Accepted
27	547	306	332	493	1442	4233	5725	7532	6778	5768	5584	5848	6495	6976	7948	8741	8245	7847	5728	4111	2942	2149	1465	1113	108348	Accepted
28																										
29																								Average Monthly =	106383.3	
30																										
31																										

Vanasse & Associates, Inc.
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810-1066
Office 978-474-8800
Fax 978-688-6508

Calculations

Job: 655 Washington Street
Location: Weymouth, MA
Title: COVID Adjustment Factor
Calculated by: BG

Job Number: 8826
Date: 1/29/21
Sheet ____ of ____
Checked by: ____

Station # 6255, Route 3, north of Route 18, Weymouth, MA

January 2018 = 122,041

January 2021 = 106,384

122,041 × 1% per year growth ≈ 125,739

COVID Adjustment $\frac{125,739}{106,384} \approx 1.182$

VEHICLE TRAVEL SPEED DATA

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/14/21	0	0	3	8	10	5	3	0	0	0	0	0	0	0	29
01:00	0	1	3	2	5	3	1	0	0	1	0	0	0	0	16
02:00	0	0	0	3	3	3	1	0	0	0	0	0	0	0	10
03:00	0	0	2	1	3	2	0	0	0	0	0	0	0	0	8
04:00	0	0	1	2	4	1	1	3	0	0	0	0	0	0	12
05:00	4	1	0	8	6	14	2	2	0	0	0	0	0	0	37
06:00	2	2	5	23	49	14	7	2	0	0	0	0	0	0	104
07:00	8	2	8	36	84	41	11	3	0	0	0	0	0	0	193
08:00	8	5	9	64	106	45	6	0	0	0	0	0	0	0	243
09:00	33	6	33	67	66	36	3	1	0	0	0	0	0	0	245
10:00	59	11	20	67	96	37	5	0	0	0	0	0	0	0	295
11:00	46	4	33	85	92	43	3	0	0	0	0	0	0	0	306
12 PM	45	4	22	91	111	39	3	1	0	0	0	0	0	0	316
13:00	55	10	31	130	104	29	2	1	0	0	0	0	0	0	362
14:00	44	9	47	100	103	31	4	0	0	0	0	0	0	0	338
15:00	62	4	32	123	121	29	5	0	0	0	0	0	0	0	376
16:00	53	13	46	140	91	20	0	0	0	0	0	0	0	0	363
17:00	34	4	21	88	96	21	0	0	0	0	0	0	0	0	264
18:00	31	3	21	56	95	17	5	0	0	0	0	0	0	0	228
19:00	29	9	19	50	64	17	1	1	0	0	0	0	0	0	190
20:00	17	3	6	43	52	35	2	0	0	0	0	0	0	0	158
21:00	8	2	3	31	34	26	3	0	0	0	0	0	0	0	107
22:00	4	2	3	14	28	10	1	0	0	0	0	0	0	0	62
23:00	0	0	1	11	12	2	2	0	0	0	0	0	0	0	28
Total	542	95	369	1243	1435	520	71	14	0	1	0	0	0	0	4290

Daily

15th Percentile :	20 MPH
50th Percentile :	29 MPH
85th Percentile :	34 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	2678
Percent in Pace :	62.4%
Number of Vehicles > 30 MPH :	2041
Percent of Vehicles > 30 MPH :	47.6%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/15/21	0	0	4	6	11	1	0	0	1	0	0	0	0	0	23
01:00	0	0	0	1	5	0	2	2	0	0	0	0	0	0	10
02:00	0	0	1	2	4	3	0	0	0	0	0	0	0	0	10
03:00	1	0	0	2	1	4	0	0	0	0	0	0	0	0	8
04:00	0	0	1	5	5	4	2	0	0	0	0	0	0	0	17
05:00	3	0	1	9	18	15	5	2	0	0	0	0	0	0	53
06:00	6	1	3	16	32	20	5	0	1	0	0	0	0	0	84
07:00	3	2	6	34	70	44	7	1	0	0	0	0	0	0	167
08:00	11	2	3	36	93	47	7	2	0	0	0	0	0	0	201
09:00	44	7	12	82	97	36	2	0	0	0	0	0	0	0	280
10:00	64	11	43	80	96	34	3	0	0	0	0	0	0	0	331
11:00	59	19	39	90	90	37	4	0	0	0	0	0	0	0	338
12 PM	55	7	26	121	122	29	8	1	0	0	0	0	0	0	369
13:00	65	21	56	127	99	30	5	0	0	0	0	0	0	0	403
14:00	50	11	44	140	106	28	3	0	0	0	0	0	0	0	382
15:00	59	12	34	122	84	32	4	1	0	0	0	0	0	0	348
16:00	50	13	29	133	137	38	4	0	0	0	0	0	0	0	404
17:00	41	14	43	138	103	15	2	1	0	0	0	0	0	0	357
18:00	45	12	32	113	102	19	8	1	0	0	0	0	0	0	332
19:00	39	11	14	71	79	39	10	2	0	0	0	0	0	0	265
20:00	20	11	11	34	44	35	5	1	0	0	0	0	0	0	161
21:00	7	1	7	22	40	29	7	1	0	0	0	0	0	0	114
22:00	0	1	6	20	32	22	4	4	0	0	0	0	0	0	89
23:00	0	0	0	8	21	17	4	2	0	0	0	0	0	0	52
Total	622	156	415	1412	1491	578	101	21	2	0	0	0	0	0	4798

Daily

15th Percentile :	18 MPH
50th Percentile :	29 MPH
85th Percentile :	34 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	2903
Percent in Pace :	60.5%
Number of Vehicles > 30 MPH :	2193
Percent of Vehicles > 30 MPH :	45.7%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/16/21	0	0	2	10	13	11	4	1	0	0	0	0	0	0	41
01:00	0	0	2	5	8	3	0	0	0	1	0	0	0	0	19
02:00	0	1	2	6	3	3	1	0	0	0	0	0	0	0	16
03:00	0	0	2	1	1	4	0	0	0	0	0	0	0	0	8
04:00	0	0	3	3	5	1	1	0	0	0	0	0	0	0	13
05:00	0	2	4	4	7	9	1	0	0	0	0	0	0	0	27
06:00	8	0	3	14	13	10	3	1	0	0	0	0	0	0	52
07:00	3	0	5	27	38	13	3	0	0	0	0	0	0	0	89
08:00	8	4	20	37	80	15	5	1	0	0	0	0	0	0	170
09:00	24	5	21	50	81	24	4	0	0	0	0	0	0	0	209
10:00	36	6	29	74	98	27	1	0	0	0	0	0	0	0	271
11:00	48	4	22	103	87	16	6	0	0	0	0	0	0	0	286
12 PM	67	12	28	90	81	20	4	0	0	0	0	0	0	0	302
13:00	78	14	51	109	69	32	6	1	0	0	0	0	0	0	360
14:00	81	13	23	125	110	38	3	1	0	0	0	0	0	0	394
15:00	72	7	32	115	119	34	5	0	0	1	0	0	0	0	385
16:00	59	11	24	129	87	35	1	0	0	0	0	0	0	0	346
17:00	45	11	27	84	69	44	4	0	0	0	0	0	0	0	284
18:00	58	7	19	64	89	36	8	0	0	0	0	0	0	0	281
19:00	35	9	10	34	63	28	7	1	0	0	0	0	0	0	187
20:00	21	3	14	38	49	24	5	0	0	0	0	0	0	0	154
21:00	10	8	11	20	38	20	8	1	0	0	0	0	0	0	116
22:00	1	0	3	14	19	18	10	1	0	0	0	0	0	0	66
23:00	0	0	2	8	17	13	3	0	1	0	0	0	0	0	44
Total	654	117	359	1164	1244	478	93	8	1	2	0	0	0	0	4120

Daily

15th Percentile :	14 MPH
50th Percentile :	28 MPH
85th Percentile :	34 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	27 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	2408
Percent in Pace :	58.4%
Number of Vehicles > 30 MPH :	1826
Percent of Vehicles > 30 MPH :	44.3%

Grand Total	1818	368	1143	3819	4170	1576	265	43	3	3	0	0	0	0	13208

Overall

15th Percentile :	17 MPH
50th Percentile :	29 MPH
85th Percentile :	34 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	7989
Percent in Pace :	60.5%
Number of Vehicles > 30 MPH :	6060
Percent of Vehicles > 30 MPH :	45.9%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/14/21	0	0	1	5	6	4	3	0	0	0	0	0	0	0	19
01:00	1	0	1	5	6	2	3	0	1	0	0	0	0	0	19
02:00	0	0	0	0	5	3	0	1	0	0	0	0	0	0	9
03:00	0	1	1	2	4	0	2	0	1	0	0	0	0	0	11
04:00	3	1	1	3	11	4	2	2	0	0	0	0	2	0	29
05:00	2	4	1	11	15	19	8	2	0	0	0	0	0	0	62
06:00	3	3	3	32	31	52	19	2	0	0	0	0	0	0	145
07:00	7	9	19	45	76	47	12	2	1	0	0	0	0	0	218
08:00	13	31	25	57	93	54	12	3	0	0	0	0	0	0	288
09:00	30	40	42	84	89	37	9	2	0	0	1	0	0	0	334
10:00	33	36	29	77	83	52	9	2	0	0	1	0	0	0	322
11:00	35	48	72	105	101	38	12	0	0	0	0	0	0	0	411
12 PM	61	65	55	109	111	42	7	0	0	0	0	0	0	0	450
13:00	44	47	63	106	126	46	3	1	0	0	0	0	0	0	436
14:00	33	43	59	114	110	43	8	0	0	0	0	1	0	0	411
15:00	36	42	63	153	125	45	7	0	0	0	0	0	0	0	471
16:00	33	53	59	129	95	27	15	1	0	0	0	0	0	0	412
17:00	49	41	58	128	98	49	6	1	0	0	0	0	0	0	430
18:00	49	29	37	69	82	33	14	0	0	0	0	0	0	0	313
19:00	13	10	14	58	84	40	10	0	0	0	0	0	0	0	229
20:00	3	6	8	33	59	44	4	2	0	0	0	0	0	0	159
21:00	3	3	4	33	43	30	5	1	0	0	0	0	0	0	122
22:00	1	0	1	22	42	20	1	2	0	0	0	0	1	0	90
23:00	0	0	1	5	11	11	3	1	0	1	1	0	0	0	34
Total	452	512	617	1385	1506	742	174	25	3	1	3	1	3	0	5424

Daily

15th Percentile :	18 MPH
50th Percentile :	29 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	2891
Percent in Pace :	53.3%
Number of Vehicles > 30 MPH :	2458
Percent of Vehicles > 30 MPH :	45.3%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/15/21	0	0	1	9	8	3	2	0	0	1	0	0	0	0	24
01:00	0	0	0	3	4	1	0	0	0	0	0	0	0	0	8
02:00	0	0	1	1	5	2	0	0	0	0	0	0	0	0	9
03:00	1	0	1	1	4	6	0	0	0	0	0	0	0	0	13
04:00	1	1	1	6	9	6	2	1	0	0	0	0	0	0	27
05:00	9	4	2	7	23	24	7	1	0	0	0	0	0	0	77
06:00	9	1	5	17	37	45	9	2	0	0	0	0	0	0	125
07:00	1	4	13	42	68	59	18	3	0	0	0	0	0	0	208
08:00	16	22	19	69	84	59	20	3	1	0	0	0	0	0	293
09:00	43	42	26	87	103	35	9	3	0	0	0	0	0	0	348
10:00	47	31	27	90	97	38	5	1	0	0	0	0	0	0	336
11:00	43	41	57	131	107	46	8	0	0	0	0	0	0	0	433
12 PM	42	49	62	137	131	44	12	1	0	1	0	0	0	0	479
13:00	49	47	80	145	106	48	5	1	0	0	0	0	0	0	481
14:00	32	51	79	131	96	52	5	0	0	0	0	0	0	0	446
15:00	29	47	84	173	138	49	8	1	0	0	0	0	0	0	529
16:00	33	54	76	144	92	53	3	1	0	0	0	0	0	0	456
17:00	40	73	71	121	114	47	7	1	0	0	0	0	0	0	474
18:00	34	21	47	122	92	43	8	1	0	0	0	0	0	0	368
19:00	19	20	28	68	93	52	8	0	0	0	0	0	0	0	288
20:00	5	8	6	53	64	44	9	2	1	0	0	0	0	0	192
21:00	6	2	9	32	57	45	8	4	0	0	0	0	0	0	163
22:00	0	0	1	18	36	23	9	2	0	0	0	0	0	0	89
23:00	0	0	2	7	17	14	4	4	0	0	0	0	0	0	48
Total	459	518	698	1614	1585	838	166	32	2	2	0	0	0	0	5914

Daily

15th Percentile :	19 MPH
50th Percentile :	28 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	3199
Percent in Pace :	54.1%
Number of Vehicles > 30 MPH :	2625
Percent of Vehicles > 30 MPH :	44.4%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/16/21	0	0	0	5	13	12	3	0	0	0	0	0	0	0	33
01:00	0	0	1	2	1	5	5	0	0	0	0	0	0	0	14
02:00	1	2	2	5	5	2	1	1	0	1	0	0	0	0	20
03:00	0	0	2	1	5	4	0	0	0	0	0	0	0	0	12
04:00	4	0	1	4	1	8	0	0	0	0	0	0	0	0	18
05:00	3	0	2	5	3	7	2	1	0	0	0	0	0	0	23
06:00	11	0	4	11	27	19	5	0	0	0	0	0	0	0	77
07:00	5	2	5	11	39	26	11	3	0	0	0	0	0	0	102
08:00	15	12	10	32	56	40	13	6	0	0	0	0	0	0	184
09:00	18	14	17	44	70	54	5	1	0	0	0	0	0	0	223
10:00	44	31	41	68	89	45	6	1	0	0	0	0	0	0	325
11:00	56	52	41	58	101	61	12	0	1	0	0	0	0	0	382
12 PM	50	86	69	117	111	50	2	0	1	0	0	0	0	0	486
13:00	82	77	73	132	104	34	4	3	0	0	0	0	0	0	509
14:00	50	55	61	105	101	52	4	0	0	0	0	0	0	0	428
15:00	48	66	80	118	89	31	6	0	0	0	0	0	0	0	438
16:00	31	58	62	116	117	51	2	0	0	0	0	0	0	0	437
17:00	25	32	37	87	107	36	6	0	0	0	0	0	0	0	330
18:00	33	28	31	67	82	50	8	2	1	0	0	0	0	0	302
19:00	30	10	25	63	73	39	11	0	0	0	0	0	0	0	251
20:00	16	11	21	45	65	26	5	0	0	0	0	0	0	0	189
21:00	12	2	6	19	47	36	7	0	1	0	0	0	0	0	130
22:00	3	2	6	17	21	22	8	3	0	0	0	0	0	0	82
23:00	0	0	1	13	19	14	3	1	0	0	0	0	0	0	51
Total	537	540	598	1145	1346	724	129	22	4	1	0	0	0	0	5046

Daily

15th Percentile :	17 MPH
50th Percentile :	28 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	27 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	2491
Percent in Pace :	49.4%
Number of Vehicles > 30 MPH :	2226
Percent of Vehicles > 30 MPH :	44.1%

Grand Total	1448	1570	1913	4144	4437	2304	469	79	9	4	3	1	3	0	16384

Overall

15th Percentile :	18 MPH
50th Percentile :	28 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	8581
Percent in Pace :	52.4%
Number of Vehicles > 30 MPH :	7309
Percent of Vehicles > 30 MPH :	44.6%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/14/21	0	0	4	13	16	9	6	0	0	0	0	0	0	0	48
01:00	1	1	4	7	11	5	4	0	1	1	0	0	0	0	35
02:00	0	0	0	3	8	6	1	1	0	0	0	0	0	0	19
03:00	0	1	3	3	7	2	2	0	1	0	0	0	0	0	19
04:00	3	1	2	5	15	5	3	5	0	0	0	0	2	0	41
05:00	6	5	1	19	21	33	10	4	0	0	0	0	0	0	99
06:00	5	5	8	55	80	66	26	4	0	0	0	0	0	0	249
07:00	15	11	27	81	160	88	23	5	1	0	0	0	0	0	411
08:00	21	36	34	121	199	99	18	3	0	0	0	0	0	0	531
09:00	63	46	75	151	155	73	12	3	0	0	1	0	0	0	579
10:00	92	47	49	144	179	89	14	2	0	0	1	0	0	0	617
11:00	81	52	105	190	193	81	15	0	0	0	0	0	0	0	717
12 PM	106	69	77	200	222	81	10	1	0	0	0	0	0	0	766
13:00	99	57	94	236	230	75	5	2	0	0	0	0	0	0	798
14:00	77	52	106	214	213	74	12	0	0	0	0	1	0	0	749
15:00	98	46	95	276	246	74	12	0	0	0	0	0	0	0	847
16:00	86	66	105	269	186	47	15	1	0	0	0	0	0	0	775
17:00	83	45	79	216	194	70	6	1	0	0	0	0	0	0	694
18:00	80	32	58	125	177	50	19	0	0	0	0	0	0	0	541
19:00	42	19	33	108	148	57	11	1	0	0	0	0	0	0	419
20:00	20	9	14	76	111	79	6	2	0	0	0	0	0	0	317
21:00	11	5	7	64	77	56	8	1	0	0	0	0	0	0	229
22:00	5	2	4	36	70	30	2	2	0	0	0	0	1	0	152
23:00	0	0	2	16	23	13	5	1	0	1	1	0	0	0	62
Total	994	607	986	2628	2941	1262	245	39	3	2	3	1	3	0	9714

Daily

15th Percentile :	18 MPH
50th Percentile :	29 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	5569
Percent in Pace :	57.3%
Number of Vehicles > 30 MPH :	4499
Percent of Vehicles > 30 MPH :	46.3%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/15/21	0	0	5	15	19	4	2	0	1	1	0	0	0	0	47
01:00	0	0	0	4	9	1	2	2	0	0	0	0	0	0	18
02:00	0	0	2	3	9	5	0	0	0	0	0	0	0	0	19
03:00	2	0	1	3	5	10	0	0	0	0	0	0	0	0	21
04:00	1	1	2	11	14	10	4	1	0	0	0	0	0	0	44
05:00	12	4	3	16	41	39	12	3	0	0	0	0	0	0	130
06:00	15	2	8	33	69	65	14	2	1	0	0	0	0	0	209
07:00	4	6	19	76	138	103	25	4	0	0	0	0	0	0	375
08:00	27	24	22	105	177	106	27	5	1	0	0	0	0	0	494
09:00	87	49	38	169	200	71	11	3	0	0	0	0	0	0	628
10:00	111	42	70	170	193	72	8	1	0	0	0	0	0	0	667
11:00	102	60	96	221	197	83	12	0	0	0	0	0	0	0	771
12 PM	97	56	88	258	253	73	20	2	0	1	0	0	0	0	848
13:00	114	68	136	272	205	78	10	1	0	0	0	0	0	0	884
14:00	82	62	123	271	202	80	8	0	0	0	0	0	0	0	828
15:00	88	59	118	295	222	81	12	2	0	0	0	0	0	0	877
16:00	83	67	105	277	229	91	7	1	0	0	0	0	0	0	860
17:00	81	87	114	259	217	62	9	2	0	0	0	0	0	0	831
18:00	79	33	79	235	194	62	16	2	0	0	0	0	0	0	700
19:00	58	31	42	139	172	91	18	2	0	0	0	0	0	0	553
20:00	25	19	17	87	108	79	14	3	1	0	0	0	0	0	353
21:00	13	3	16	54	97	74	15	5	0	0	0	0	0	0	277
22:00	0	1	7	38	68	45	13	6	0	0	0	0	0	0	178
23:00	0	0	2	15	38	31	8	6	0	0	0	0	0	0	100
Total	1081	674	1113	3026	3076	1416	267	53	4	2	0	0	0	0	10712

Daily

15th Percentile :	18 MPH
50th Percentile :	29 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	6102
Percent in Pace :	57.0%
Number of Vehicles > 30 MPH :	4818
Percent of Vehicles > 30 MPH :	45.0%

Location : Route 53
Location : West of W Lake Drive
City/State: Weymouth, MA

8826SP01

EB, WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
01/16/21	0	0	2	15	26	23	7	1	0	0	0	0	0	0	74
01:00	0	0	3	7	9	8	5	0	0	1	0	0	0	0	33
02:00	1	3	4	11	8	5	2	1	0	1	0	0	0	0	36
03:00	0	0	4	2	6	8	0	0	0	0	0	0	0	0	20
04:00	4	0	4	7	6	9	1	0	0	0	0	0	0	0	31
05:00	3	2	6	9	10	16	3	1	0	0	0	0	0	0	50
06:00	19	0	7	25	40	29	8	1	0	0	0	0	0	0	129
07:00	8	2	10	38	77	39	14	3	0	0	0	0	0	0	191
08:00	23	16	30	69	136	55	18	7	0	0	0	0	0	0	354
09:00	42	19	38	94	151	78	9	1	0	0	0	0	0	0	432
10:00	80	37	70	142	187	72	7	1	0	0	0	0	0	0	596
11:00	104	56	63	161	188	77	18	0	1	0	0	0	0	0	668
12 PM	117	98	97	207	192	70	6	0	1	0	0	0	0	0	788
13:00	160	91	124	241	173	66	10	4	0	0	0	0	0	0	869
14:00	131	68	84	230	211	90	7	1	0	0	0	0	0	0	822
15:00	120	73	112	233	208	65	11	0	0	1	0	0	0	0	823
16:00	90	69	86	245	204	86	3	0	0	0	0	0	0	0	783
17:00	70	43	64	171	176	80	10	0	0	0	0	0	0	0	614
18:00	91	35	50	131	171	86	16	2	1	0	0	0	0	0	583
19:00	65	19	35	97	136	67	18	1	0	0	0	0	0	0	438
20:00	37	14	35	83	114	50	10	0	0	0	0	0	0	0	343
21:00	22	10	17	39	85	56	15	1	1	0	0	0	0	0	246
22:00	4	2	9	31	40	40	18	4	0	0	0	0	0	0	148
23:00	0	0	3	21	36	27	6	1	1	0	0	0	0	0	95
Total	1191	657	957	2309	2590	1202	222	30	5	3	0	0	0	0	9166

Daily

15th Percentile :	16 MPH
50th Percentile :	28 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	27 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	4899
Percent in Pace :	53.4%
Number of Vehicles > 30 MPH :	4052
Percent of Vehicles > 30 MPH :	44.2%

Grand Total	3266	1938	3056	7963	8607	3880	734	122	12	7	3	1	3	0	29592

Overall

15th Percentile :	18 MPH
50th Percentile :	29 MPH
85th Percentile :	35 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	16570
Percent in Pace :	56.0%
Number of Vehicles > 30 MPH :	13369
Percent of Vehicles > 30 MPH :	45.2%

PUBLIC TRANSPORTATION INFORMATION

225•226

Effective December 20, 2020

225 Weymouth Landing - Quincy Center Station

226 Columbian Square- Braintree Station

Serving

- 1000 Southern Artery
- Fore River Shipyard
- East Braintree
- Shaw Street
- Lincoln Square
- Red Line

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

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

225 Weekday

Inbound			Outbound		
Leave Weymouth Landing	Arrive Howard/ Quincy Ave.	Arrive Quincy Center Station	Leave Quincy Center Station	Arrive Howard/ Quincy Ave.	Arrive Weymouth Landing
b 5:30A	5:34A	5:49A	b 5:10A	5:14A	5:26A
b 5:50	5:54	6:09	b 5:30	5:34	5:46
6:11	6:15	6:31	b 5:52	5:56	6:08
b 6:23	6:27	6:43	6:00	6:08	6:20
6:35	6:42	6:59	b 6:13	6:17	6:29
b 6:47	6:54	7:10	6:23	6:31	6:43
6:59	7:06	7:23	b 6:37	6:41	6:53
b 7:11	7:18	7:34	6:47	6:55	7:07
7:24	7:31	7:49	b 7:03	7:07	7:19
b 7:38	7:45	8:01	7:14	7:22	7:34
.....	bq 7:55	8:11	b 7:27	7:34	7:46
7:52	7:59	8:17	7:40	7:50	8:02
.....	bq 8:02	8:18	b 7:53	8:01	8:13
b 8:05	8:12	8:28	8:06	8:16	8:28
.....	bq 8:23	8:39	b 8:21	8:29	8:41
8:18	8:25	8:43	8:32	8:43	8:55
b 8:31	8:38	8:54	b 8:47	8:57	9:09
8:44	8:51	9:09	8:58	9:09	9:21
b 8:58	9:05	9:21	b 9:15	9:25	9:37
9:12	9:19	9:37	9:43	9:54	10:06
b 9:26	9:33	9:49	b 10:11	10:21	10:33
9:40	9:47	10:05	10:36	10:47	10:59
b 10:09	10:16	10:32	b 11:04	11:14	11:26
10:37	10:44	11:00	11:34	11:46	11:59
b 11:05	11:12	11:28			
11:35	11:42	11:58	**b 12:04P**	**12:15P**	**12:28P**
			12:34	**12:46**	**12:59**
b 12:05P	**12:12P**	**12:28P**	**b 1:04**	**1:15**	**1:28**
12:35	**12:42**	**12:58**	**1:34**	**1:46**	**1:59**
b 1:05	**1:12**	**1:28**	**b 2:02**	**2:13**	**2:27**
1:35	**1:42**	**1:58**	**2:32**	**2:45**	**2:59**
b 2:05	**2:12**	**2:28**	**b 3:02**	**3:13**	**3:27**
2:35	**2:42**	**2:58**	**3:30**	**3:44**	**3:58**
b 3:03	**3:10**	**3:26**	**b 3:45**	**3:59**	**4:13**
3:31	**3:36**	**3:52**	**3:59**	**4:13**	**4:27**
b 4:02	**4:07**	**4:23**	**b 4:12**	**4:26**	**4:40**
4:18	**4:23**	**4:39**	**4:24**	**4:38**	**4:52**
b 4:32	**4:37**	**4:52**	**b 4:36**	**4:50**	**5:04**
4:45	**4:50**	**5:06**	**4:48**	**5:02**	**5:17**
b 4:57	**5:02**	**5:17**	**b 5:00**	**5:14**	**5:29**
5:09	**5:14**	**5:30**	**5:12**	**5:26**	**5:41**
b 5:21	**5:26**	**5:41**	**b 5:24**	**5:38**	**5:53**
5:33	**5:38**	**5:54**	**5:36**	**5:50**	**6:05**
b 5:45	**5:50**	**6:05**	**b 5:48**	**6:01**	**6:16**
5:57	**6:02**	**6:18**	**6:00**	**6:11**	**6:26**
b 6:09	**6:14**	**6:29**	**b 6:12**	**6:22**	**6:37**
6:21	**6:26**	**6:49**	**6:24**	**6:35**	**6:50**
b 6:32	**6:37**	**6:52**	**b 6:36**	**6:46**	**7:01**
6:43	**6:48**	**7:03**	**6:48**	**6:59**	**7:14**
b 6:54	**6:59**	**7:11**	**b 7:00**	**7:10**	**7:25**
7:05	**7:09**	**7:21**	**7:24**	**7:35**	**7:50**
b 7:18	**7:22**	**7:34**	**b 8:12**	**8:19**	**8:34**
7:53	**7:57**	**8:09**	**8:59**	**9:10**	**9:25**
b 8:38	**8:42**	**8:54**	**b 9:47**	**9:54**	**10:08**
9:28	**9:32**	**9:44**	**10:32**	**10:42**	**10:54**
b 10:12	**10:16**	**10:28**	**b 11:35**	**11:40**	**11:52**
11:00	**11:04**	**11:14**			
b 11:57	12:01A	12:11A			

226 Weekday

Inbound			Outbound		
Leave Columbian Square	Arrive Weymouth Landing	Arrive Braintree Station	Leave Braintree Station	Arrive Weymouth Landing	Arrive Columbian Square
6:20A	6:28A	6:38A	5:45A	5:52A	6:05A
6:50	6:58	7:13	6:25	6:32	6:45
7:30	7:41	7:56	6:55	7:02	7:15
8:00	8:11	8:26	7:25	7:33	7:50
8:35	8:46	9:01	8:01	8:11	8:28
9:05	9:16	9:31	8:35	8:43	9:01
9:50	10:01	10:16	9:20	9:28	9:46
10:50	11:00	11:13	10:20	10:28	10:46
11:50	**12:00N**	**12:13P**	11:20	11:28	11:46
12:50P	**1:00P**	**1:13P**	**12:20P**	**12:28P**	**12:46P**
1:50	**2:00**	**2:13**	**1:20**	**1:28**	**1:46**
2:50	**3:00**	**3:13**	**2:20**	**2:28**	**2:46**
3:50	**4:01**	**4:15**	**3:17**	**3:25**	**3:44**
4:35	**4:46**	**5:00**	**3:55**	**4:05**	**4:24**
5:05	**5:17**	**5:32**	**4:26**	**4:36**	**4:55**
5:45	**5:57**	**6:10**	**5:08**	**5:19**	**5:38**
6:15	**6:26**	**6:39**	**5:40**	**5:51**	**6:10**
6:48	**6:59**	**7:12**	**6:15**	**6:26**	**6:43**
7:16	**7:26**	**7:39**	**6:45**	**6:55**	**7:12**
8:10	**8:20**	**8:33**	**7:43**	**7:51**	**8:06**
9:04	**9:14**	**9:27**	**8:37**	**8:45**	**9:00**
9:58	**10:07**	**10:17**	**9:31**	**9:39**	**9:54**
10:44	**10:53**	**11:03**	**10:21**	**10:28**	**10:40**
11:30	**11:39**	**11:49**	**11:07**	**11:14**	**11:26**

b - Via Quincy Ave, omits Southern Artery and Scammell St.
q - Originates at Quintree Mall

Route 225
Weymouth Landing - Quincy Center Station

Route 226
Columbian Square- Braintree Station

225 Saturday

Inbound			Outbound		
Leave Weymouth Landing	Arrive Howard/ Quincy Ave.	Arrive Quincy Center Station	Leave Quincy Center Station	Arrive Howard/ Quincy Ave.	Arrive Weymouth Landing
b 6:30A	6:36A	6:48A	b 6:05A	6:11A	6:23A
7:30	7:36	7:51	7:05	7:13	7:25
b 8:30	8:36	8:50	b 8:00	8:09	8:22
9:00	9:06	9:21	8:30	8:40	8:53
b 9:30	9:36	9:50	b 9:00	9:09	9:22
10:00	10:06	10:21	9:30	9:40	9:53
b 10:30	10:36	10:53	b 10:00	10:09	10:22
11:00	11:06	11:23	10:30	10:40	10:53
b 11:30	11:36	11:53	b 11:00	11:09	11:24
			11:30	11:40	11:55
12:00N	**12:06P**	**12:23P**			
b 12:30P	**12:36**	**12:53**	**b 12:00N**	**12:09P**	**12:24P**
1:00	**1:06**	**1:23**	**12:30P**	**12:40**	**12:55**
b 1:30	**1:36**	**1:53**	**b 1:00**	**1:09**	**1:24**
2:00	**2:06**	**2:23**	**1:30**	**1:40**	**1:55**
b 2:20	**2:26**	**2:43**	**b 1:50**	**1:59**	**2:14**
2:40	**2:46**	**3:03**	**2:10**	**2:20**	**2:35**
b 3:00	**3:06**	**3:23**	**b 2:30**	**2:39**	**2:54**
3:20	**3:26**	**3:41**	**2:50**	**3:00**	**3:15**
b 3:40	**3:45**	**3:59**	**b 3:10**	**3:19**	**3:33**
4:00	**4:05**	**4:20**	**3:30**	**3:39**	**3:53**
b 4:20	**4:25**	**4:39**	**b 3:50**	**3:58**	**4:12**
4:40	**4:45**	**5:00**	**4:10**	**4:19**	**4:33**
b 5:00	**5:05**	**5:19**	**b 4:30**	**4:38**	**4:52**
5:20	**5:25**	**5:40**	**4:50**	**4:59**	**5:13**
b 5:40	**5:45**	**5:59**	**b 5:10**	**5:18**	**5:32**
6:05	**6:10**	**6:25**	**5:35**	**5:44**	**5:58**
b 6:35	**6:40**	**6:54**	**b 6:05**	**6:13**	**6:27**
7:05	**7:10**	**7:22**	**6:35**	**6:44**	**6:58**
b 8:05	**8:10**	**8:21**	**b 7:35**	**7:42**	**7:55**
9:05	**9:10**	**9:22**	**8:35**	**8:44**	**8:57**
b 10:05	**10:10**	**10:20**	**b 9:35**	**9:42**	**9:55**
11:00	**11:05**	**11:16**	**10:35**	**10:44**	**10:57**
b 11:55	12:00M	12:10A	**b 11:30**	**11:36**	**11:47**

226 Saturday

Inbound			Outbound		
Leave Columbian Square	Arrive Weymouth Landing	Arrive Braintree Station	Leave Braintree Station	Arrive Weymouth Landing	Arrive Columbian Square
7:00A	7:12A	7:21A	6:35A	6:42A	6:52A
7:50	8:02	8:11	7:25	7:32	7:44
8:40	8:52	9:01	8:15	8:23	8:35
9:35	9:48	9:58	9:10	9:18	9:30
10:35	10:48	10:58	10:05	10:13	10:25
11:35	11:48	11:58	11:05	11:16	11:30
12:35P	**12:49P**	**1:00P**	**12:05P**	**12:16P**	**12:30P**
1:35	**1:49**	**2:00**	**1:05**	**1:16**	**1:30**
2:35	**2:49**	**3:00**	**2:05**	**2:16**	**2:30**
3:35	**3:49**	**4:00**	**3:05**	**3:16**	**3:30**
4:35	**4:49**	**5:00**	**4:05**	**4:16**	**4:30**
5:35	**5:49**	**6:00**	**5:05**	**5:16**	**5:30**
6:35	**6:48**	**6:57**	**6:05**	**6:16**	**6:30**
7:35	**7:48**	**7:57**	**7:05**	**7:13**	**7:25**

225 Sunday

Inbound			Outbound		
Leave Weymouth Landing	Arrive Howard/ Quincy Ave.	Arrive Quincy Center Station	Leave Quincy Center Station	Arrive Howard/ Quincy Ave.	Arrive Weymouth Landing
7:50A	7:56A	8:10A	7:20A	7:27A	7:38A
8:50	8:56	9:10	8:20	8:27	8:38
9:50	9:56	10:10	9:20	9:29	9:40
10:50	10:57	11:13	10:20	10:30	10:41
11:50	11:57	**12:13P**	11:20	11:30	11:41
12:50P	**12:57P**	**1:13P**	**12:20P**	**12:30P**	**12:41P**
1:50	**1:56**	**2:12**	**1:20**	**1:30**	**1:41**
2:50	**2:56**	**3:11**	**2:20**	**2:30**	**2:41**
3:50	**3:56**	**4:11**	**3:20**	**3:31**	**3:42**
4:50	**4:56**	**5:11**	**4:20**	**4:31**	**4:42**
5:50	**5:56**	**6:11**	**5:20**	**5:31**	**5:42**
6:50	**6:55**	**7:08**	**6:20**	**6:31**	**6:42**
7:50	**7:54**	**8:07**	**7:20**	**7:30**	**7:40**
8:50	**8:54**	**9:07**	**8:20**	**8:28**	**8:38**
9:50	**9:54**	**10:07**	**9:20**	**9:28**	**9:38**
10:50	**10:54**	**11:06**	**10:20**	**10:28**	**10:38**
11:50	**11:54**	12:04A	**11:20**	**11:27**	**11:37**

NO Route 226 service on Sundays

All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Subway	Bus + Subway
CharlieCard	$1.70	$1.70	$2.40	$2.40
CharlieTicket	$1.70	$1.70	$2.40	$4.10*
Cash-on-Board	$1.70	$3.40	$2.40	$4.10
Student/Youth**	$0.85	$0.85	$1.10	$1.10
Senior/TAP***	$0.85	$0.85	$1.10	$1.10

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

* Transfers Subway to Silver Line SL4 or SL5 pay $2.40

** Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards available to students through participating middle and high schools. Youth CharlieCards available through community partners across Greater Boston.

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

Winter 2021 Holidays
12/25/20 & 1/1/21 Sun; 1/18/21 & 2/15/21: Sat

MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Weymouth | COUNT DATE : Jan-21

DISTRICT : 6 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Route 53

MINOR STREET(S) : Route 18

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	NWB	SWB		
PEAK HOURLY VOLUMES (PM) :	557	968	473	49		**2,047**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **22,744**

TOTAL # OF CRASHES : 48

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **9.60**

CRASH RATE CALCULATION : 1.16

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

Comments : Above Statewide and District Crash Rates

Project Title & Date: Proposed Mixed-Use Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Weymouth | COUNT DATE : Jan-21

DISTRICT : 6 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Route 53

MINOR STREET(S) : Middle Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	1,077	774	739	645		**3,235**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **35,944**

TOTAL # OF CRASHES : 41

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **8.20**

CRASH RATE CALCULATION : **0.63**

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

Comments : Below Statewide and District Crash Rates

Project Title & Date: Proposed Mixed-Use Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Weymouth | COUNT DATE : Jan-21

DISTRICT : 6 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Middle Street

MINOR STREET(S) : Winter Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (PM) :	709	923	627			**2,259**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **25,100**

TOTAL # OF CRASHES : 33

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **6.60**

CRASH RATE CALCULATION : 0.72

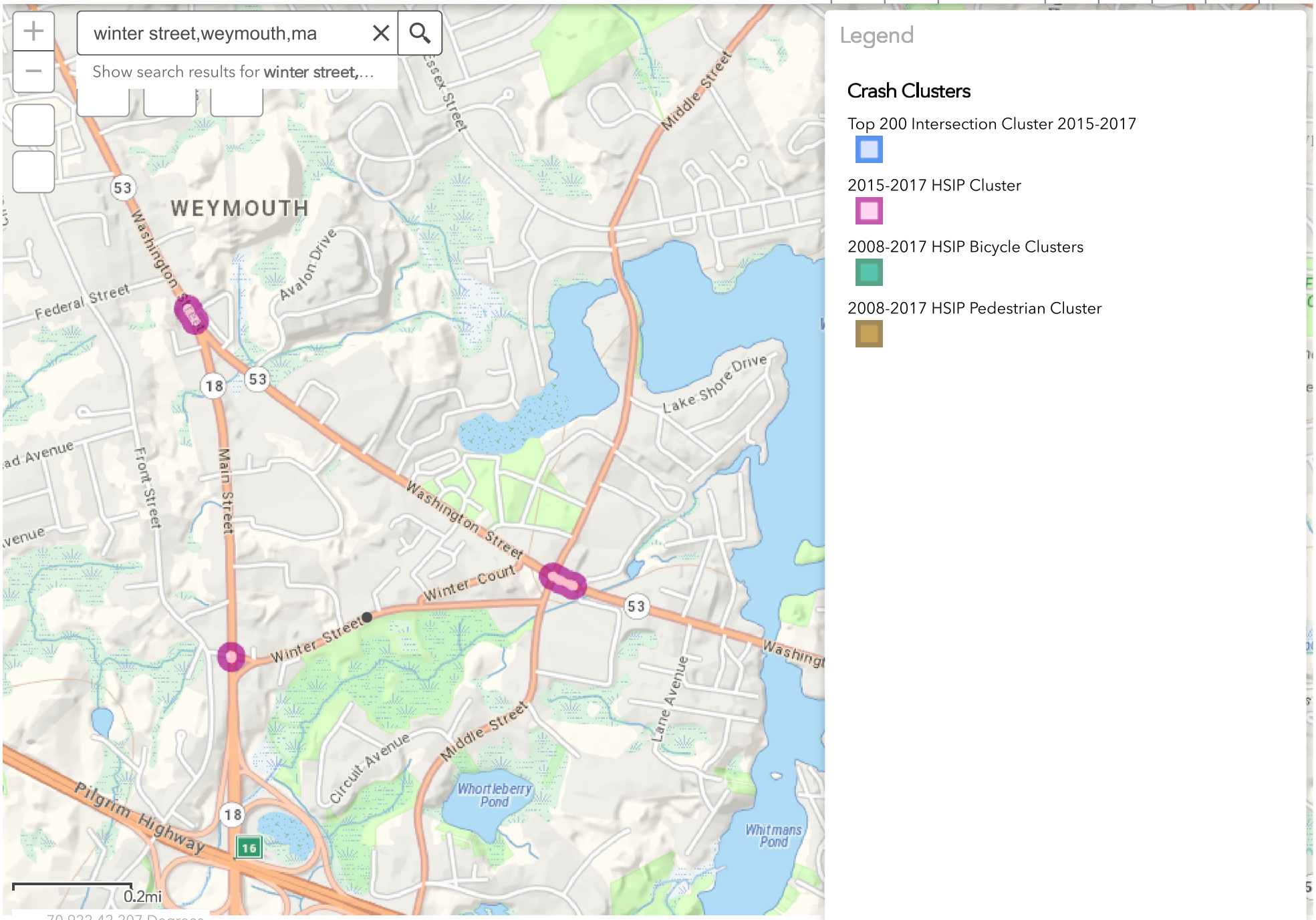
RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Below Statewide/Above District Crash Rates

Project Title & Date: Proposed Mixed-Use Development

Top Crash Locations

Accessible Version



Legend

Crash Clusters

Top 200 Intersection Cluster 2015-2017

2015-2017 HSIP Cluster

2008-2017 HSIP Bicycle Clusters

2008-2017 HSIP Pedestrian Cluster

RECOMMENDED ROAD SAFETY AUDIT IMPROVEMENTS

ROAD SAFETY AUDIT

Route 53/Route 18, Route 18/Winter Street,
Route 53/Middle Street, and Pleasant Street/
Libbey Industrial Parkway

Town of Weymouth

May 18, 2018

Prepared For:
MassDOT

Prepared By:
Howard Stein Hudson
11 Beacon Street, Boston, MA

Summary of Road Safety Audits

Table 3 below shows the estimated time frames of short-term, mid-term, and long-term solutions, about what was discussed, as well as the cost ranges of low-cost, medium-cost, and high-cost projects. **Tables 4-8** provide an estimate of the timeframe and cost of each potential safety enhancement that may address each of the identified safety issues.

Table 3: Estimated Time Frame and Costs Breakdown

Time Frame	
Short-Term	<1 Year
Mid-Term	1-3 Years
Long-Term	>3 Years

Costs	
Low	<$10,000
Medium	$10,001-$50,000
High	>$50,000

Table 4: Potential Safety Enhancement Summary – Route 53 at Route 18					
Safety Issue	**Potential Safety Enhancement**	**Safety Payoff**	**Time Frame**	**Cost**	**Jurisdiction**
Route 18 Approach Geometry	Evaluate the lane use on the Route 18 approach and, if feasible, consider changing the outer lane from a shared left/through/right to a through/right. This would also eliminate the need for the two receiving lanes and quick merge on Route 53.	Medium	Mid-term	Low	MassDOT
	Consider delineating the Route 18 approach lanes earlier to help motorists choose the appropriate lane needed for their turning radius.	Low	Short-term	Low	MassDOT
	Evaluate the turn radius for the left turns from Route 18 onto Route 53 to reduce the likelihood of sideswipe collisions. Re-stripe faded dotted lane extension lines through the intersection according to the appropriate turning radius to guide vehicles making the turn.	Low	Short-term	Low	MassDOT
	Evaluate if cutting back the scored concrete island at the Route 18 approach would help left-turning vehicles to stay in the inside left-turn lane.	Low	Mid-term	Low	MassDOT
	Evaluate approach geometry and roadway alignment along the Route 18 approach to improve turn radii for vehicles.	High	Long-term	High	MassDOT
	Evaluate the southeast corner turning radius for right-turning vehicles from Route 18 onto Route 53.	Medium	Long-term	High	MassDOT
	In the short term, consider providing signage directing trucks coming from Route 3 to access Route 53 South from Winter Street.	Low	Short-term	Low	MassDOT

Route 53 Eastbound Approach Geometry	Consider narrowing lanes by restriping lane lines to slow cars on the Route 53 eastbound channelized right, which could also provide room for bike lanes.	Low	Short-term	Low	MassDOT
	Extend gore and pavement markings for the Route 53 eastbound channelized right to provide more lane delineation and deflection, which could help to slow drivers down.	Low	Short-term	Low	MassDOT
	Evaluate the need for channelization of the Route 53 right turn and determine whether the right turn lane can be placed adjacent to the left/through lane, eliminating the right-turn slip lane and traffic island.	Medium	Long-term	High	MassDOT
Access Management	Consider defining curb cuts more clearly and narrowing access points for EZ Auto.	Medium	Mid-term	High	MassDOT/ EZ Auto
	Evaluate EZ Auto curb cut locations to determine safe access points.	Medium	Mid-term	High	MassDOT/ EZ Auto
	Consider restricting left turns out of the east CVS access point or make it an entrance only.	Low	Short-term	Low	MassDOT/CVS
Pedestrian and Bicycle Accommodations	Consider providing a crosswalk across the Route 18 approach.	Medium	Mid-term	Medium	MassDOT
	Consider narrowing lanes by restriping to create either a wider shoulder for bikes or marked bike lanes.	Low	Mid-term	Low	MassDOT
	Provide audible APS pedestrian pushbuttons at ADA-compliant locations as well as countdown pedestrian indications.	Low	Long-term	Medium	MassDOT
	Evaluate the angle of crosswalk at Route 53 channelized right lane to shorten pedestrian crossing distances to help reduce exposure times.	Low	Long-term	Medium	MassDOT
	Consider reconstructing the sidewalks and relocating utility poles so they do not create pinch points by obstructing the sidewalks.	Medium	Long-term	High	MassDOT

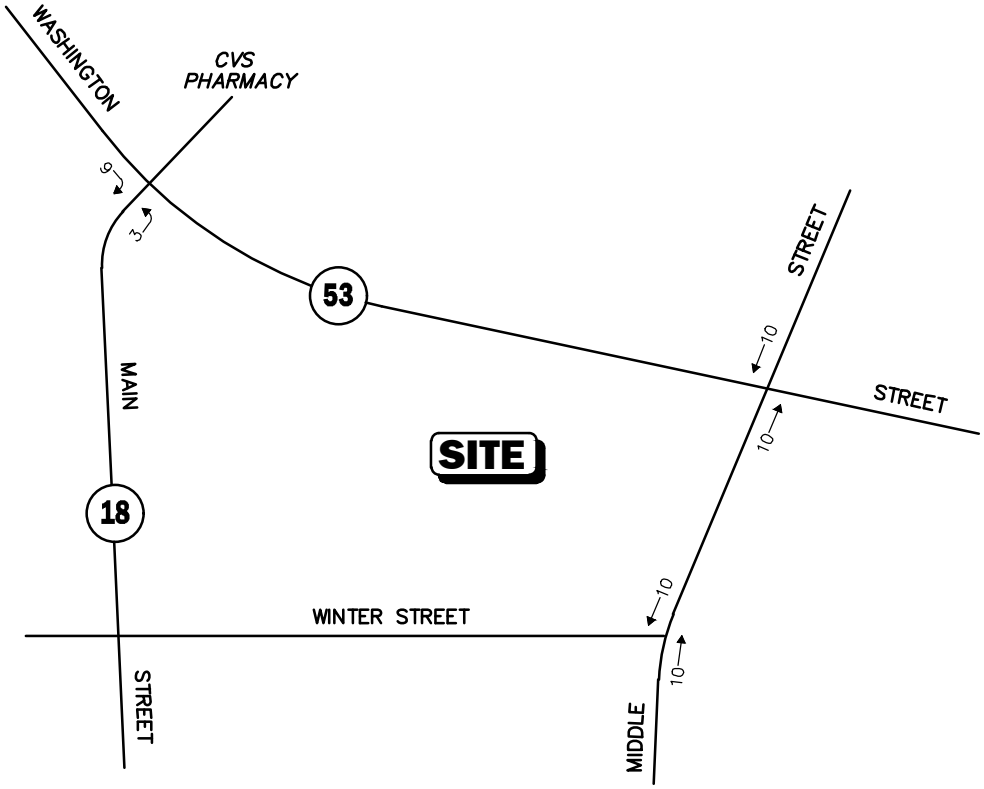
Signage and Pavement Markings	Consider relocating merge signage further west on Route 53 so left-turning vehicles from Route 18 can see it when they complete the turn.	Low	Short-term	Low	MassDOT
	If Potential Enhancement #1 in Safety Issue #1 is implemented and only one left-turning lane is provided at the Route 18 approach, the merge will be eliminated as there would be no need for two receiving lanes.	Medium	Long-term	Low	MassDOT
	Update the object marker facing Route 53 westbound on the traffic island to meet current standards with reflectors.	Low	Short-term	Low	MassDOT
	Update the signal backplates to include retroreflective borders.	Low	Short-term	Low	MassDOT
	Replace the Route 53 eastbound channelized right turn signals to more accurately reflect the direction of the movement.	Low	Short-term	Low	MassDOT

Table 6: Potential Safety Enhancement Summary – Route 53 at Middle Street					
Safety Issue	**Potential Safety Enhancement**	**Safety Payoff**	**Time Frame**	**Cost**	**Jurisdiction**
Traffic Signal Phasing	If feasible, consider providing protected only phasing for left turns on all approaches.	High	Short-term	Medium	MassDOT
	Consider providing flashing yellow arrows for permitted left turns if protected only phasing is not feasible.	Medium	Short-term	Medium	MassDOT
Access Management	Consider restricting left turns out of the plaza driveways with a scored concrete median. Consider placing the median on the inside of the left northbound lane to channelize left turns into the south plaza while restricting left turns out of both plazas, as well as prohibiting travel between the two plazas across all lanes.	Medium	Long-term	High	MassDOT
	Consider signing and marking both plaza driveways on Route 53 as right-in right-out.	Medium	Short-term	Low	MassDOT/plaza property owners
Signage and Pavement Markings	Consider marking the through only lane on the Middle Street southbound approach for consistency as well as extending the lane markings further back to assist drivers in choosing the proper lane.	Low	Short-term	Low	Town of Weymouth
	Consider providing signage to help guide drivers into the correct lane for the intersection of Middle Street at Winter Street.	Low	Short-term	Low	MassDOT/Town of Weymouth
	Fix signs that are leaning or damaged.	Low	Short-term	Low	MassDOT/Town of Weymouth
	Consider providing No Turn on Red blank out signs illuminated only during applicable times to reduce driver confusion.	Low	Short-term	Low	MassDOT
	Evaluate if right on red can be restricted completely at all approaches.	Medium	Short-term	Low	MassDOT
	Evaluate if two through lanes are needed on Middle Street northbound.	Low	Short-term	Low	MassDOT

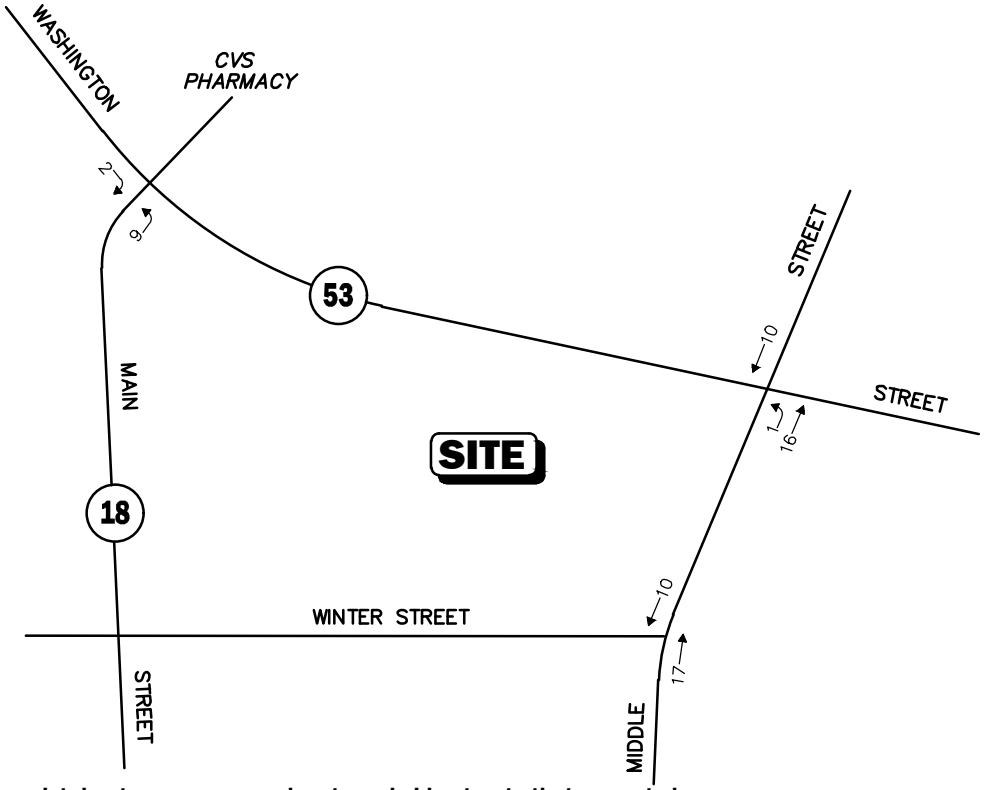
Signage and Pavement Markings	Consider prohibiting permissive lefts, as suggested in Safety Issue #1.	High	Short-term	Low	MassDOT
	Evaluate whether intervals are timed properly to ensure that vehicles have the appropriate clearance.	Low	Short-term	Low	MassDOT
	Consider relocating utility wires to create unobstructed views of the northbound and southbound signals.	Low	Mid-term	Medium	MassDOT
Pedestrian and Bicycle Accommodations	Consider upgrading all pedestrian pushbuttons to audible APS pedestrian pushbuttons in ADA-compliant locations.	Low	Long-term	Medium	MassDOT
	Extend the vertical retaining wall along the sidewalk at the Middle Street northbound approach to replace the steep angled sidewall.	Low	Long-term	Medium	Town of Weymouth
	Repair the damaged wheelchair ramp in the southwest corner of the intersection.	Low	Short-term	Low	MassDOT
	Evaluate bike lane connectivity and layout. Consider bike boxes at the Middle Street approaches.	Medium	Long-term	Medium	Town of Weymouth
	Ensure all pedestrian crossing times meet current standards.	Low	Short-term	Low	MassDOT

BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure A-1

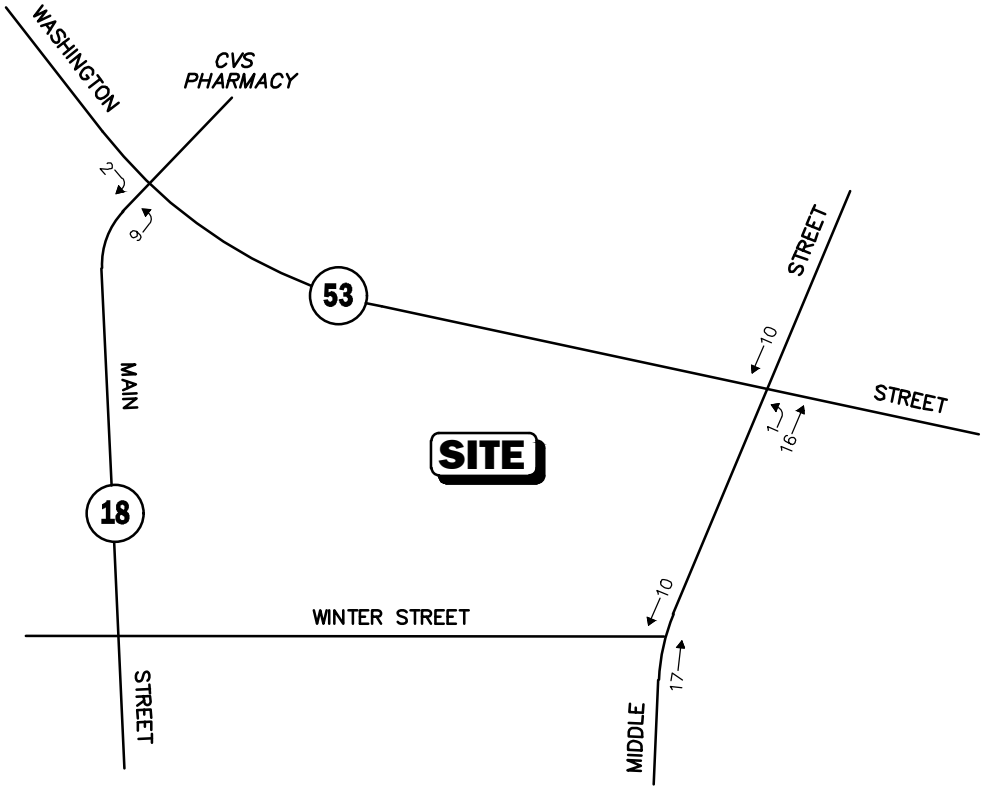
Union Point
Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:29:59 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure A-2

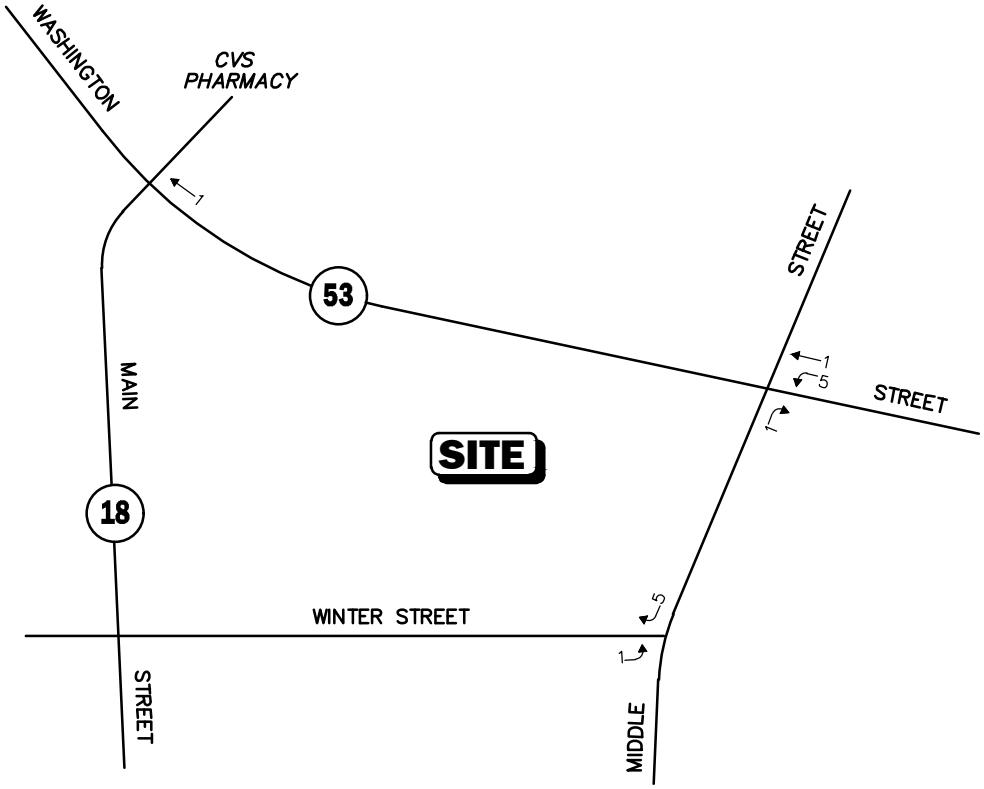
Union Point
Peak Hour Traffic Volumes

Vanasse & Associates inc

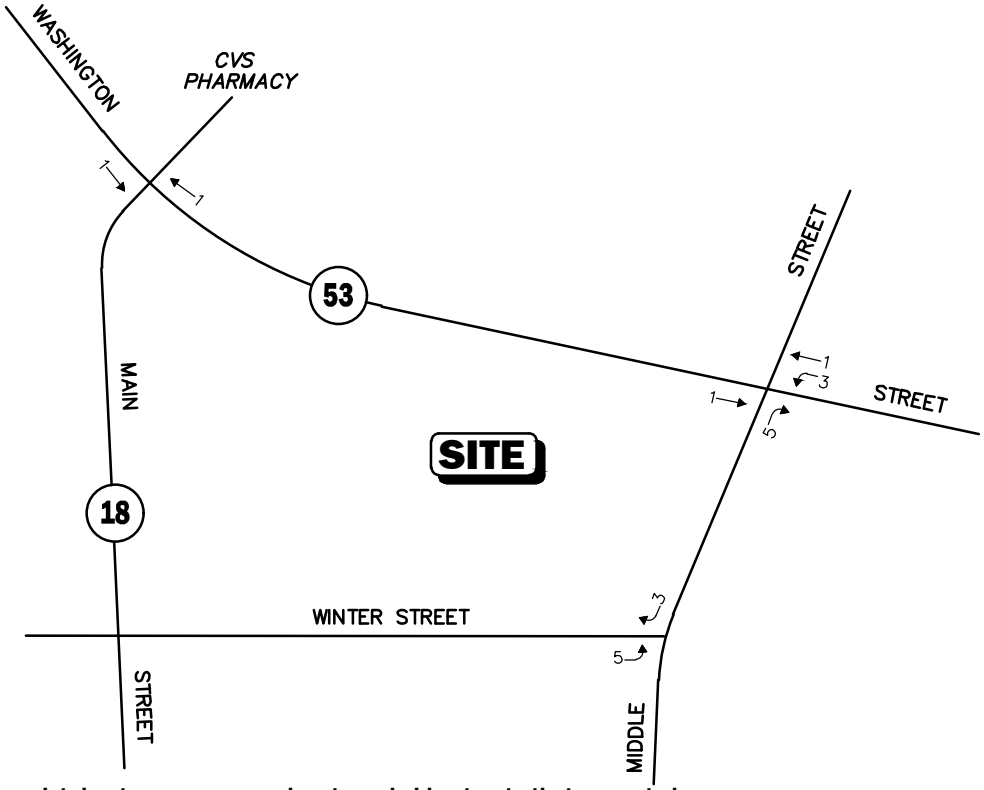
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:30:42 PM, DWG To PDF.pc3

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure A-3

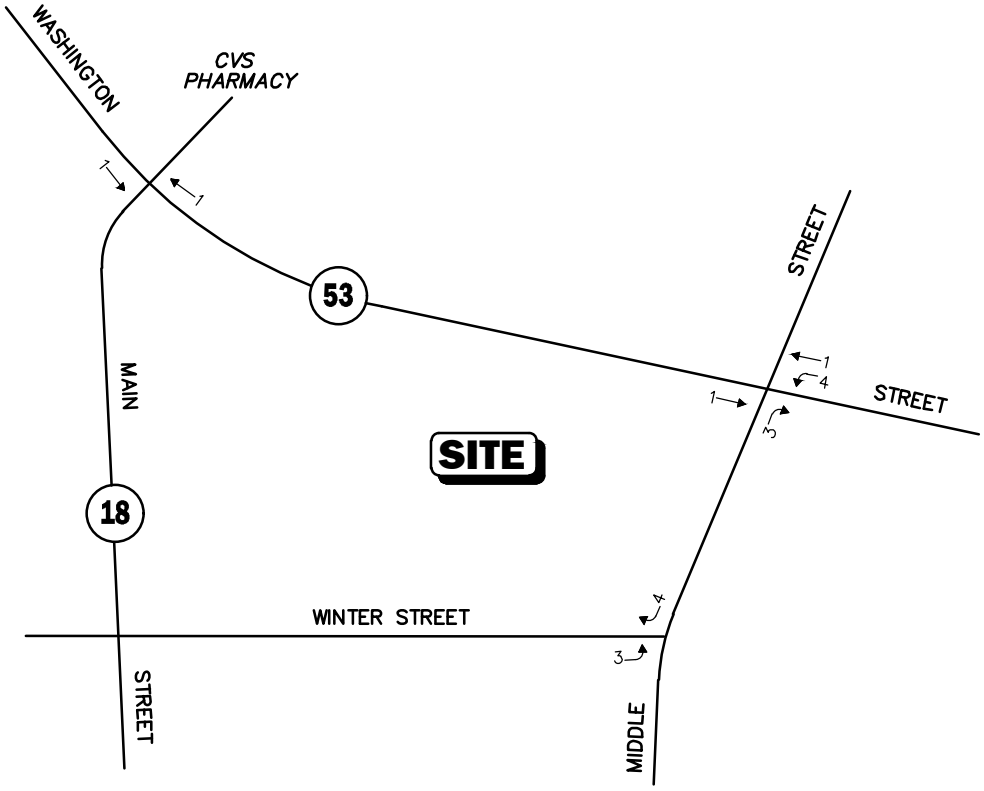
Vanasse & Associates inc

Pleasant Street Residential Development Peak Hour Traffic Volumes

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 4:06:58 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure A-4

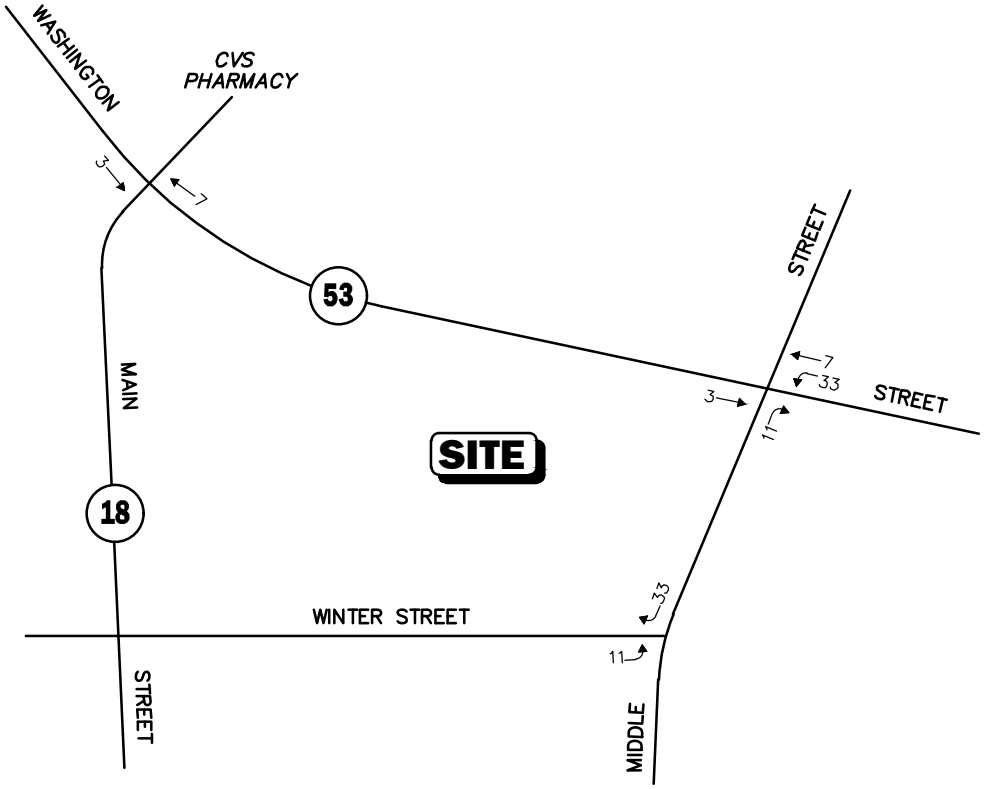
Pleasant Street Residential Development Peak Hour Traffic Volumes

Vanasse & Associates inc

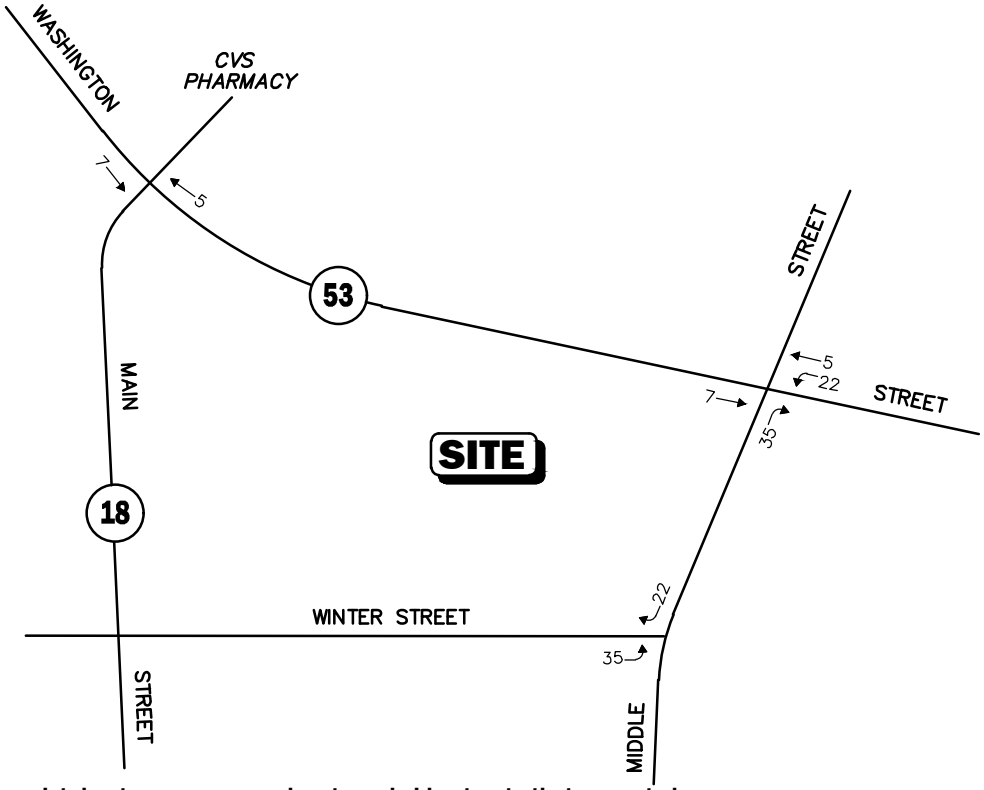
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:32:44 PM, DWG To PDF.pc3

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



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

Not To Scale

Figure A-5

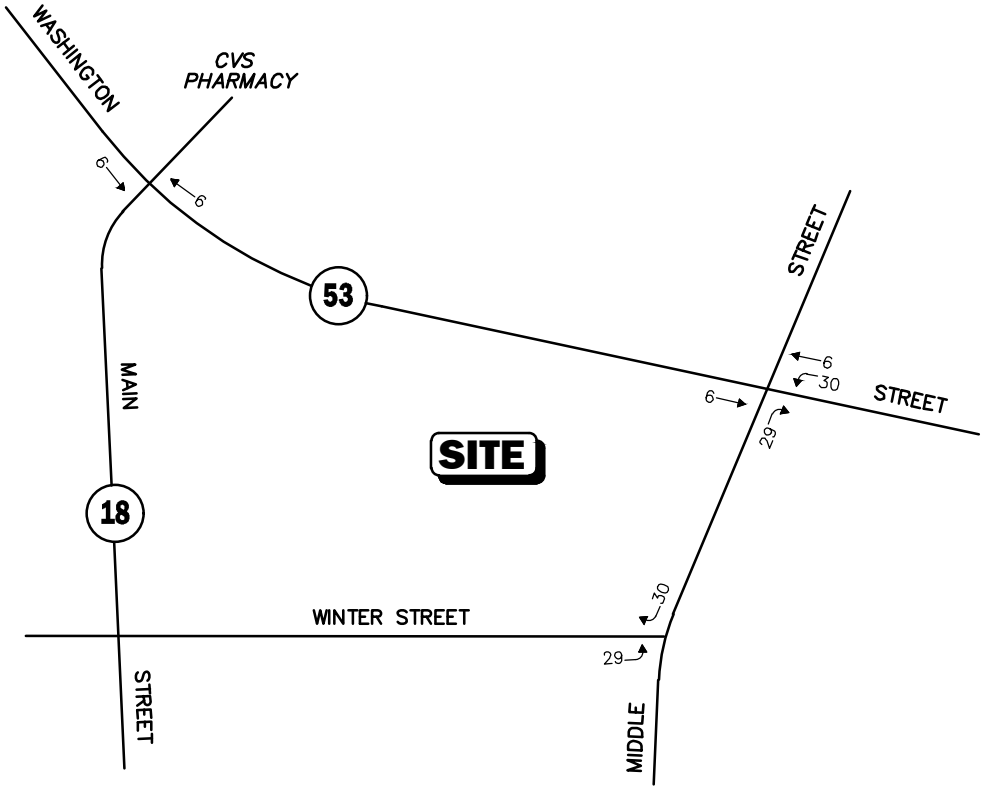
Vanasse & Associates inc

Washington Street
Mixed-Use Development
Peak Hour Traffic Volumes

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:34:36 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)



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

Not To Scale

Figure A-6

Washington Street
Mixed-Use Development
Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:35:18 PM, DWG To PDF.pc3

GENERAL BACKGROUND TRAFFIC GROWTH

General Background Traffic Growth

STA.	CITY/TOWN	ROUTE/STREET	LOCATION	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average Annual Growth Rate
6255	Weymouth	Route 3	North of Route 18	134,418	131,978	132,053	131,271	132,623	127,190	133,245	133,570	133,238	130,967	-0.01%
														-0.01%

TRIP-GENERATION CALCULATIONS

Multifamily Housing (Mid-Rise)
(221)

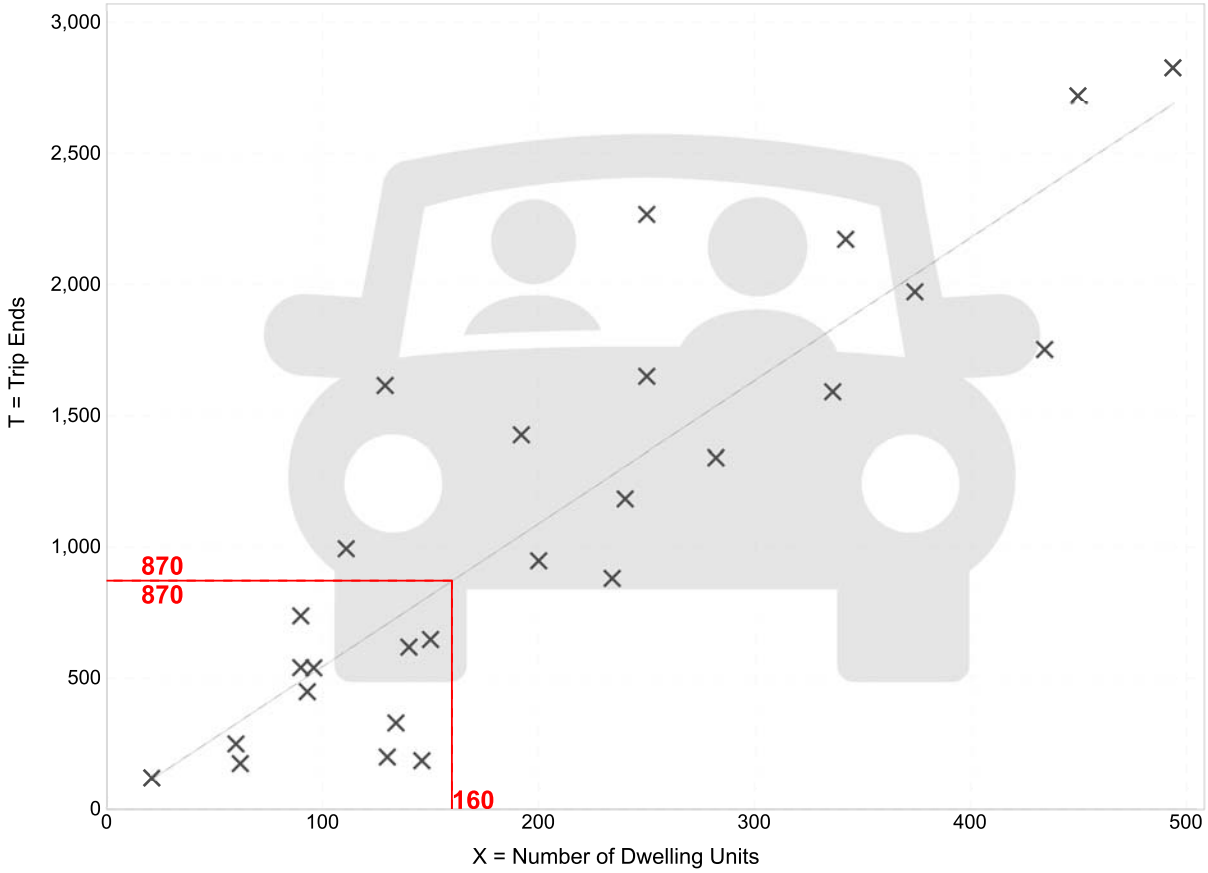
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



Fitted Curve Equation: T = 5.45(X) - 1.75

R^2= 0.77

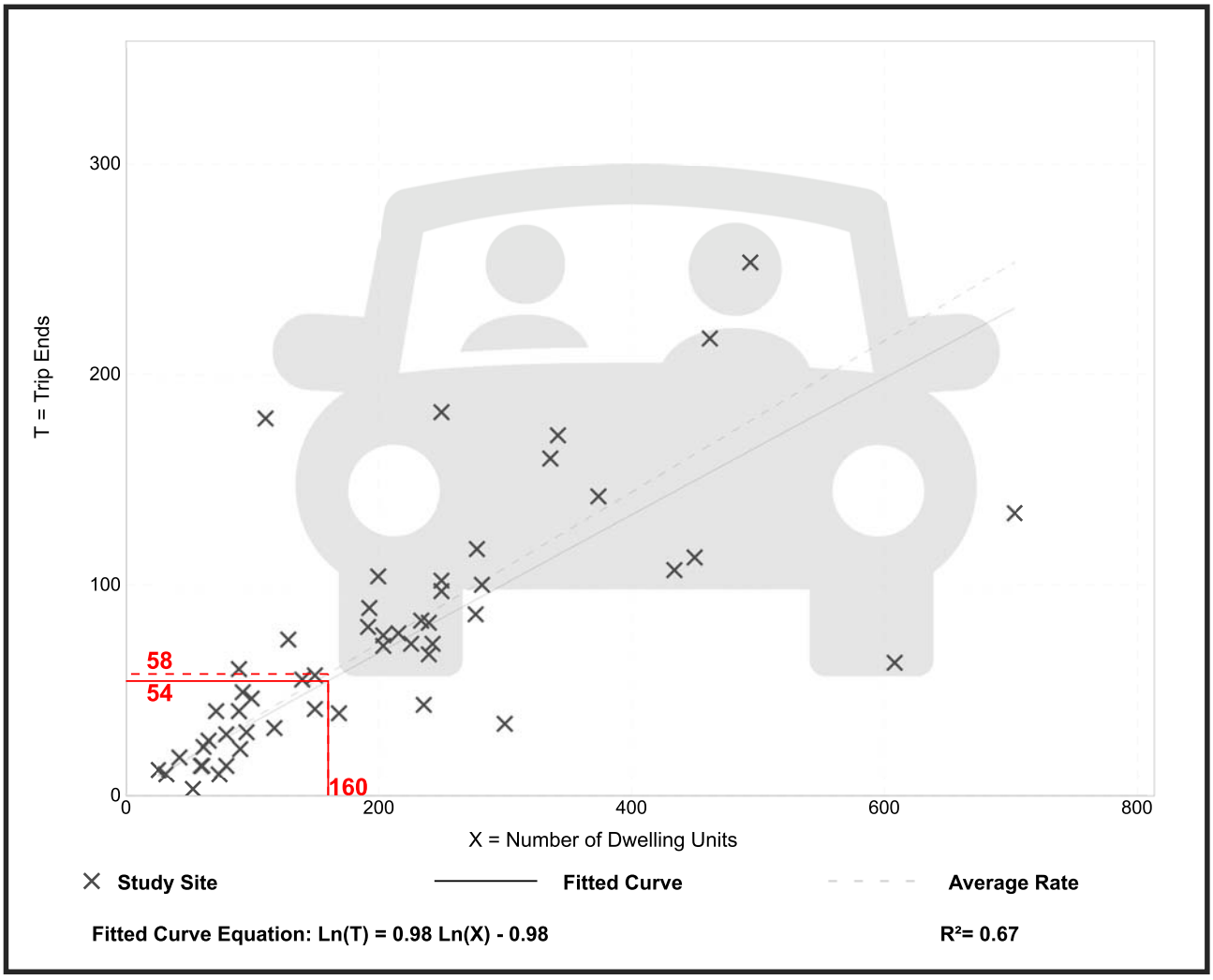
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	53
Avg. Num. of Dwelling Units:	207
Directional Distribution:	26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



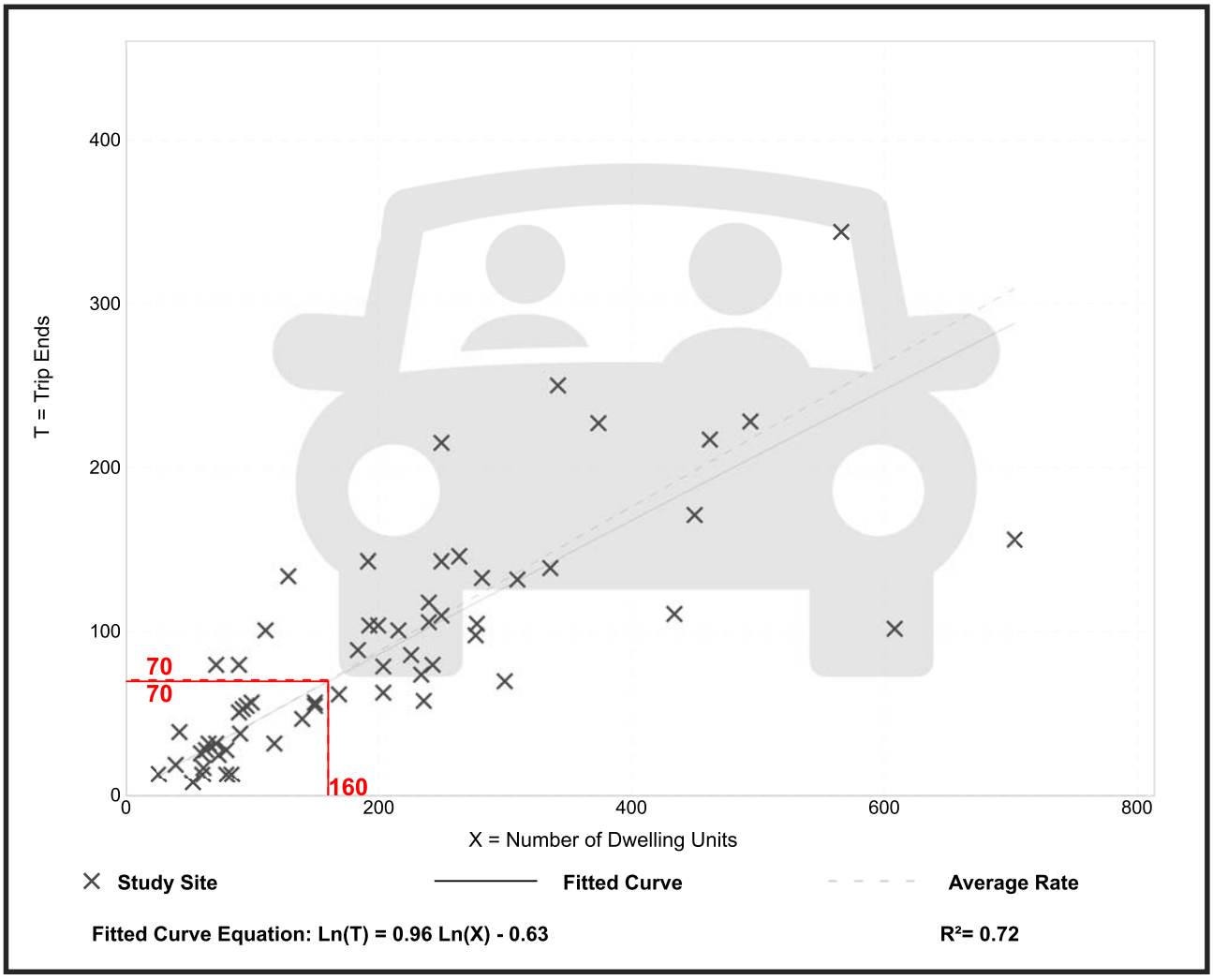
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	60
Avg. Num. of Dwelling Units:	208
Directional Distribution:	61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

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

Data Plot and Equation



Multifamily Housing (Mid-Rise)
(221)

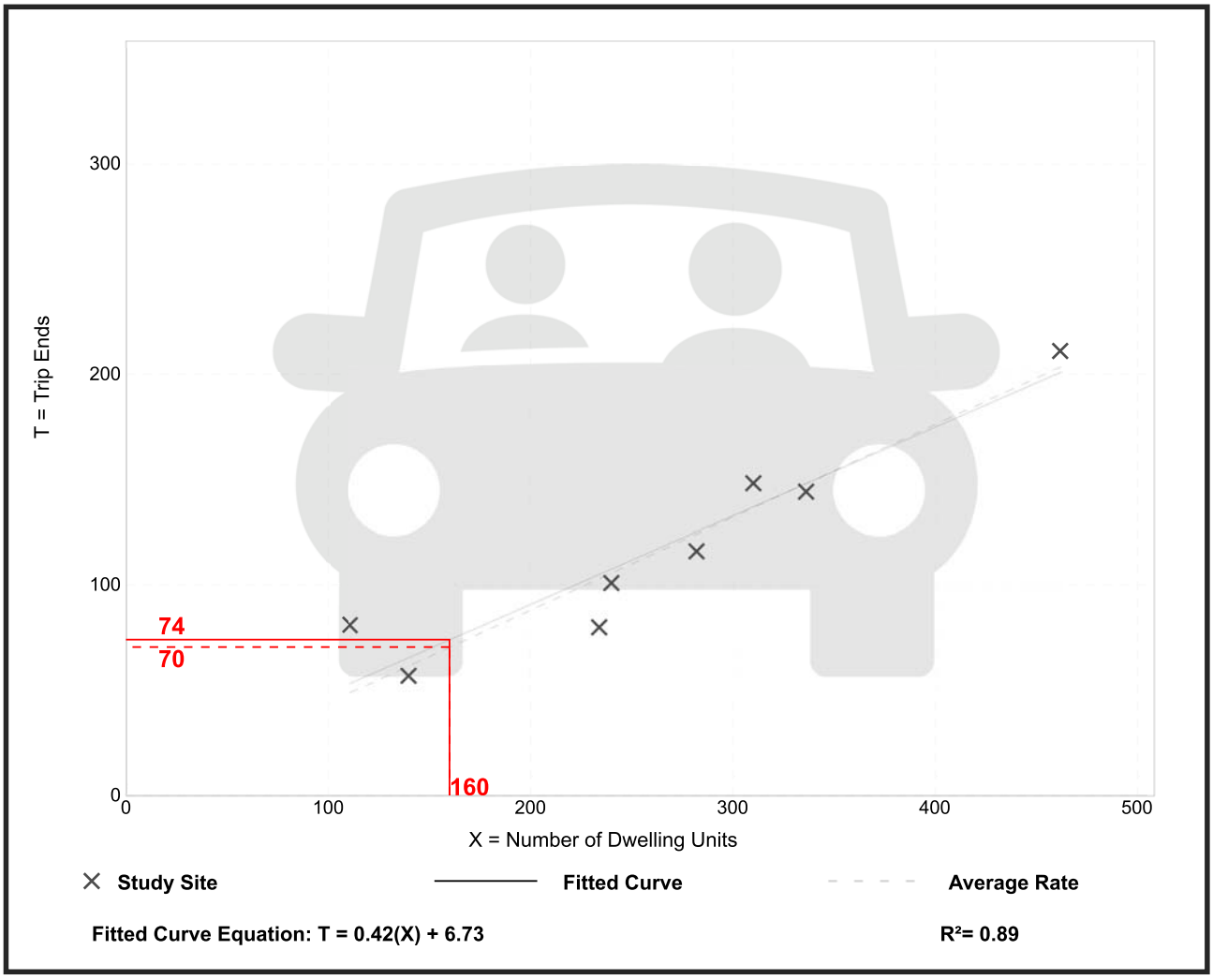
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 8
Avg. Num. of Dwelling Units: 264
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.34 - 0.73	0.08

Data Plot and Equation



Institute of Transportation Engineers (ITE)
Trip Generation, 10 th Edition
Land Use Code (LUC) 820 - Shopping Center

Average Vehicle Trips Ends vs: 1,000 Square Feet Gross Leasable Area
Independent Variable (X): 4.000

AVERAGE WEEKDAY DAILY

T = 37.75 * X
T = 37.75 * 4.000
T = 151.00
T = 152 vehicle trips
with 50% (76 vpd) entering and 50% (76 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.94 * (X)
T = 0.94 * 4.000
T = 3.76
T = 4 vehicle trips
with 62% (2 vph) entering and 38% (2 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 3.81 * X
T = 3.81 * 4.000
T = 15.24
T = 15 vehicle trips
with 48% (7 vph) entering and 52% (8 vph) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 4.50 * X
T = 4.50 * 4.000
T = 18.00
T = 18 vehicle trips
with 52% (9 vph) entering and 48% (9 vph) exiting.

Proposed Mixed-Use Development, Weymouth, MA

Analyst: **BG**
Date: **2/2/2021**

Job No. **8826**
Time Period: **Weekday Daily**

Land Use A	**Retail**		
ITE LUC	820		
Size	**4.000**	ksf	
	Total	Internal	External
Enter	**76**	**7**	**69**
Exit	**76**	**8**	**68**
Total	**152**	**15**	**137**

A to B

% Demand	Trips	Balanced
30%	**22.8**	**0**
% Demand	Trips	
28%	**0**	

B to A

% Demand	Trips	Balanced
28%	**21.28**	**0**
% Demand	Trips	
30%	**0**	

A to C

% Demand	Trips	Balanced
11%	**8.36**	**8**
% Demand	Trips	
33%	**143.55**	

C to A

% Demand	Trips	Balanced
9%	**6.84**	**7**
% Demand	Trips	
38%	**165.3**	

B to C

% Demand	Trips	Balanced
11%	**0**	**0**
% Demand	Trips	
33%	**143.55**	

C to B

% Demand	Trips	Balanced
38%	**165.3**	**0**
% Demand	Trips	
9%	**0**	

Land Use B			
ITE LUC			
Size	**0.53**	ksf	
		Internal	External
Enter		**0**	**0**
Exit		**0**	**0**
Total	**0**	**0**	**0**

Land Use C	**Residential**		
ITE LUC	221		
Size	**160**		
	Total	Internal	External
Enter	**435**	**8**	**427**
Exit	**435**	**7**	**428**
Total	**870**	**15**	**855**

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Total	
Enter	**69**	**0**	**427**	**496**	
Exit	**68**	**0**	**428**	**496**	
Total	**137**	**0**	**855**	**992**	Internal Capture Rate
Single-Use Trip Gen Est.	**152**	**0**	**870**	**1022**	**3%**

* from ITE Trip Generation Handbook, 9th Edition, 2012.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	VAI
Project Location:	Weymouth, MA	**Performed By:**	BG
Scenario Description:		**Date:**	2/2/2021
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	2/2/2021

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820			4	2	2
Restaurant		4		0		
Cinema/Entertainment				0		
Residential	221	160		54	14	40
Hotel				0		
All Other Land Uses[2]				0		
				58	16	42

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	2.00	0%	0%	2.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	0%	0%	1.13	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	69	20	49
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[5]	58	16	42
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Mixed-Use Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	2.00	2	4	2.00	2	4
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	14	16	1.13	40	45
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	9	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	4	4	2	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	16	16	14	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	4	4	2	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	45	45	40	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	VAI
Project Location:	Weymouth, MA	**Performed By:**	BG
Scenario Description:		**Date:**	2/2/2021
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	2/2/2021

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	4		15	7	8
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	160		70	42	28
Hotel				0		
All Other Land Uses[2]				0		
				85	49	36

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	2.00	0%	0%	2.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	0%	0%	1.13	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	109	61	48
Internal Capture Percentage	9%	8%	10%
External Vehicle-Trips[5]	78	45	33
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	9%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Mixed-Use Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	2.00	7	14	2.00	8	16
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	42	47	1.13	28	32
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	1	4	1
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	7	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	2	0
Retail	0		0	0	22	0
Restaurant	0	7		0	8	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	13	14	7	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	43	47	38	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	4	12	16	6	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	31	32	27	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Mixed-Use Development	**Organization:**	VAI
Project Location:	Weymouth, MA	**Performed By:**	BG
Scenario Description:		**Date:**	2/2/2021
Analysis Year:		**Checked By:**	
Analysis Period:	**Saturday Midday Peak Hour**	**Date:**	2/2/2021

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	4		18	9	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	160		74	36	38
Hotel				0		
All Other Land Uses[2]				0		
				92	45	47

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail	2.00	0%	0%	2.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.13	0%	0%	1.13	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	5	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	120	59	61
Internal Capture Percentage	12%	12%	11%
External Vehicle-Trips[5]	83	40	43
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	11%	28%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	12%	5%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Mixed-Use Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	2.00	9	18	2.00	9	18
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	36	41	1.13	38	43
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		5	1	5	1
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	18	9	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	2	0
Retail	0		0	0	19	0
Restaurant	0	9		0	7	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	2	0	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	16	18	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	36	41	32	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	5	13	18	7	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	41	43	36	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

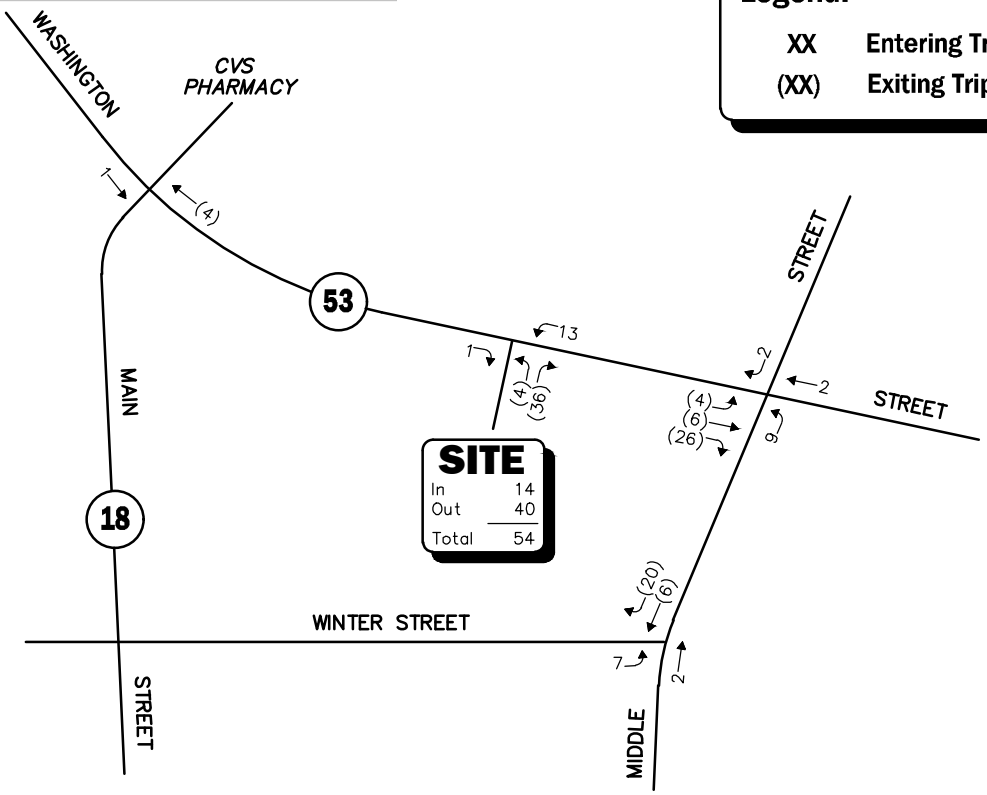
TRIP DISTRIBUTION WORKSHEET

Proposed Residential Development - Weymouth, MA

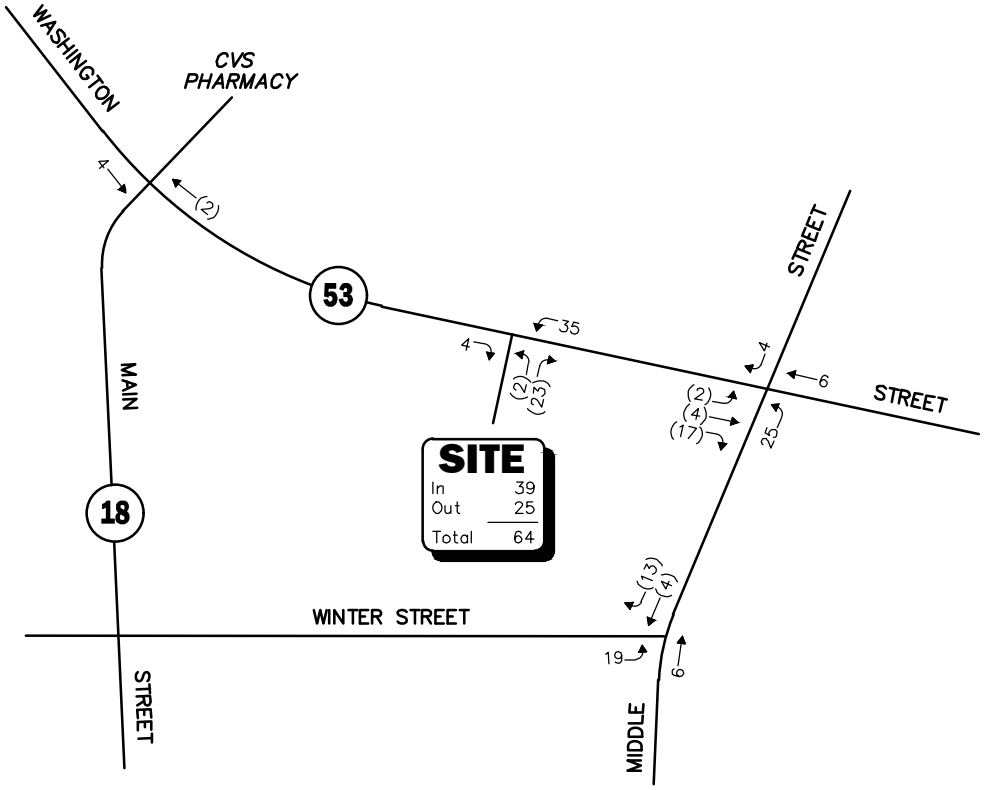
Residence	Workplace			Number	Pleasant Street (North)	Pleasant Street (South)	Route 53 (East)	Route 53 (West)
Weymouth Town city	Massachusetts	Suffolk County	Boston city	6,610				6610
Weymouth Town city	Massachusetts	Norfolk County	Weymouth Town city	4,877	1463	1707	244	1463
Weymouth Town city	Massachusetts	Norfolk County	Quincy city	3,244	1071			2173
Weymouth Town city	Massachusetts	Plymouth County	Hingham town	1,808	452		1356	
Weymouth Town city	Massachusetts	Norfolk County	Braintree Town city	1,700		425		1275
Weymouth Town city	Massachusetts	Plymouth County	Norwell town	646			646	
Weymouth Town city	Massachusetts	Plymouth County	Rockland town	602			602	
Weymouth Town city	Massachusetts	Middlesex County	Cambridge city	596				596
Weymouth Town city	Massachusetts	Plymouth County	Brockton city	476		476		
Weymouth Town city	Massachusetts	Plymouth County	Hanover town	465			465	
Weymouth Town city	Massachusetts	Norfolk County	Norwood town	371				371
Weymouth Town city	Massachusetts	Norfolk County	Randolph town	349		349		
Weymouth Town city	Massachusetts	Norfolk County	Canton town	330				330
Weymouth Town city	Massachusetts	Norfolk County	Stoughton town	302		302		
Weymouth Town city	Massachusetts	Middlesex County	Waltham city	290				290
Weymouth Town city	Massachusetts	Plymouth County	Plymouth town	249				249
Weymouth Town city	Massachusetts	Norfolk County	Dedham town	244				244
Weymouth Town city	Massachusetts	Middlesex County	Newton city	225				225
Weymouth Town city	Massachusetts	Plymouth County	Abington town	223		223		
Weymouth Town city	Massachusetts	Plymouth County	Pembroke town	218				218
Weymouth Town city	Massachusetts	Plymouth County	Marshfield town	175			70	105
Weymouth Town city	Massachusetts	Norfolk County	Wellesley town	166				166
Weymouth Town city	Massachusetts	Middlesex County	Somerville city	164				164
Weymouth Town city	Massachusetts	Norfolk County	Milton town	164				164
				24,494	2,986	3,482	3,383	14,643
					12%	14%	14%	60%

PROJECT COMPONENT TRIP DISTRIBUTION NETWORKS

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Not To Scale

Figure A-7

Project-Generated Residential Component Peak Hour Traffic Volumes

Vanasse & Associates inc

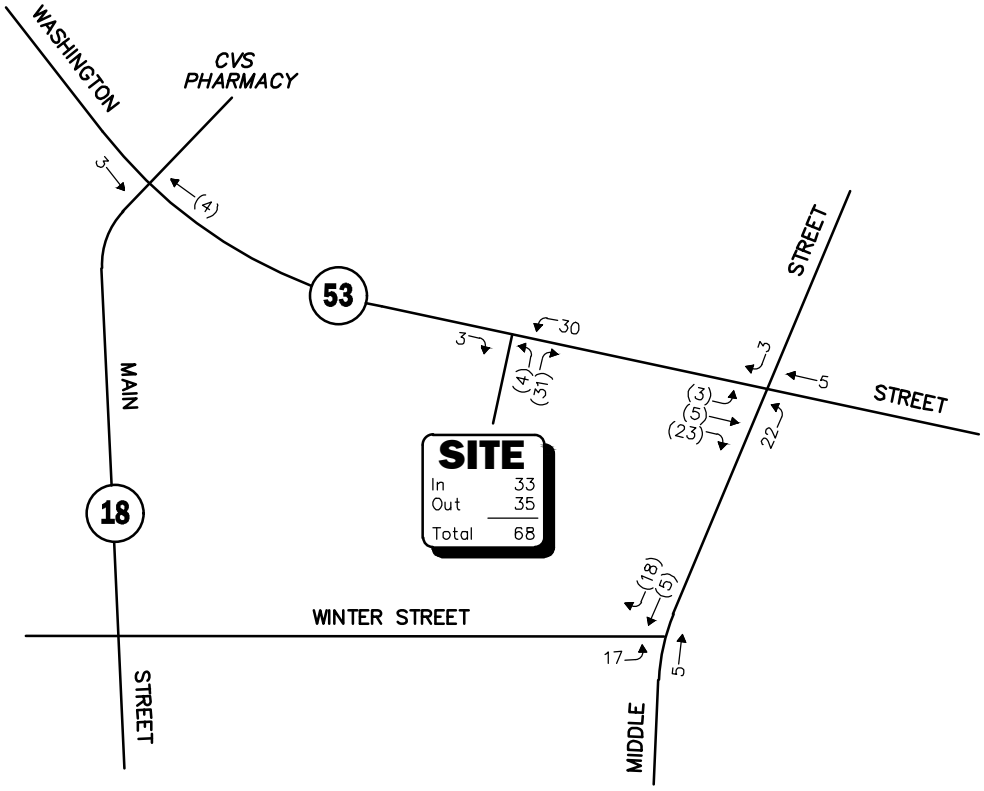
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:36:02 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure A-8

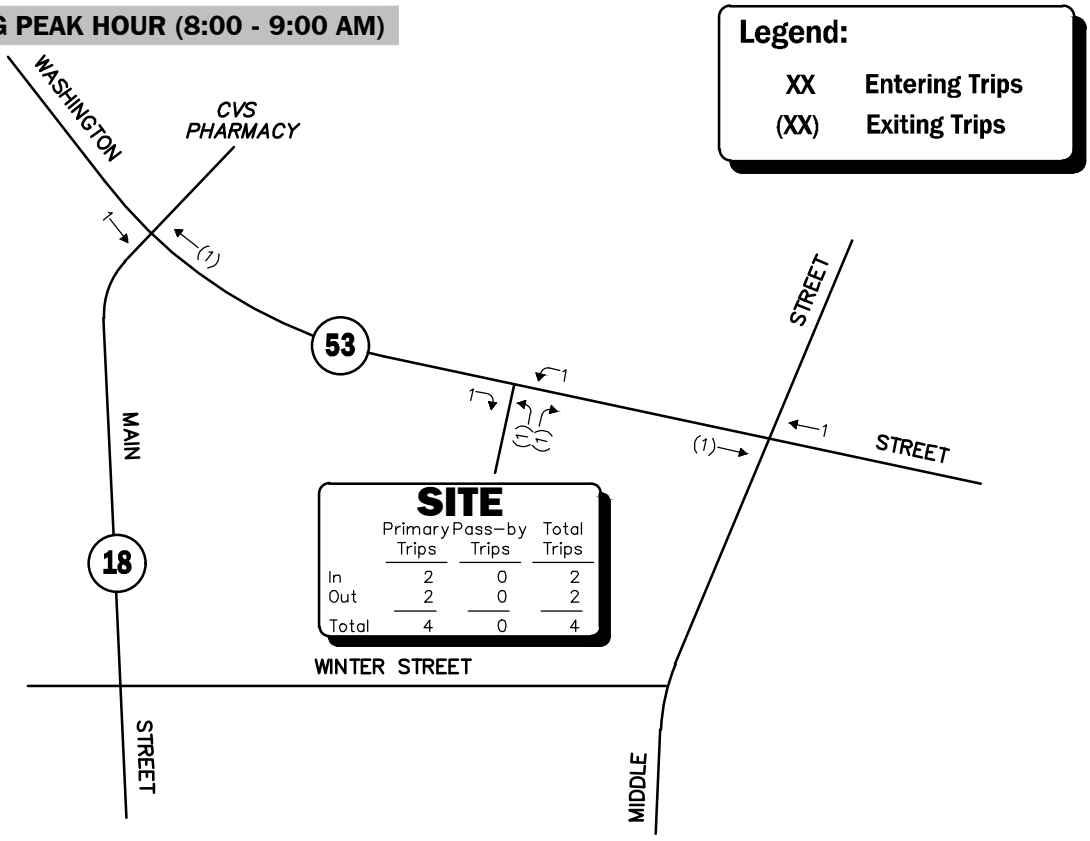
Project-Generated Residential Component Peak Hour Traffic Volumes

Vanasse & Associates inc

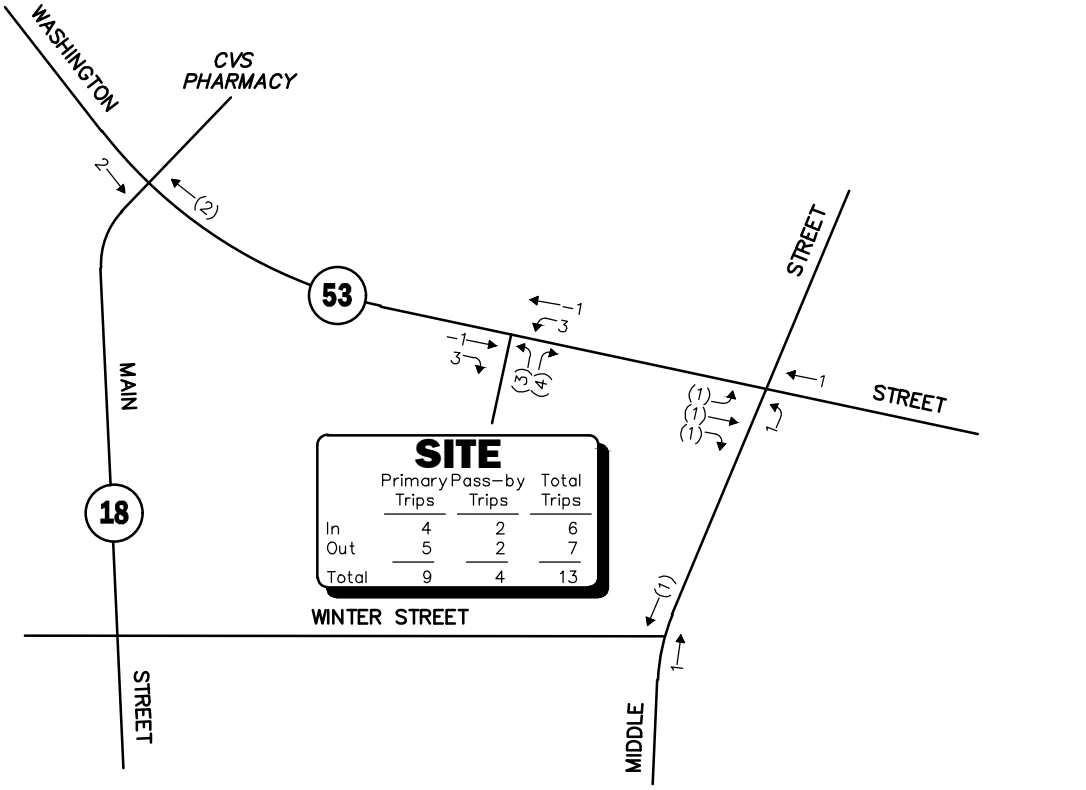
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:36:47 PM, DWG To PDF.pc3

WEEKDAY MORNING PEAK HOUR (8:00 - 9:00 AM)



WEEKDAY EVENING PEAK HOUR (4:00 - 5:00 PM)



Not To Scale

Figure A-9

Project-Generated Retail Component Peak Hour Traffic Volumes

Vanasse & Associates inc

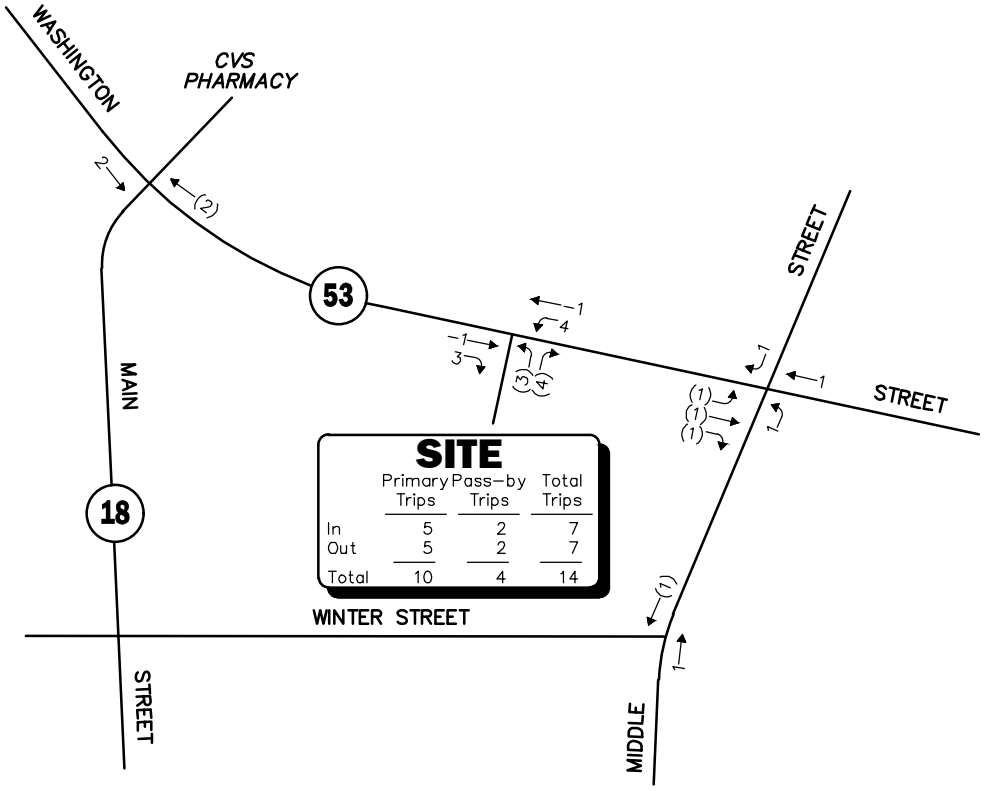
Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:37:28 PM, DWG To PDF.pc3

SATURDAY MIDDAY PEAK HOUR (1:00 - 2:00 PM)

Legend:

XX	Entering Trips
(XX)	Exiting Trips



Not To Scale

Figure A-10

Project-Generated Retail Component Peak Hour Traffic Volumes

Vanasse & Associates inc

Copyright © 2021 by VAi. All Rights Reserved.

R:\8826\8826NT1.dwg, 2/5/2021 2:38:49 PM, DWG To PDF.pc3

CAPACITY ANALYSIS WORKSHEETS

2020 Existing Conditions Analysis
2028 No-Build Conditions Analysis
2028 Build Conditions Analysis
2028 Build with Mitigation Conditions Analysis

2020 Existing Conditions Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	279	350	27	262	3	340	19	40	10	6	2
Future Volume (vph)	6	279	350	27	262	3	340	19	40	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3563			405			148	
Travel Time (s)		6.9			81.0			9.2			3.4	
Peak Hour Factor	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	0	320	393	33	327	0	221	218	0	0	24	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.46	0.26	0.11	0.44		0.38	0.39			0.08	
Control Delay		24.2	1.3	36.5	17.8		25.3	24.7			34.8	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		24.2	1.3	36.5	17.8		25.3	24.7			34.8	
Queue Length 50th (ft)		52	0	7	55		35	33			4	
Queue Length 95th (ft)		302	24	50	229		244	236			35	
Internal Link Dist (ft)		225			3483			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1591	1547	422	1585		1032	992			549	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.20	0.25	0.08	0.21		0.21	0.22			0.04	

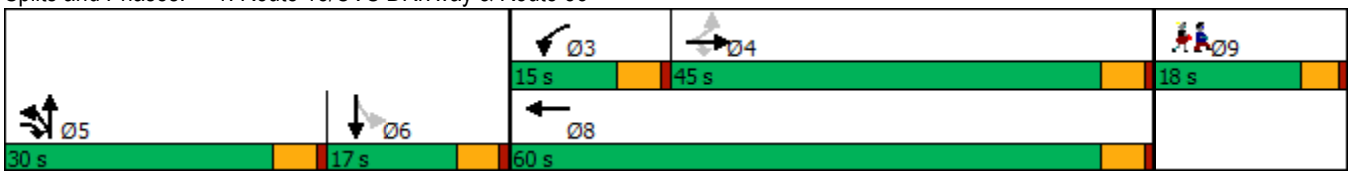
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 59
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

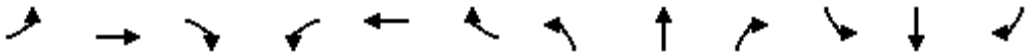
Splits and Phases: 1: Route 18/CVS DRivway & Route 53



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	279	350	27	262	3	340	19	40	10	6	2
Future Volume (vph)	6	279	350	27	262	3	340	19	40	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.97			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.97	
Satd. Flow (prot)		2090	1794	1696	1878		1754	1679			1819	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	0.97			0.99	
Satd. Flow (perm)		2073	1794	1696	1878		1754	1679			1859	
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	7	313	393	33	323	4	374	21	44	13	8	3
RTOR Reduction (vph)	0	0	168	0	1	0	0	6	0	0	3	0
Lane Group Flow (vph)	0	320	225	33	326	0	221	212	0	0	21	0
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		18.3	36.4	2.2	25.5		18.1	18.1			2.1	
Effective Green, g (s)		19.3	38.4	3.2	26.5		19.1	19.1			3.1	
Actuated g/C Ratio		0.29	0.57	0.05	0.40		0.29	0.29			0.05	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		597	1028	81	742		500	478			86	
v/s Ratio Prot			0.06	0.02	c0.17		0.13	c0.13				
v/s Ratio Perm		c0.15	0.06								c0.01	
v/c Ratio		0.54	0.22	0.41	0.44		0.44	0.44			0.25	
Uniform Delay, d1		20.1	7.0	31.0	14.8		19.6	19.6			30.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.9	0.1	3.3	0.4		0.6	0.7			1.5	
Delay (s)		21.0	7.1	34.3	15.2		20.2	20.3			32.3	
Level of Service		C	A	C	B		C	C			C	
Approach Delay (s)		13.3			17.0			20.2			32.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	210	104	313	216	72	81	423	274	109	625	71
Future Volume (vph)	90	210	104	313	216	72	81	423	274	109	625	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	387	0	348	320	0	99	516	334	127	810	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	17.0	21.0		46.0	50.0		14.0	50.0	46.0	17.0	53.0	
Total Split (%)	10.2%	12.6%		27.5%	29.9%		8.4%	29.9%	27.5%	10.2%	31.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.30	0.66		0.78	0.35		0.36	0.50	0.38	0.54	0.72	
Control Delay	25.9	49.3		37.4	33.4		39.2	33.2	13.9	56.9	35.9	
Queue Delay	0.0	0.0		0.0	0.0		2.5	0.5	0.8	0.0	0.0	
Total Delay	25.9	49.3		37.4	33.4		41.7	33.6	14.7	56.9	35.9	
Queue Length 50th (ft)	40	114		147	82		43	130	100	72	215	
Queue Length 95th (ft)	105	#282		372	181		114	255	206	#232	442	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	424	584		779	1586		304	1681	1236	239	1680	
Starvation Cap Reductn	0	0		0	0		119	697	595	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.26	0.66		0.45	0.20		0.54	0.52	0.52	0.53	0.48	

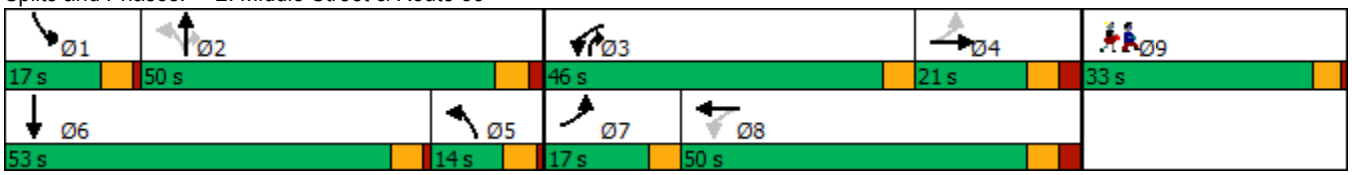
Intersection Summary	
Area Type:	Other
Cycle Length: 167	
Actuated Cycle Length: 102.9	

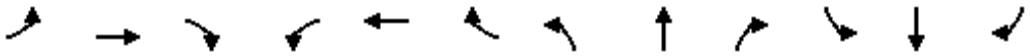
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	20%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 120
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

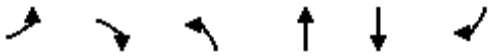
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	210	104	313	216	72	81	423	274	109	625	71
Future Volume (vph)	90	210	104	313	216	72	81	423	274	109	625	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3331		1770	3341		1719	3539	1568	1787	3319	
Flt Permitted	0.56	1.00		0.21	1.00		0.34	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1050	3331		398	3341		615	3539	1568	1787	3319	
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	111	259	128	348	240	80	99	516	334	127	727	83
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	111	387	0	348	320	0	99	516	334	127	810	0
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	25.6	14.9		40.0	25.3		29.0	28.0	49.1	12.6	33.7	
Effective Green, g (s)	25.6	17.9		40.0	28.3		30.0	30.0	53.1	13.6	34.7	
Actuated g/C Ratio	0.24	0.17		0.38	0.27		0.28	0.28	0.50	0.13	0.33	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	329	565		425	896		268	1006	789	230	1091	
v/s Ratio Prot	0.03	0.12		c0.16	0.10		0.03	c0.15	0.09	0.07	c0.24	
v/s Ratio Perm	0.05			c0.15			0.07		0.12			
v/c Ratio	0.34	0.68		0.82	0.36		0.37	0.51	0.42	0.55	0.74	
Uniform Delay, d1	32.3	41.2		26.2	31.2		32.4	31.6	16.5	43.1	31.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	3.4		11.7	0.2		0.9	0.4	0.4	2.9	2.8	
Delay (s)	32.9	44.6		37.9	31.5		33.3	32.1	16.9	45.9	34.2	
Level of Service	C	D		D	C		C	C	B	D	C	
Approach Delay (s)		42.0			34.8			26.9			35.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	105.5	Sum of lost time (s)	20.5
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

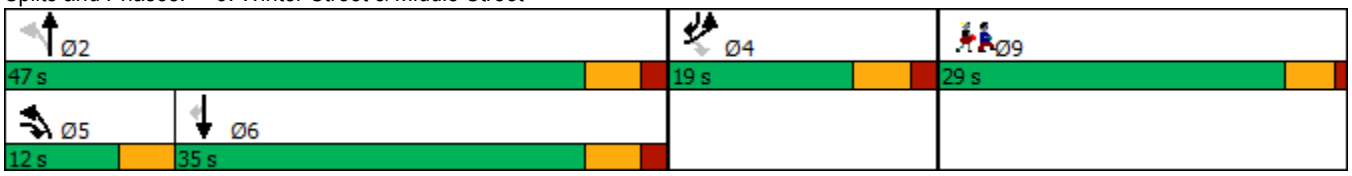


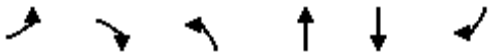
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	392	141	86	386	468	574	
Future Volume (vph)	392	141	86	386	468	574	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		No				No	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.93	0.93	0.81	0.81	0.85	0.85	
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	422	152	106	477	551	675	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	19.0	12.0	12.0	47.0	35.0	19.0	29.0
Total Split (%)	20.0%	12.6%	12.6%	49.5%	36.8%	20.0%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.44	0.18	0.24	0.25	0.51	0.65	
Control Delay	20.7	7.5	9.9	8.8	18.7	12.0	
Queue Delay	0.0	0.0	0.0	0.0	0.1	24.3	
Total Delay	20.7	7.5	9.9	8.8	18.7	36.3	
Queue Length 50th (ft)	50	18	13	34	69	82	
Queue Length 95th (ft)	154	54	54	99	160	376	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1031	872	457	2919	2059	1065	
Starvation Cap Reductn	0	0	0	0	484	405	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.41	0.17	0.23	0.16	0.35	1.02	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 55.2	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated

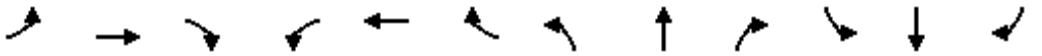
Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	392	141	86	386	468	574
Future Volume (vph)	392	141	86	386	468	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3367	1583	1787	3574	3471	1583
Flt Permitted	0.95	1.00	0.26	1.00	1.00	1.00
Satd. Flow (perm)	3367	1583	492	3574	3471	1583
Peak-hour factor, PHF	0.93	0.93	0.81	0.81	0.85	0.85
Adj. Flow (vph)	422	152	106	477	551	675
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	422	152	106	477	551	675
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	12.6	20.4	27.0	27.0	15.2	27.8
Effective Green, g (s)	15.6	26.4	27.0	29.0	17.2	31.8
Actuated g/C Ratio	0.27	0.45	0.46	0.50	0.29	0.54
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	897	714	399	1771	1020	968
v/s Ratio Prot	0.13	0.04	0.04	c0.13	0.16	c0.17
v/s Ratio Perm		0.06	0.09			0.25
v/c Ratio	0.47	0.21	0.27	0.27	0.54	0.70
Uniform Delay, d1	18.0	9.7	9.6	8.6	17.3	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.4	0.1	0.6	2.2
Delay (s)	18.4	9.9	10.0	8.7	17.9	12.0
Level of Service	B	A	A	A	B	B
Approach Delay (s)	16.1			8.9	14.7	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	454	468	53	417	3	453	27	77	18	17	14
Future Volume (vph)	46	454	468	53	417	3	453	27	77	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3546			405			148	
Travel Time (s)		6.9			80.6			9.2			3.4	
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)							38%					
Lane Group Flow (vph)	0	515	482	58	456	0	299	294	0	0	69	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.76	0.35	0.27	0.53		0.61	0.62			0.35	
Control Delay		37.8	2.9	49.5	21.6		40.9	40.0			43.7	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		37.8	2.9	49.5	21.6		40.9	40.0			43.7	
Queue Length 50th (ft)		268	25	32	175		161	151			31	
Queue Length 95th (ft)		#573	62	93	390		#417	#408			71	
Internal Link Dist (ft)		225			3466			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1051	1380	279	1230		622	595			287	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.49	0.35	0.21	0.37		0.48	0.49			0.24	

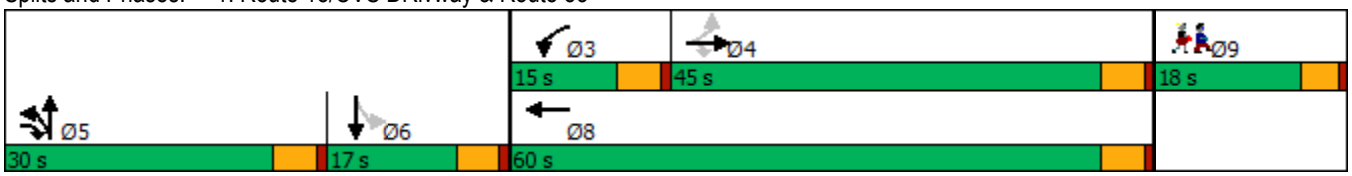
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

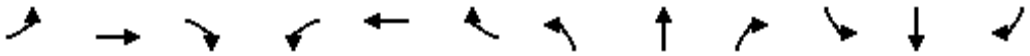
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 88.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

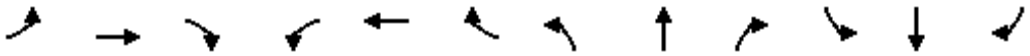




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	454	468	53	417	3	453	27	77	18	17	14
Future Volume (vph)	46	454	468	53	417	3	453	27	77	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.96			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2124	1812	1865	1879		1754	1653			2032	
Flt Permitted		0.92	1.00	0.95	1.00		0.95	0.97			0.75	
Satd. Flow (perm)		1973	1812	1865	1879		1754	1653			1560	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Adj. Flow (vph)	47	468	482	58	453	3	482	29	82	25	24	20
RTOR Reduction (vph)	0	0	142	0	0	0	0	10	0	0	12	0
Lane Group Flow (vph)	0	515	340	58	456	0	299	284	0	0	57	0
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		29.4	53.1	6.2	40.6		23.7	23.7			6.7	
Effective Green, g (s)		30.4	55.1	7.2	41.6		24.7	24.7			7.7	
Actuated g/C Ratio		0.33	0.59	0.08	0.45		0.27	0.27			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		644	1073	144	840		465	439			129	
v/s Ratio Prot			0.08	0.03	c0.24		0.17	c0.17				
v/s Ratio Perm		c0.26	0.10								c0.04	
v/c Ratio		0.80	0.32	0.40	0.54		0.64	0.65			0.44	
Uniform Delay, d1		28.5	9.5	40.9	18.8		30.2	30.3			40.6	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		6.9	0.2	1.8	0.7		3.0	3.3			2.4	
Delay (s)		35.4	9.7	42.7	19.5		33.3	33.5			43.0	
Level of Service		D	A	D	B		C	C			D	
Approach Delay (s)		23.0			22.1			33.4			43.0	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	404	147	263	286	96	158	507	412	132	513	129
Future Volume (vph)	188	404	147	263	286	96	158	507	412	132	513	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	574	0	283	411	0	182	583	474	140	683	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.45	0.66		0.72	0.39		0.60	0.65	0.47	0.59	0.72	
Control Delay	23.9	37.2		33.1	28.9		46.7	37.1	3.4	54.1	36.4	
Queue Delay	0.0	0.0		0.0	0.0		7.8	0.6	2.8	0.0	0.0	
Total Delay	23.9	37.2		33.1	28.9		54.4	37.8	6.1	54.1	36.4	
Queue Length 50th (ft)	64	146		98	91		90	162	0	78	184	
Queue Length 95th (ft)	182	#313		#353	200		184	270	50	#220	317	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	454	924		392	1081		304	1483	1014	247	1561	
Starvation Cap Reductn	0	0		0	0		84	527	413	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.43	0.62		0.72	0.38		0.83	0.61	0.79	0.57	0.44	

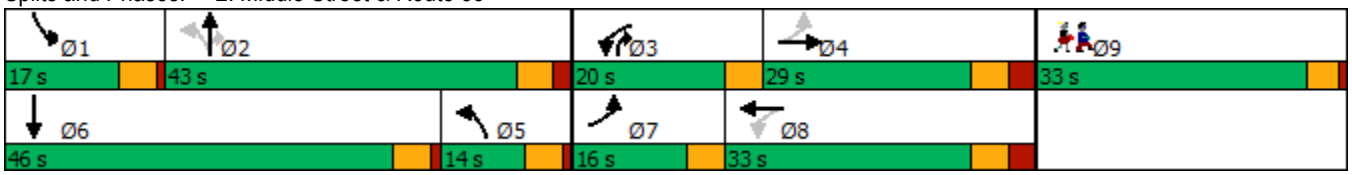
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 97.3	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

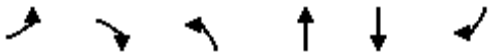
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Middle Street & Route 53



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	404	147	263	286	96	158	507	412	132	513	129
Future Volume (vph)	188	404	147	263	286	96	158	507	412	132	513	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3422		1787	3474		1787	3610	1599	1805	3501	
Flt Permitted	0.49	1.00		0.17	1.00		0.39	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	926	3422		314	3474		737	3610	1599	1805	3501	
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	196	421	153	283	308	103	182	583	474	140	546	137
RTOR Reduction (vph)	0	24	0	0	21	0	0	0	274	0	16	0
Lane Group Flow (vph)	196	550	0	283	390	0	182	583	200	140	667	0
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	32.4	21.0		41.4	26.0		23.1	22.1	38.5	11.8	25.0	
Effective Green, g (s)	32.4	24.0		41.4	29.0		24.1	24.1	42.5	12.8	26.0	
Actuated g/C Ratio	0.32	0.24		0.41	0.29		0.24	0.24	0.42	0.13	0.26	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	396	817		369	1002		290	865	676	229	905	
v/s Ratio Prot	0.06	0.16		c0.12	0.11		0.07	c0.16	0.05	0.08	c0.19	
v/s Ratio Perm	0.10			c0.19			0.08		0.07			
v/c Ratio	0.49	0.67		0.77	0.39		0.63	0.67	0.30	0.61	0.74	
Uniform Delay, d1	25.9	34.7		22.5	28.7		34.9	34.6	19.1	41.5	34.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	2.2		9.2	0.3		4.2	2.1	0.2	4.8	3.2	
Delay (s)	26.9	36.9		31.7	28.9		39.1	36.7	19.4	46.3	37.3	
Level of Service	C	D		C	C		D	D	B	D	D	
Approach Delay (s)		34.3			30.0			30.4			38.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	20.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

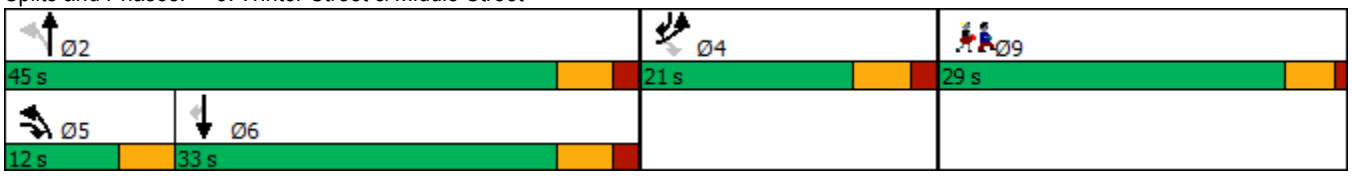


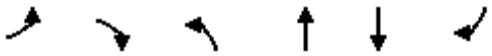
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	476	151	108	601	487	436	
Future Volume (vph)	476	151	108	601	487	436	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.84	0.84	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	567	180	115	639	518	464	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.52	0.18	0.27	0.35	0.50	0.38	
Control Delay	20.7	2.0	11.2	10.4	19.7	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.1	1.2	
Total Delay	20.7	2.0	11.2	10.4	19.8	3.1	
Queue Length 50th (ft)	69	0	16	53	68	0	
Queue Length 95th (ft)	187	16	68	161	166	41	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1164	993	439	2762	1934	1236	
Starvation Cap Reductn	0	0	0	0	477	535	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.18	0.26	0.23	0.36	0.66	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 56.5	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated

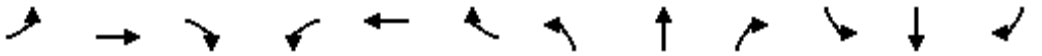
Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	476	151	108	601	487	436
Future Volume (vph)	476	151	108	601	487	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3467	1599	1770	3610	3574	1599
Flt Permitted	0.95	1.00	0.27	1.00	1.00	1.00
Satd. Flow (perm)	3467	1599	497	3610	3574	1599
Peak-hour factor, PHF	0.84	0.84	0.94	0.94	0.94	0.94
Adj. Flow (vph)	567	180	115	639	518	464
RTOR Reduction (vph)	0	94	0	0	0	208
Lane Group Flow (vph)	567	86	115	639	518	256
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	14.6	22.4	26.2	26.2	14.4	29.0
Effective Green, g (s)	17.6	28.4	26.2	28.2	16.4	33.0
Actuated g/C Ratio	0.29	0.48	0.44	0.47	0.27	0.55
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1022	760	384	1705	981	991
v/s Ratio Prot	c0.16	0.02	0.04	c0.18	c0.14	0.07
v/s Ratio Perm		0.03	0.09			0.09
v/c Ratio	0.55	0.11	0.30	0.37	0.53	0.26
Uniform Delay, d1	17.7	8.7	10.6	10.1	18.4	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.4	0.1	0.5	0.1
Delay (s)	18.4	8.7	11.1	10.2	18.9	7.1
Level of Service	B	A	B	B	B	A
Approach Delay (s)	16.1			10.4	13.3	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	408	449	95	463	2	404	27	93	19	18	11
Future Volume (vph)	51	408	449	95	463	2	404	27	93	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3546			405			148	
Travel Time (s)		6.9			80.6			9.2			3.4	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							34%					
Lane Group Flow (vph)	0	504	493	103	505	0	280	271	0	0	59	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.73	0.36	0.45	0.55		0.60	0.59			0.32	
Control Delay		36.6	2.9	53.1	21.6		41.9	39.2			44.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		36.6	2.9	53.1	21.6		41.9	39.2			44.9	
Queue Length 50th (ft)		268	26	60	198		155	137			28	
Queue Length 95th (ft)		#568	61	#162	443		#383	#350			75	
Internal Link Dist (ft)		225			3466			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1010	1388	265	1227		584	567			270	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.50	0.36	0.39	0.41		0.48	0.48			0.22	

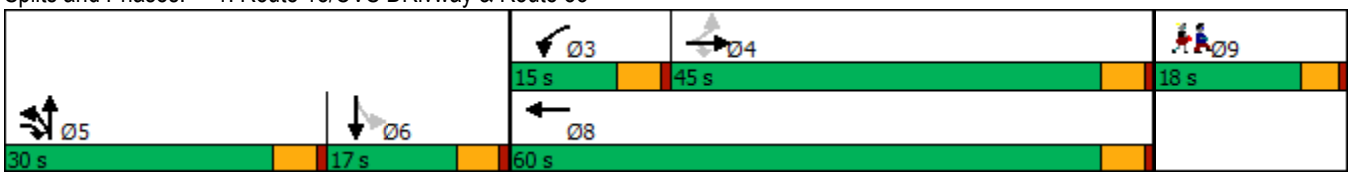
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

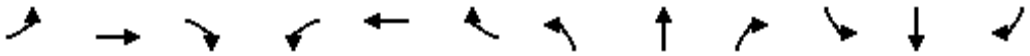
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 90.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

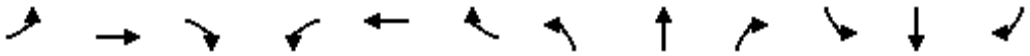




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	408	449	95	463	2	404	27	93	19	18	11
Future Volume (vph)	51	408	449	95	463	2	404	27	93	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.95			0.97	
Flt Protected		0.99	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2123	1812	1865	1899		1737	1645			2045	
Flt Permitted		0.90	1.00	0.95	1.00		0.95	0.97			0.75	
Satd. Flow (perm)		1917	1812	1865	1899		1737	1645			1564	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Adj. Flow (vph)	56	448	493	103	503	2	425	28	98	23	22	14
RTOR Reduction (vph)	0	0	147	0	0	0	0	16	0	0	9	0
Lane Group Flow (vph)	0	504	346	103	505	0	280	255	0	0	50	0
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		31.6	54.8	7.1	43.7		23.2	23.2			6.5	
Effective Green, g (s)		32.6	56.8	8.1	44.7		24.2	24.2			7.5	
Actuated g/C Ratio		0.34	0.60	0.08	0.47		0.25	0.25			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		655	1078	158	889		440	417			122	
v/s Ratio Prot			0.08	0.06	c0.27		c0.16	0.16				
v/s Ratio Perm		c0.26	0.11								c0.03	
v/c Ratio		0.77	0.32	0.65	0.57		0.64	0.61			0.41	
Uniform Delay, d1		28.0	9.7	42.3	18.4		31.7	31.5			41.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		5.4	0.2	9.3	0.8		3.0	2.7			2.2	
Delay (s)		33.5	9.8	51.6	19.2		34.7	34.1			44.1	
Level of Service		C	A	D	B		C	C			D	
Approach Delay (s)		21.8			24.7			34.4			44.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	20.5
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	377	173	308	343	98	204	504	312	118	473	156
Future Volume (vph)	181	377	173	308	343	98	204	504	312	118	473	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	199	604	0	324	464	0	213	525	325	134	715	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.48	0.68		0.84	0.44		0.73	0.57	0.34	0.58	0.72	
Control Delay	25.0	37.0		43.4	30.5		54.2	35.4	3.1	54.3	35.6	
Queue Delay	0.0	0.0		0.0	0.0		25.5	0.6	2.4	0.0	0.0	
Total Delay	25.0	37.0		43.4	30.5		79.7	36.0	5.5	54.3	35.6	
Queue Length 50th (ft)	65	152		121	107		108	143	0	74	191	
Queue Length 95th (ft)	188	#337		#446	233		#239	251	52	#202	320	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	427	925		387	1068		292	1464	946	243	1536	
Starvation Cap Reductn	0	0		0	0		76	549	484	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.47	0.65		0.84	0.43		0.99	0.57	0.70	0.55	0.47	

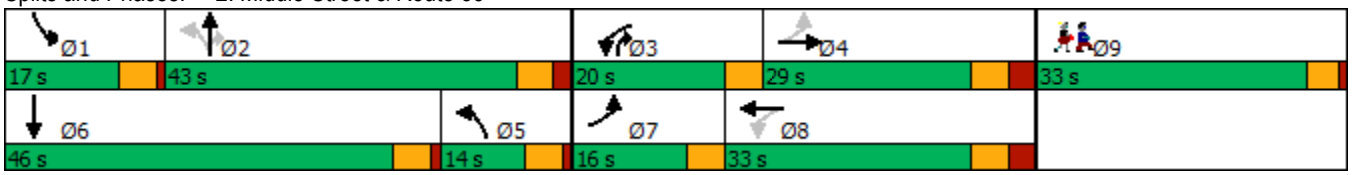
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 98.4	

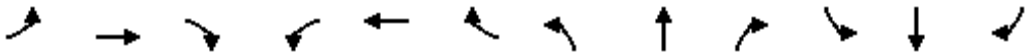
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 120
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

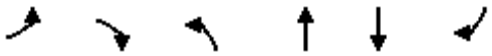
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	377	173	308	343	98	204	504	312	118	473	156
Future Volume (vph)	181	377	173	308	343	98	204	504	312	118	473	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3429		1805	3482		1787	3610	1615	1805	3476	
Flt Permitted	0.42	1.00		0.16	1.00		0.38	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	807	3429		298	3482		715	3610	1615	1805	3476	
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Adj. Flow (vph)	199	414	190	324	361	103	212	525	325	134	538	177
RTOR Reduction (vph)	0	35	0	0	16	0	0	0	187	0	23	0
Lane Group Flow (vph)	199	569	0	324	448	0	213	525	138	134	692	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	33.2	21.5		41.9	26.2		23.9	22.9	39.3	11.7	26.4	
Effective Green, g (s)	33.2	24.5		41.9	29.2		24.9	24.9	43.3	12.7	27.4	
Actuated g/C Ratio	0.33	0.24		0.41	0.29		0.24	0.24	0.43	0.12	0.27	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	378	826		365	999		282	883	687	225	936	
v/s Ratio Prot	0.06	0.17		c0.14	0.13		c0.08	0.15	0.04	0.07	c0.20	
v/s Ratio Perm	0.11			c0.22			0.11		0.05			
v/c Ratio	0.53	0.69		0.89	0.45		0.76	0.59	0.20	0.60	0.74	
Uniform Delay, d1	26.0	35.1		25.1	29.7		35.8	33.9	18.3	42.1	33.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	2.4		22.0	0.3		10.9	1.1	0.1	4.2	3.1	
Delay (s)	27.3	37.5		47.0	30.0		46.7	35.0	18.5	46.3	37.0	
Level of Service	C	D		D	C		D	D	B	D	D	
Approach Delay (s)		35.0			37.0			32.3			38.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	101.7	Sum of lost time (s)	20.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

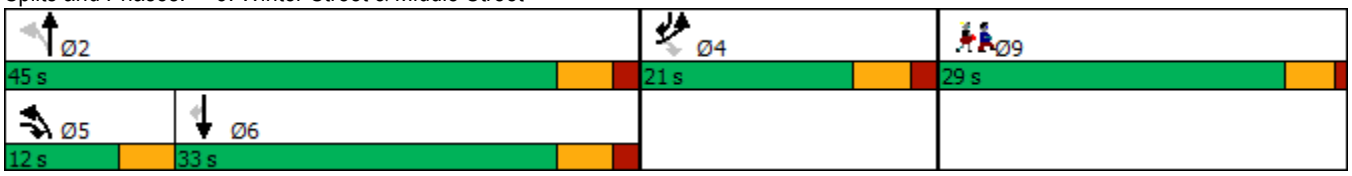


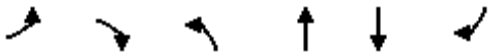
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	450	138	101	570	491	463	
Future Volume (vph)	450	138	101	570	491	463	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.86	0.86	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	464	142	104	588	571	538	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.45	0.15	0.24	0.31	0.51	0.43	
Control Delay	20.5	2.2	10.6	9.7	19.1	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.1	1.2	
Total Delay	20.5	2.2	10.6	9.7	19.2	3.1	
Queue Length 50th (ft)	55	0	14	47	75	0	
Queue Length 95th (ft)	168	19	62	146	173	34	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1182	958	443	2775	1964	1296	
Starvation Cap Reductn	0	0	0	0	519	511	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.15	0.23	0.21	0.40	0.69	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 56.7	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Winter Street & Middle Street

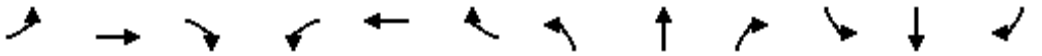




Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	450	138	101	570	491	463
Future Volume (vph)	450	138	101	570	491	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3502	1615	1787	3610	3610	1615
Flt Permitted	0.95	1.00	0.25	1.00	1.00	1.00
Satd. Flow (perm)	3502	1615	469	3610	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.86	0.86
Adj. Flow (vph)	464	142	104	588	571	538
RTOR Reduction (vph)	0	77	0	0	0	240
Lane Group Flow (vph)	464	65	104	588	571	298
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	13.5	21.3	27.5	27.5	15.7	29.2
Effective Green, g (s)	16.5	27.3	27.5	29.5	17.7	33.2
Actuated g/C Ratio	0.28	0.46	0.46	0.49	0.30	0.55
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	964	736	386	1777	1066	1002
v/s Ratio Prot	c0.13	0.02	0.03	c0.16	c0.16	0.08
v/s Ratio Perm		0.02	0.09			0.11
v/c Ratio	0.48	0.09	0.27	0.33	0.54	0.30
Uniform Delay, d1	18.1	9.2	10.0	9.2	17.7	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.4	0.1	0.5	0.2
Delay (s)	18.5	9.3	10.4	9.3	18.2	7.3
Level of Service	B	A	B	A	B	A
Approach Delay (s)	16.3			9.5	12.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2028 No-Build Conditions Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	302	384	23	289	3	367	19	43	10	6	2
Future Volume (vph)	6	302	384	23	289	3	367	19	43	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3563			405			148	
Travel Time (s)		6.9			81.0			9.2			3.4	
Peak Hour Factor	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	0	346	431	28	361	0	238	233	0	0	24	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.49	0.28	0.10	0.48		0.41	0.41			0.08	
Control Delay		24.6	1.3	38.5	18.6		26.2	25.6			36.2	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		24.6	1.3	38.5	18.6		26.2	25.6			36.2	
Queue Length 50th (ft)		63	0	7	68		42	40			5	
Queue Length 95th (ft)		327	25	46	253		271	261			35	
Internal Link Dist (ft)		225			3483			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1549	1545	403	1569		987	948			509	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.22	0.28	0.07	0.23		0.24	0.25			0.05	

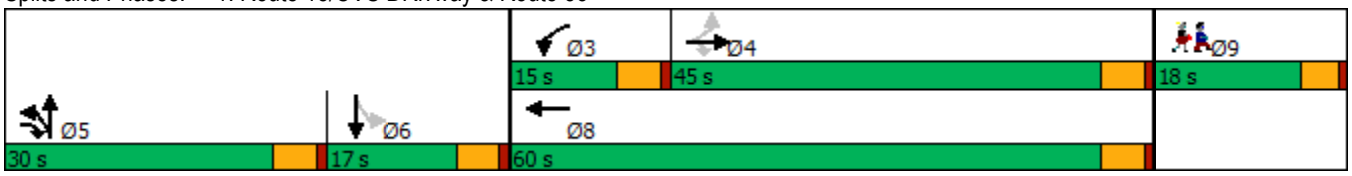
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 61.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

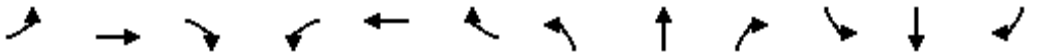
Splits and Phases: 1: Route 18/CVS DRivway & Route 53



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	302	384	23	289	3	367	19	43	10	6	2
Future Volume (vph)	6	302	384	23	289	3	367	19	43	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.97			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.97	
Satd. Flow (prot)		2090	1794	1696	1878		1754	1679			1819	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	0.97			0.96	
Satd. Flow (perm)		2073	1794	1696	1878		1754	1679			1800	
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	7	339	431	28	357	4	403	21	47	13	8	3
RTOR Reduction (vph)	0	0	178	0	1	0	0	6	0	0	3	0
Lane Group Flow (vph)	0	346	253	28	360	0	238	227	0	0	21	0
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		19.7	38.9	2.2	26.9		19.2	19.2			2.2	
Effective Green, g (s)		20.7	40.9	3.2	27.9		20.2	20.2			3.2	
Actuated g/C Ratio		0.30	0.59	0.05	0.40		0.29	0.29			0.05	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		616	1054	77	752		509	487			82	
v/s Ratio Prot			0.07	0.02	c0.19		c0.14	0.13				
v/s Ratio Perm		c0.17	0.07								c0.01	
v/c Ratio		0.56	0.24	0.36	0.48		0.47	0.47			0.26	
Uniform Delay, d1		20.6	6.9	32.2	15.5		20.3	20.3			32.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		1.2	0.1	2.9	0.5		0.7	0.7			1.7	
Delay (s)		21.8	7.0	35.1	15.9		21.0	21.0			33.7	
Level of Service		C	A	D	B		C	C			C	
Approach Delay (s)		13.6			17.3			21.0			33.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	20.5
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	228	112	373	240	77	87	463	307	117	680	76
Future Volume (vph)	96	228	112	373	240	77	87	463	307	117	680	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	419	0	414	353	0	106	565	374	136	879	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	17.0		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	17.0	21.0		46.0	50.0		14.0	50.0	46.0	17.0	53.0	
Total Split (%)	10.2%	12.6%		27.5%	29.9%		8.4%	29.9%	27.5%	10.2%	31.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.37	0.82		0.84	0.36		0.42	0.50	0.40	0.65	0.75	
Control Delay	29.0	63.1		44.6	35.1		45.5	35.1	14.3	68.1	39.3	
Queue Delay	0.0	0.0		0.0	0.0		6.4	2.7	2.2	0.0	0.0	
Total Delay	29.0	63.1		44.6	35.1		51.9	37.8	16.5	68.1	39.3	
Queue Length 50th (ft)	51	155		219	105		53	164	123	95	280	
Queue Length 95th (ft)	111	#322		469	199		122	285	242	#258	498	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	367	514		698	1396		266	1478	1151	210	1478	
Starvation Cap Reductn	0	0		0	0		114	771	621	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.32	0.82		0.59	0.25		0.70	0.80	0.71	0.65	0.59	

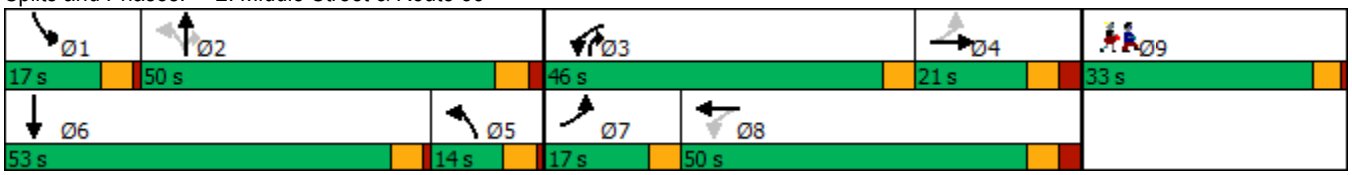
Intersection Summary	
Area Type:	Other
Cycle Length: 167	
Actuated Cycle Length: 115	

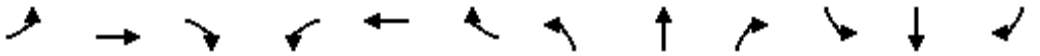
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	20%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 130
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

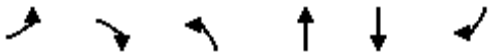
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	228	112	373	240	77	87	463	307	117	680	76
Future Volume (vph)	96	228	112	373	240	77	87	463	307	117	680	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3332		1770	3344		1719	3539	1568	1787	3323	
Flt Permitted	0.54	1.00		0.21	1.00		0.26	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1017	3332		398	3344		471	3539	1568	1787	3323	
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	119	281	138	414	267	86	106	565	374	136	791	88
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	119	419	0	414	353	0	106	565	374	136	879	0
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	25.7	14.7		45.9	30.9		35.5	34.5	61.7	12.5	39.6	
Effective Green, g (s)	25.7	17.7		45.9	33.9		36.5	36.5	61.7	13.5	40.6	
Actuated g/C Ratio	0.22	0.15		0.39	0.29		0.31	0.31	0.52	0.11	0.34	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	293	499		471	960		245	1094	819	204	1143	
v/s Ratio Prot	0.04	0.13		c0.20	0.11		0.03	c0.16	0.11	0.08	c0.26	
v/s Ratio Perm	0.05			c0.14			0.10		0.13			
v/c Ratio	0.41	0.84		0.88	0.37		0.43	0.52	0.46	0.67	0.77	
Uniform Delay, d1	38.7	48.8		30.4	33.5		39.0	33.5	17.6	50.1	34.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	11.8		16.8	0.2		1.2	0.4	0.4	8.0	3.2	
Delay (s)	39.6	60.6		47.2	33.7		40.2	33.9	18.0	58.1	37.7	
Level of Service	D	E		D	C		D	C	B	E	D	
Approach Delay (s)		55.9			41.0			28.9			40.4	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

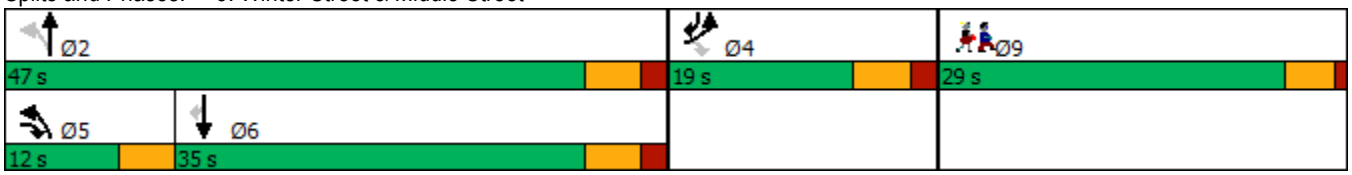


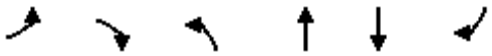
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	432	151	92	425	512	653	
Future Volume (vph)	432	151	92	425	512	653	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		No				No	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.93	0.93	0.81	0.81	0.85	0.85	
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	465	162	114	525	602	768	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	19.0	12.0	12.0	47.0	35.0	19.0	29.0
Total Split (%)	20.0%	12.6%	12.6%	49.5%	36.8%	20.0%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.47	0.19	0.27	0.28	0.54	0.73	
Control Delay	21.9	8.1	10.0	8.9	18.9	14.2	
Queue Delay	0.0	0.0	0.0	0.0	0.1	51.1	
Total Delay	21.9	8.1	10.0	8.9	19.1	65.2	
Queue Length 50th (ft)	57	20	14	38	77	104	
Queue Length 95th (ft)	#177	62	56	108	175	#532	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	984	864	431	2808	1966	1054	
Starvation Cap Reductn	0	0	0	0	522	367	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.19	0.26	0.19	0.42	1.12	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 57.5	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	432	151	92	425	512	653
Future Volume (vph)	432	151	92	425	512	653
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3367	1583	1787	3574	3471	1583
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	3367	1583	446	3574	3471	1583
Peak-hour factor, PHF	0.93	0.93	0.81	0.81	0.85	0.85
Adj. Flow (vph)	465	162	114	525	602	768
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	465	162	114	525	602	768
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	13.7	21.5	28.3	28.3	16.5	30.2
Effective Green, g (s)	16.7	27.5	28.3	30.3	18.5	34.2
Actuated g/C Ratio	0.27	0.45	0.46	0.50	0.30	0.56
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	923	714	379	1778	1054	992
v/s Ratio Prot	0.14	0.04	0.04	c0.15	0.17	c0.20
v/s Ratio Perm		0.06	0.10			0.29
v/c Ratio	0.50	0.23	0.30	0.30	0.57	0.77
Uniform Delay, d1	18.6	10.2	10.1	9.0	17.9	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2	0.4	0.1	0.8	3.8
Delay (s)	19.0	10.4	10.6	9.1	18.6	14.2
Level of Service	B	B	B	A	B	B
Approach Delay (s)	16.8			9.4	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	495	504	57	453	3	494	27	83	18	17	14
Future Volume (vph)	46	495	504	57	453	3	494	27	83	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3546			405			148	
Travel Time (s)		6.9			80.6			9.2			3.4	
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)							38%					
Lane Group Flow (vph)	0	557	520	62	495	0	326	317	0	0	69	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.78	0.38	0.30	0.56		0.66	0.67			0.37	
Control Delay		38.7	3.4	51.7	22.2		44.0	43.1			45.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		38.7	3.4	51.7	22.2		44.0	43.1			45.9	
Queue Length 50th (ft)		301	34	36	196		190	177			33	
Queue Length 95th (ft)		#651	74	98	433		#475	#455			71	
Internal Link Dist (ft)		225			3466			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1017	1384	258	1190		573	549			263	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.55	0.38	0.24	0.42		0.57	0.58			0.26	

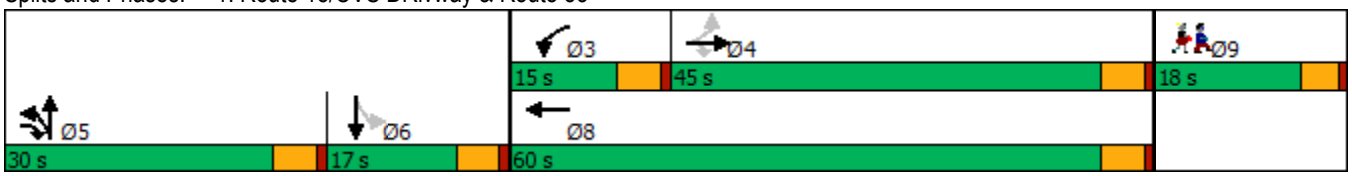
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 92.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

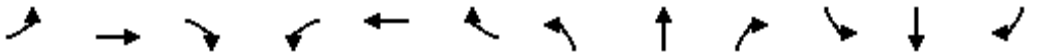
Splits and Phases: 1: Route 18/CVS DRivway & Route 53



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	495	504	57	453	3	494	27	83	18	17	14
Future Volume (vph)	46	495	504	57	453	3	494	27	83	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.96			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2125	1812	1865	1880		1754	1653			2032	
Flt Permitted		0.93	1.00	0.95	1.00		0.95	0.97			0.74	
Satd. Flow (perm)		1974	1812	1865	1880		1754	1653			1541	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Adj. Flow (vph)	47	510	520	62	492	3	526	29	88	25	24	20
RTOR Reduction (vph)	0	0	137	0	0	0	0	10	0	0	12	0
Lane Group Flow (vph)	0	557	383	62	495	0	326	307	0	0	57	0
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		32.4	57.2	6.4	43.8		24.8	24.8			6.8	
Effective Green, g (s)		33.4	59.2	7.4	44.8		25.8	25.8			7.8	
Actuated g/C Ratio		0.34	0.61	0.08	0.46		0.26	0.26			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		676	1100	141	863		464	437			123	
v/s Ratio Prot			0.09	0.03	c0.26		c0.19	0.19				
v/s Ratio Perm		c0.28	0.12								c0.04	
v/c Ratio		0.82	0.35	0.44	0.57		0.70	0.70			0.46	
Uniform Delay, d1		29.4	9.5	43.1	19.3		32.4	32.4			42.9	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		8.1	0.2	2.2	0.9		4.8	5.0			2.8	
Delay (s)		37.4	9.7	45.3	20.3		37.2	37.4			45.6	
Level of Service		D	A	D	C		D	D			D	
Approach Delay (s)		24.0			23.0			37.3			45.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	20.5
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	441	157	307	313	103	170	559	482	141	560	138
Future Volume (vph)	201	441	157	307	313	103	170	559	482	141	560	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	623	0	330	448	0	195	643	554	150	743	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.51	0.70		0.89	0.43		0.65	0.68	0.54	0.64	0.74	
Control Delay	26.7	39.6		51.9	30.9		49.1	37.8	4.2	58.0	37.2	
Queue Delay	0.0	0.0		0.0	0.0		24.0	1.9	4.0	0.0	0.0	
Total Delay	26.7	39.6		51.9	30.9		73.1	39.7	8.2	58.0	37.2	
Queue Length 50th (ft)	73	170		136	106		97	183	7	87	208	
Queue Length 95th (ft)	202	#376		#472	226		194	298	63	#249	348	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	418	884		370	1045		302	1415	1027	236	1491	
Starvation Cap Reductn	0	0		0	0		100	584	379	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.50	0.70		0.89	0.43		0.97	0.77	0.85	0.64	0.50	

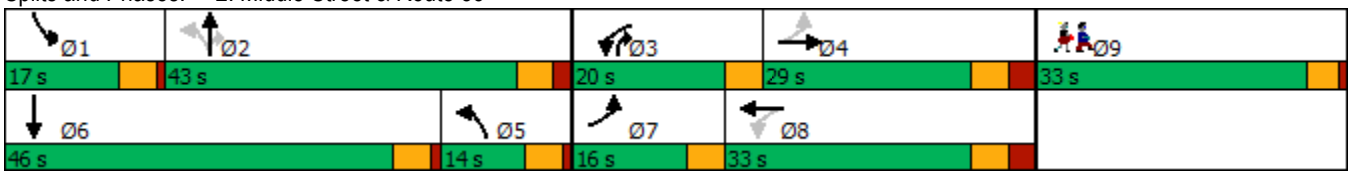
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 101.4	

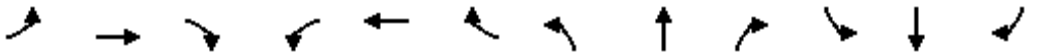
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 120
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

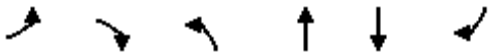
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	441	157	307	313	103	170	559	482	141	560	138
Future Volume (vph)	201	441	157	307	313	103	170	559	482	141	560	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3424		1787	3476		1787	3610	1599	1805	3503	
Flt Permitted	0.43	1.00		0.15	1.00		0.37	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	808	3424		285	3476		693	3610	1599	1805	3503	
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	209	459	164	330	337	111	195	643	554	150	596	147
RTOR Reduction (vph)	0	23	0	0	20	0	0	0	325	0	16	0
Lane Group Flow (vph)	209	600	0	330	428	0	195	643	229	150	727	0
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	34.3	22.4		42.7	26.8		25.6	24.6	40.9	12.1	27.5	
Effective Green, g (s)	34.3	25.4		42.7	29.8		26.6	26.6	40.9	13.1	28.5	
Actuated g/C Ratio	0.33	0.24		0.41	0.28		0.25	0.25	0.39	0.13	0.27	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	375	830		350	989		293	917	624	225	953	
v/s Ratio Prot	0.06	0.18		c0.15	0.12		0.07	c0.18	0.06	0.08	c0.21	
v/s Ratio Perm	0.12			c0.24			0.10		0.09			
v/c Ratio	0.56	0.72		0.94	0.43		0.67	0.70	0.37	0.67	0.76	
Uniform Delay, d1	26.9	36.4		27.5	30.6		35.8	35.4	22.7	43.7	35.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.8	3.1		33.4	0.3		5.6	2.4	0.4	7.3	3.7	
Delay (s)	28.7	39.5		60.9	30.9		41.5	37.9	23.1	51.0	38.7	
Level of Service	C	D		E	C		D	D	C	D	D	
Approach Delay (s)		36.8			43.6			32.5			40.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	20.5
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

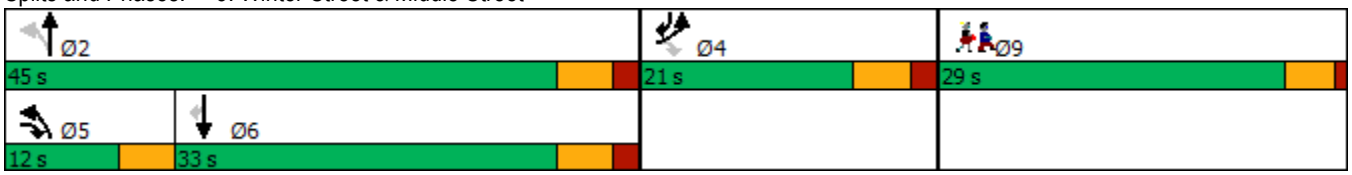


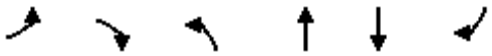
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	550	162	116	661	532	492	
Future Volume (vph)	550	162	116	661	532	492	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.84	0.84	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	655	193	123	703	566	523	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.59	0.20	0.31	0.39	0.53	0.42	
Control Delay	22.9	2.0	11.4	10.7	19.9	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.2	1.5	
Total Delay	22.9	2.0	11.4	10.7	20.1	3.4	
Queue Length 50th (ft)	84	0	17	61	76	0	
Queue Length 95th (ft)	#244	18	71	178	181	42	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1108	989	415	2629	1841	1246	
Starvation Cap Reductn	0	0	0	0	509	513	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.20	0.30	0.27	0.42	0.71	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 58.8	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

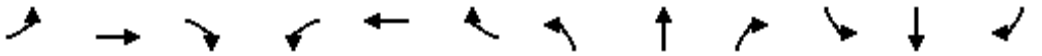
Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	550	162	116	661	532	492
Future Volume (vph)	550	162	116	661	532	492
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3467	1599	1770	3610	3574	1599
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	3467	1599	452	3610	3574	1599
Peak-hour factor, PHF	0.84	0.84	0.94	0.94	0.94	0.94
Adj. Flow (vph)	655	193	123	703	566	523
RTOR Reduction (vph)	0	101	0	0	0	225
Lane Group Flow (vph)	655	92	123	703	566	298
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	15.7	23.5	27.5	27.5	15.7	31.4
Effective Green, g (s)	18.7	29.5	27.5	29.5	17.7	35.4
Actuated g/C Ratio	0.30	0.47	0.44	0.47	0.28	0.57
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1042	758	365	1712	1017	1012
v/s Ratio Prot	c0.19	0.02	0.04	c0.19	c0.16	0.08
v/s Ratio Perm		0.04	0.11			0.10
v/c Ratio	0.63	0.12	0.34	0.41	0.56	0.29
Uniform Delay, d1	18.8	9.1	11.1	10.7	18.9	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	0.6	0.2	0.7	0.2
Delay (s)	20.0	9.2	11.7	10.8	19.6	7.1
Level of Service	B	A	B	B	B	A
Approach Delay (s)	17.5			11.0	13.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	444	483	102	503	2	442	27	100	19	18	11
Future Volume (vph)	51	444	483	102	503	2	442	27	100	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			3546			405			148	
Travel Time (s)		6.9			80.6			9.2			3.4	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							34%					
Lane Group Flow (vph)	0	544	531	111	549	0	307	291	0	0	59	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.73	0.40	0.56	0.54		0.73	0.70			0.38	
Control Delay		36.5	3.3	60.2	21.1		49.5	45.6			49.2	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		36.5	3.3	60.2	21.1		49.5	45.6			49.2	
Queue Length 50th (ft)		298	34	71	223		194	170			31	
Queue Length 95th (ft)		#641	73	#179	493		#437	#391			75	
Internal Link Dist (ft)		225			3466			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		807	1363	210	1092		464	455			215	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.67	0.39	0.53	0.50		0.66	0.64			0.27	

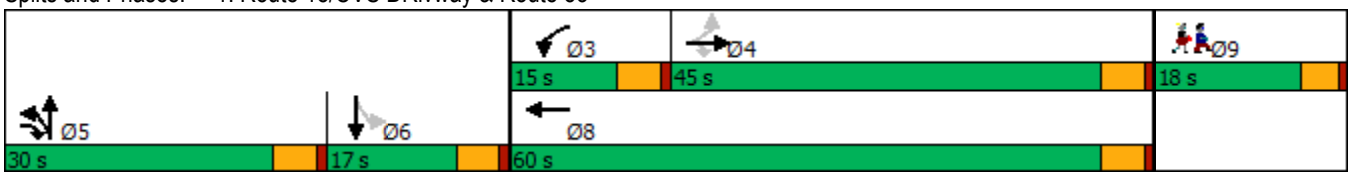
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

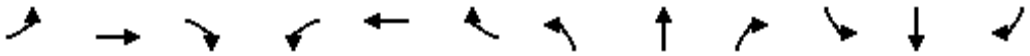
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 101.6
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

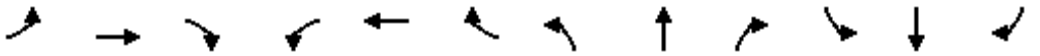




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	444	483	102	503	2	442	27	100	19	18	11
Future Volume (vph)	51	444	483	102	503	2	442	27	100	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.95			0.97	
Flt Protected		0.99	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2123	1812	1865	1899		1737	1644			2045	
Flt Permitted		0.90	1.00	0.95	1.00		0.95	0.97			0.74	
Satd. Flow (perm)		1917	1812	1865	1899		1737	1644			1546	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Adj. Flow (vph)	56	488	531	111	547	2	465	28	105	23	22	14
RTOR Reduction (vph)	0	0	144	0	0	0	0	16	0	0	9	0
Lane Group Flow (vph)	0	544	387	111	549	0	307	275	0	0	50	0
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		38.6	62.3	9.7	53.3		23.7	23.7			6.9	
Effective Green, g (s)		39.6	64.3	10.7	54.3		24.7	24.7			7.9	
Actuated g/C Ratio		0.37	0.61	0.10	0.51		0.23	0.23			0.07	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		714	1097	187	970		403	382			115	
v/s Ratio Prot			0.08	0.06	c0.29		c0.18	0.17				
v/s Ratio Perm		c0.28	0.13								c0.03	
v/c Ratio		0.76	0.35	0.59	0.57		0.76	0.72			0.43	
Uniform Delay, d1		29.2	10.5	45.7	17.8		38.0	37.6			47.0	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.8	0.2	5.0	0.8		8.3	6.4			2.6	
Delay (s)		34.0	10.7	50.7	18.6		46.3	43.9			49.6	
Level of Service		C	B	D	B		D	D			D	
Approach Delay (s)		22.5			24.0			45.1			49.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	20.5
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	411	185	364	375	105	220	556	366	126	517	167
Future Volume (vph)	194	411	185	364	375	105	220	556	366	126	517	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	655	0	383	506	0	229	579	381	143	778	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.55	0.73		1.02	0.49		0.81	0.61	0.39	0.62	0.75	
Control Delay	28.0	39.8		80.3	32.5		62.9	35.9	3.0	57.5	36.6	
Queue Delay	0.0	0.0		0.0	0.0		55.5	1.4	3.0	0.0	0.0	
Total Delay	28.0	39.8		80.3	32.5		118.4	37.3	6.0	57.5	36.6	
Queue Length 50th (ft)	76	178		176	125		117	161	0	83	213	
Queue Length 95th (ft)	#215	#398		#575	261		#289	278	55	#225	354	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	390	896		374	1032		281	1416	981	236	1486	
Starvation Cap Reductn	0	0		0	0		72	604	481	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.55	0.73		1.02	0.49		1.10	0.71	0.76	0.61	0.52	

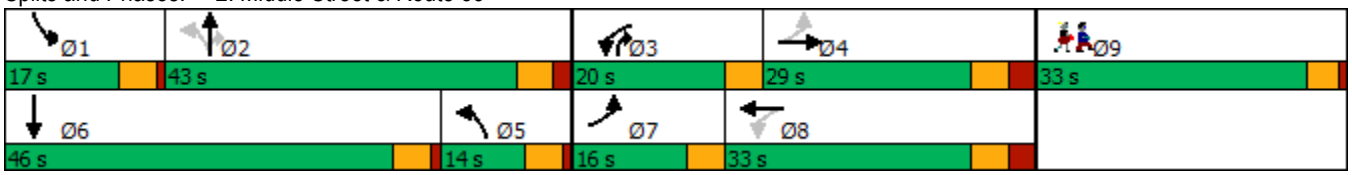
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 101.4	

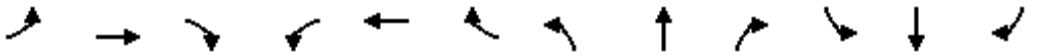
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 150
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

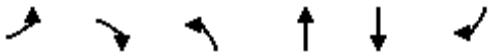
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	411	185	364	375	105	220	556	366	126	517	167
Future Volume (vph)	194	411	185	364	375	105	220	556	366	126	517	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3432		1805	3484		1787	3610	1615	1805	3478	
Flt Permitted	0.36	1.00		0.15	1.00		0.33	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	689	3432		288	3484		622	3610	1615	1805	3478	
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Adj. Flow (vph)	213	452	203	383	395	111	229	579	381	143	588	190
RTOR Reduction (vph)	0	33	0	0	17	0	0	0	217	0	22	0
Lane Group Flow (vph)	213	622	0	383	489	0	229	579	164	143	756	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	34.6	22.4		42.7	26.5		25.9	24.9	41.2	11.9	28.6	
Effective Green, g (s)	34.6	25.4		42.7	29.5		26.9	26.9	45.2	12.9	29.6	
Actuated g/C Ratio	0.33	0.24		0.41	0.28		0.26	0.26	0.43	0.12	0.28	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	357	831		353	980		273	926	696	222	982	
v/s Ratio Prot	0.07	0.18		c0.17	0.14		c0.08	0.16	0.04	0.08	c0.22	
v/s Ratio Perm	0.13			c0.27			c0.13		0.06			
v/c Ratio	0.60	0.75		1.08	0.50		0.84	0.63	0.24	0.64	0.77	
Uniform Delay, d1	26.8	36.7		29.0	31.5		37.5	34.5	18.9	43.8	34.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	3.7		72.6	0.4		19.7	1.3	0.2	6.3	3.7	
Delay (s)	29.5	40.5		101.6	31.9		57.2	35.8	19.0	50.0	38.2	
Level of Service	C	D		F	C		E	D	B	D	D	
Approach Delay (s)		37.8			61.9			34.5			40.0	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

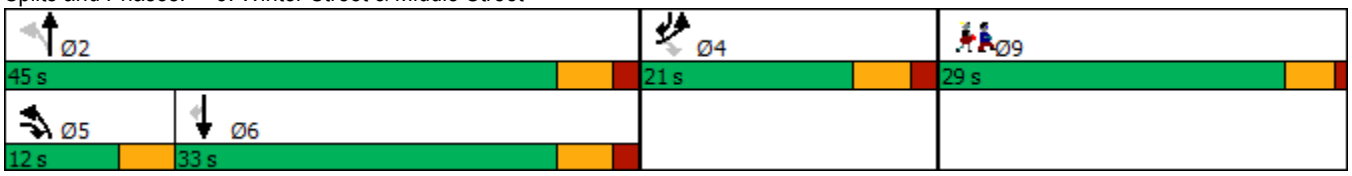


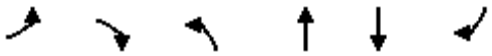
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	514	148	108	628	536	530	
Future Volume (vph)	514	148	108	628	536	530	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.86	0.86	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	530	153	111	647	623	616	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.50	0.16	0.28	0.34	0.55	0.48	
Control Delay	21.7	2.2	10.9	10.0	19.6	2.1	
Queue Delay	0.0	0.0	0.0	0.0	0.2	1.5	
Total Delay	21.7	2.2	10.9	10.0	19.8	3.6	
Queue Length 50th (ft)	67	0	16	54	85	0	
Queue Length 95th (ft)	200	21	65	162	188	34	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1127	959	413	2648	1873	1307	
Starvation Cap Reductn	0	0	0	0	555	482	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.16	0.27	0.24	0.47	0.75	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 59	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Winter Street & Middle Street

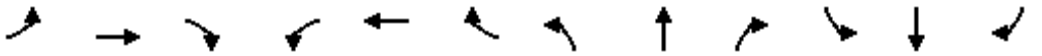




Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	514	148	108	628	536	530
Future Volume (vph)	514	148	108	628	536	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3502	1615	1787	3610	3610	1615
Flt Permitted	0.95	1.00	0.22	1.00	1.00	1.00
Satd. Flow (perm)	3502	1615	419	3610	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.86	0.86
Adj. Flow (vph)	530	153	111	647	623	616
RTOR Reduction (vph)	0	83	0	0	0	264
Lane Group Flow (vph)	530	70	111	647	623	352
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	14.7	22.5	28.6	28.6	16.8	31.5
Effective Green, g (s)	17.7	28.5	28.6	30.6	18.8	35.5
Actuated g/C Ratio	0.28	0.46	0.46	0.49	0.30	0.57
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	996	739	364	1775	1091	1025
v/s Ratio Prot	c0.15	0.02	0.04	c0.18	c0.17	0.09
v/s Ratio Perm		0.03	0.10			0.13
v/c Ratio	0.53	0.09	0.30	0.36	0.57	0.34
Uniform Delay, d1	18.8	9.5	10.6	9.8	18.3	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1	0.5	0.1	0.7	0.2
Delay (s)	19.3	9.6	11.0	9.9	19.0	7.3
Level of Service	B	A	B	A	B	A
Approach Delay (s)	17.1			10.1	13.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2028 Build Conditions Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	304	384	23	294	3	367	19	43	10	6	2
Future Volume (vph)	6	304	384	23	294	3	367	19	43	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			2410			405			148	
Travel Time (s)		6.9			54.8			9.2			3.4	
Peak Hour Factor	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	0	349	431	28	367	0	238	233	0	0	24	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.49	0.28	0.10	0.49		0.41	0.41			0.08	
Control Delay		24.6	1.3	38.6	18.6		26.3	25.7			36.3	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		24.6	1.3	38.6	18.6		26.3	25.7			36.3	
Queue Length 50th (ft)		64	0	7	69		42	40			5	
Queue Length 95th (ft)		330	25	46	258		272	261			36	
Internal Link Dist (ft)		225			2330			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1547	1544	401	1567		982	944			506	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.23	0.28	0.07	0.23		0.24	0.25			0.05	

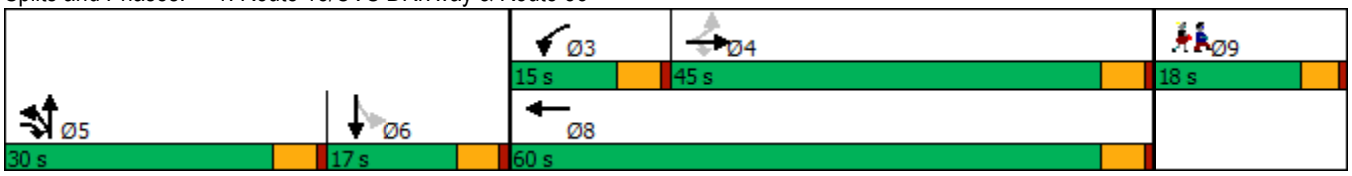
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

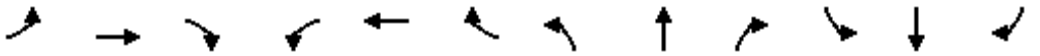
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 61.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

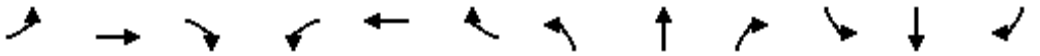




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	304	384	23	294	3	367	19	43	10	6	2
Future Volume (vph)	6	304	384	23	294	3	367	19	43	10	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.97			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.97	
Satd. Flow (prot)		2090	1794	1696	1878		1754	1679			1819	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	0.97			0.96	
Satd. Flow (perm)		2073	1794	1696	1878		1754	1679			1800	
Peak-hour factor, PHF	0.89	0.89	0.89	0.81	0.81	0.81	0.91	0.91	0.91	0.75	0.75	0.75
Adj. Flow (vph)	7	342	431	28	363	4	403	21	47	13	8	3
RTOR Reduction (vph)	0	0	177	0	1	0	0	6	0	0	3	0
Lane Group Flow (vph)	0	349	254	28	366	0	238	227	0	0	21	0
Heavy Vehicles (%)	0%	3%	2%	10%	1%	0%	1%	0%	0%	13%	0%	50%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		19.9	39.1	2.2	27.1		19.2	19.2			2.2	
Effective Green, g (s)		20.9	41.1	3.2	28.1		20.2	20.2			3.2	
Actuated g/C Ratio		0.30	0.59	0.05	0.40		0.29	0.29			0.05	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		620	1056	77	756		507	485			82	
v/s Ratio Prot			0.07	0.02	c0.20		c0.14	0.13				
v/s Ratio Perm		c0.17	0.07								c0.01	
v/c Ratio		0.56	0.24	0.36	0.48		0.47	0.47			0.26	
Uniform Delay, d1		20.6	6.9	32.3	15.5		20.4	20.4			32.2	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		1.2	0.1	2.9	0.5		0.7	0.7			1.7	
Delay (s)		21.8	7.0	35.2	16.0		21.1	21.1			33.8	
Level of Service		C	A	D	B		C	C			C	
Approach Delay (s)		13.6			17.3			21.1			33.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	20.5
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	235	138	373	243	77	96	463	307	117	680	78
Future Volume (vph)	100	235	138	373	243	77	96	463	307	117	680	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	460	0	414	356	0	117	565	374	136	882	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	17.0		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	17.0	21.0		46.0	50.0		14.0	50.0	46.0	17.0	53.0	
Total Split (%)	10.2%	12.6%		27.5%	29.9%		8.4%	29.9%	27.5%	10.2%	31.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.38	0.91		0.84	0.36		0.46	0.50	0.40	0.65	0.75	
Control Delay	29.4	73.6		45.1	35.5		47.1	34.9	14.2	69.0	39.5	
Queue Delay	0.0	0.0		0.0	0.0		9.1	3.3	2.2	0.0	0.0	
Total Delay	29.4	73.6		45.1	35.5		56.2	38.2	16.4	69.0	39.5	
Queue Length 50th (ft)	53	174		221	107		59	165	123	95	282	
Queue Length 95th (ft)	115	#367		469	201		133	285	242	#258	501	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	363	504		691	1381		264	1461	1151	208	1460	
Starvation Cap Reductn	0	0		0	0		112	775	623	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.34	0.91		0.60	0.26		0.77	0.82	0.71	0.65	0.60	

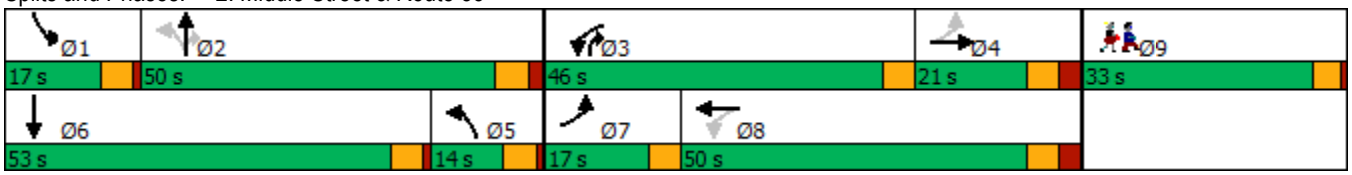
Intersection Summary	
Area Type:	Other
Cycle Length: 167	
Actuated Cycle Length: 116	

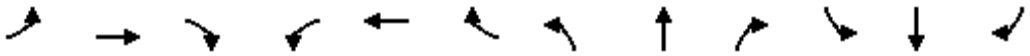
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	20%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 140
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

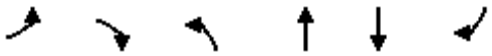
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	235	138	373	243	77	96	463	307	117	680	78
Future Volume (vph)	100	235	138	373	243	77	96	463	307	117	680	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3307		1770	3345		1719	3539	1568	1787	3318	
Flt Permitted	0.54	1.00		0.22	1.00		0.26	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1014	3307		401	3345		464	3539	1568	1787	3318	
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.82	0.82	0.82	0.86	0.86	0.86
Adj. Flow (vph)	123	290	170	414	270	86	117	565	374	136	791	91
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	123	460	0	414	356	0	117	565	374	136	882	0
Heavy Vehicles (%)	1%	2%	5%	2%	4%	4%	5%	2%	3%	1%	3%	43%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	25.7	14.6		46.0	30.9		36.3	35.3	62.7	12.5	40.0	
Effective Green, g (s)	25.7	17.6		46.0	33.9		37.3	37.3	62.7	13.5	41.0	
Actuated g/C Ratio	0.22	0.15		0.39	0.28		0.31	0.31	0.53	0.11	0.34	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	291	489		470	952		248	1109	826	202	1143	
v/s Ratio Prot	0.04	c0.14		c0.20	0.11		0.04	c0.16	0.10	0.08	c0.27	
v/s Ratio Perm	0.05			0.14			0.11		0.13			
v/c Ratio	0.42	0.94		0.88	0.37		0.47	0.51	0.45	0.67	0.77	
Uniform Delay, d1	39.3	50.2		30.9	34.1		40.2	33.4	17.5	50.6	34.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	26.5		17.3	0.2		1.4	0.4	0.4	8.5	3.3	
Delay (s)	40.3	76.7		48.2	34.3		41.6	33.7	17.9	59.2	38.1	
Level of Service	D	E		D	C		D	C	B	E	D	
Approach Delay (s)		69.0			41.8			29.0			40.9	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

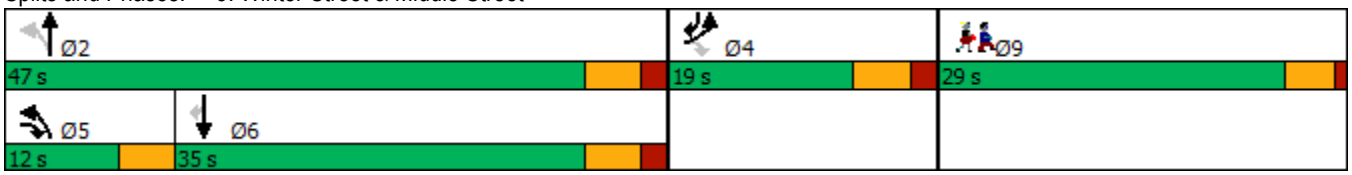


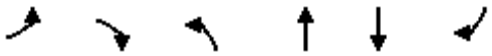
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	439	151	92	427	518	673	
Future Volume (vph)	439	151	92	427	518	673	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		No				No	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.93	0.93	0.81	0.81	0.85	0.85	
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	472	162	114	527	609	792	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	19.0	12.0	12.0	47.0	35.0	19.0	29.0
Total Split (%)	20.0%	12.6%	12.6%	49.5%	36.8%	20.0%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.48	0.19	0.28	0.28	0.55	0.75	
Control Delay	22.2	8.2	10.0	8.9	18.9	15.0	
Queue Delay	0.0	0.0	0.0	0.0	0.2	50.8	
Total Delay	22.2	8.2	10.0	8.9	19.1	65.8	
Queue Length 50th (ft)	58	20	14	38	78	111	
Queue Length 95th (ft)	#183	63	56	108	176	#559	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	981	862	428	2801	1961	1055	
Starvation Cap Reductn	0	0	0	0	529	356	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.48	0.19	0.27	0.19	0.43	1.13	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 57.7	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	439	151	92	427	518	673
Future Volume (vph)	439	151	92	427	518	673
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3367	1583	1787	3574	3471	1583
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	3367	1583	439	3574	3471	1583
Peak-hour factor, PHF	0.93	0.93	0.81	0.81	0.85	0.85
Adj. Flow (vph)	472	162	114	527	609	792
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	472	162	114	527	609	792
Heavy Vehicles (%)	4%	2%	1%	1%	4%	2%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	13.7	21.5	28.4	28.4	16.6	30.3
Effective Green, g (s)	16.7	27.5	28.4	30.4	18.6	34.3
Actuated g/C Ratio	0.27	0.45	0.47	0.50	0.30	0.56
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	921	713	376	1781	1058	993
v/s Ratio Prot	0.14	0.04	0.04	c0.15	0.18	c0.21
v/s Ratio Perm		0.06	0.10			0.30
v/c Ratio	0.51	0.23	0.30	0.30	0.58	0.80
Uniform Delay, d1	18.7	10.2	10.1	9.0	17.9	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	0.5	0.1	0.8	4.5
Delay (s)	19.2	10.4	10.6	9.1	18.6	15.1
Level of Service	B	B	B	A	B	B
Approach Delay (s)	17.0			9.4	16.7	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	436	2	14	403	5	37
Future Volume (vph)	436	2	14	403	5	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	2410			1153	342	
Travel Time (s)	54.8			26.2	7.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	476	0	0	453	45	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

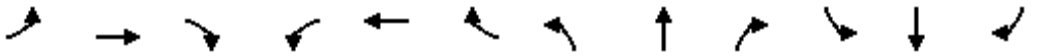
Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	436	2	14	403	5	37
Future Vol, veh/h	436	2	14	403	5	37
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	474	2	15	438	5	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	476	0	943	475
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	468	-
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	-	-	1086	-	291	590
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	630	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1086	-	286	590
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	619	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	524	-	-	1086	-
HCM Lane V/C Ratio	0.087	-	-	0.014	-
HCM Control Delay (s)	12.5	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	501	504	57	457	3	494	27	83	18	17	14
Future Volume (vph)	46	501	504	57	457	3	494	27	83	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			2191			405			148	
Travel Time (s)		6.9			49.8			9.2			3.4	
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)							38%					
Lane Group Flow (vph)	0	563	520	62	500	0	326	317	0	0	69	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.78	0.38	0.31	0.56		0.67	0.67			0.38	
Control Delay		38.7	3.4	51.9	22.2		44.3	43.3			46.0	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		38.7	3.4	51.9	22.2		44.3	43.3			46.0	
Queue Length 50th (ft)		305	35	37	199		193	180			33	
Queue Length 95th (ft)		#662	76	98	439		#475	#455			71	
Internal Link Dist (ft)		225			2111			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		1009	1384	255	1187		568	545			260	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.56	0.38	0.24	0.42		0.57	0.58			0.27	

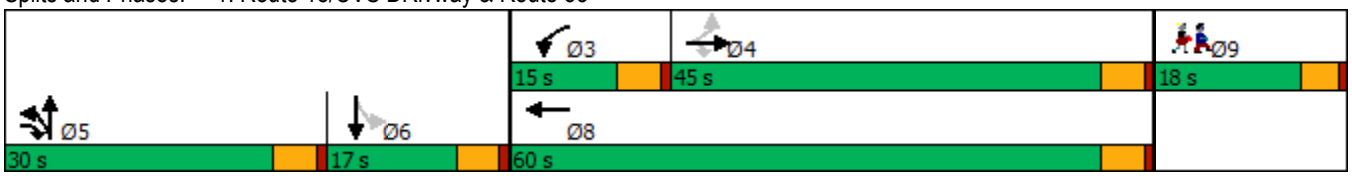
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

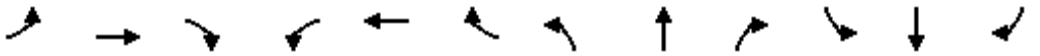
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 92.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

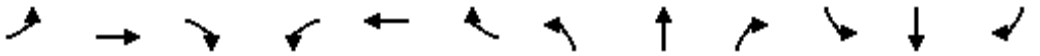




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	501	504	57	457	3	494	27	83	18	17	14
Future Volume (vph)	46	501	504	57	457	3	494	27	83	18	17	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.96			0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2125	1812	1865	1880		1754	1653			2032	
Flt Permitted		0.93	1.00	0.95	1.00		0.95	0.97			0.74	
Satd. Flow (perm)		1975	1812	1865	1880		1754	1653			1541	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.94	0.94	0.94	0.71	0.71	0.71
Adj. Flow (vph)	47	516	520	62	497	3	526	29	88	25	24	20
RTOR Reduction (vph)	0	0	134	0	0	0	0	10	0	0	12	0
Lane Group Flow (vph)	0	563	386	62	500	0	326	307	0	0	57	0
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		32.9	57.7	6.4	44.3		24.8	24.8			6.8	
Effective Green, g (s)		33.9	59.7	7.4	45.3		25.8	25.8			7.8	
Actuated g/C Ratio		0.35	0.61	0.08	0.46		0.26	0.26			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		683	1103	140	869		461	435			122	
v/s Ratio Prot			0.09	0.03	c0.27		c0.19	0.19				
v/s Ratio Perm		c0.29	0.12								c0.04	
v/c Ratio		0.82	0.35	0.44	0.58		0.71	0.71			0.47	
Uniform Delay, d1		29.3	9.5	43.3	19.3		32.7	32.7			43.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		8.0	0.2	2.2	0.9		4.9	5.1			2.8	
Delay (s)		37.3	9.7	45.6	20.2		37.6	37.8			45.9	
Level of Service		D	A	D	C		D	D			D	
Approach Delay (s)		24.1			23.0			37.7			45.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	446	175	307	320	103	196	559	482	141	560	142
Future Volume (vph)	204	446	175	307	320	103	196	559	482	141	560	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	647	0	330	455	0	225	643	554	150	747	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.52	0.73		0.89	0.44		0.75	0.68	0.54	0.64	0.74	
Control Delay	27.1	40.3		51.9	31.1		55.6	37.8	4.2	58.0	37.2	
Queue Delay	0.0	0.0		0.0	0.0		57.1	1.9	4.0	0.0	0.0	
Total Delay	27.1	40.3		51.9	31.1		112.7	39.7	8.2	58.0	37.2	
Queue Length 50th (ft)	75	177		136	108		115	183	7	87	210	
Queue Length 95th (ft)	206	#398		#472	230		#246	298	64	#249	351	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	413	884		370	1041		300	1415	1026	236	1491	
Starvation Cap Reductn	0	0		0	0		94	584	379	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.52	0.73		0.89	0.44		1.09	0.77	0.86	0.64	0.50	

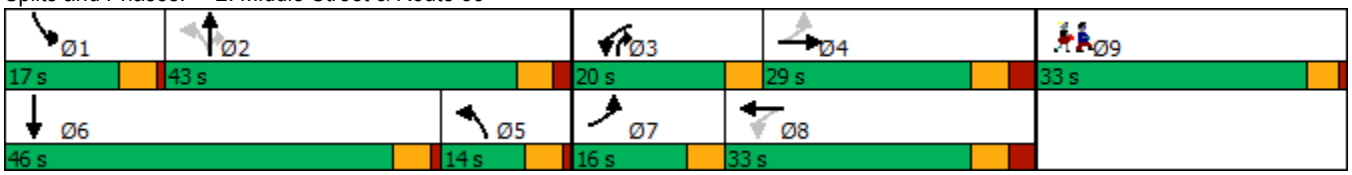
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 101.4	

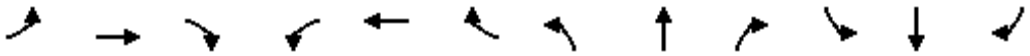
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 140
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

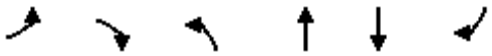
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	446	175	307	320	103	196	559	482	141	560	142
Future Volume (vph)	204	446	175	307	320	103	196	559	482	141	560	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3414		1787	3478		1787	3610	1599	1805	3501	
Flt Permitted	0.42	1.00		0.15	1.00		0.36	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	789	3414		285	3478		685	3610	1599	1805	3501	
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	212	465	182	330	344	111	225	643	554	150	596	151
RTOR Reduction (vph)	0	27	0	0	20	0	0	0	324	0	16	0
Lane Group Flow (vph)	213	620	0	330	435	0	225	643	230	150	731	0
Heavy Vehicles (%)	1%	1%	2%	1%	0%	0%	1%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	34.4	22.4		42.7	26.7		25.6	24.6	40.9	12.1	27.6	
Effective Green, g (s)	34.4	25.4		42.7	29.7		26.6	26.6	40.9	13.1	28.6	
Actuated g/C Ratio	0.33	0.24		0.41	0.28		0.25	0.25	0.39	0.13	0.27	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	373	828		350	986		290	917	624	225	956	
v/s Ratio Prot	0.07	0.18		c0.15	0.13		0.08	c0.18	0.06	0.08	c0.21	
v/s Ratio Perm	0.12			c0.24			0.11		0.09			
v/c Ratio	0.57	0.75		0.94	0.44		0.78	0.70	0.37	0.67	0.76	
Uniform Delay, d1	26.9	36.7		27.6	30.7		36.5	35.4	22.7	43.7	35.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	3.7		33.4	0.3		12.2	2.4	0.4	7.3	3.7	
Delay (s)	29.0	40.5		61.0	31.0		48.8	37.9	23.1	51.0	38.6	
Level of Service	C	D		E	C		D	D	C	D	D	
Approach Delay (s)		37.6			43.6			33.8			40.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	20.5
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

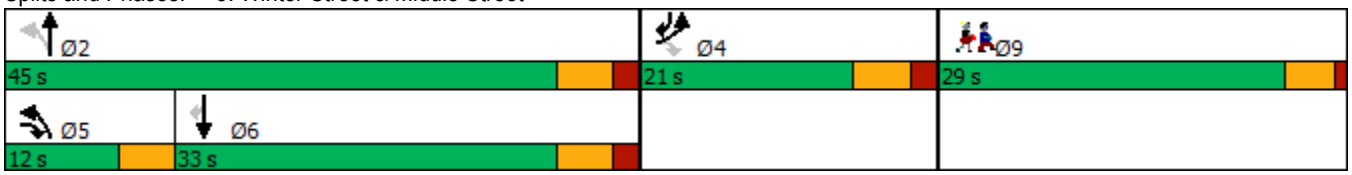


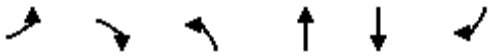
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	569	162	116	668	537	505	
Future Volume (vph)	569	162	116	668	537	505	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.84	0.84	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	677	193	123	711	571	537	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.61	0.20	0.31	0.39	0.53	0.43	
Control Delay	23.4	2.0	11.4	10.7	20.0	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.2	1.5	
Total Delay	23.4	2.0	11.4	10.7	20.1	3.5	
Queue Length 50th (ft)	88	0	17	61	77	0	
Queue Length 95th (ft)	#258	18	71	180	183	42	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1108	988	413	2628	1840	1251	
Starvation Cap Reductn	0	0	0	0	510	506	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.61	0.20	0.30	0.27	0.43	0.72	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 58.8	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	569	162	116	668	537	505
Future Volume (vph)	569	162	116	668	537	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3467	1599	1770	3610	3574	1599
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	3467	1599	448	3610	3574	1599
Peak-hour factor, PHF	0.84	0.84	0.94	0.94	0.94	0.94
Adj. Flow (vph)	677	193	123	711	571	537
RTOR Reduction (vph)	0	102	0	0	0	231
Lane Group Flow (vph)	677	91	123	711	571	306
Heavy Vehicles (%)	1%	1%	2%	0%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	15.7	23.5	27.6	27.6	15.8	31.5
Effective Green, g (s)	18.7	29.5	27.6	29.6	17.8	35.5
Actuated g/C Ratio	0.30	0.47	0.44	0.48	0.29	0.57
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1040	757	363	1715	1021	1013
v/s Ratio Prot	c0.20	0.02	0.04	c0.20	c0.16	0.09
v/s Ratio Perm		0.04	0.11			0.11
v/c Ratio	0.65	0.12	0.34	0.41	0.56	0.30
Uniform Delay, d1	19.0	9.2	11.1	10.7	18.9	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	0.6	0.2	0.7	0.2
Delay (s)	20.4	9.2	11.7	10.9	19.6	7.1
Level of Service	C	A	B	B	B	A
Approach Delay (s)	17.9			11.0	13.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	798	7	38	620	5	27
Future Volume (vph)	798	7	38	620	5	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	2191			1355	356	
Travel Time (s)	49.8			30.8	8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	875	0	0	715	34	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

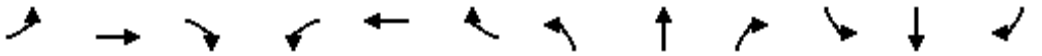
Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	798	7	38	620	5	27
Future Vol, veh/h	798	7	38	620	5	27
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	867	8	41	674	5	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	875	0	1627	871
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	756	-
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	-	-	771	-	112	350
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	771	-	102	350
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	425	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	254	-	-	771	-
HCM Lane V/C Ratio	0.137	-	-	0.054	-
HCM Control Delay (s)	21.4	-	-	9.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	449	483	102	509	2	442	27	100	19	18	11
Future Volume (vph)	51	449	483	102	509	2	442	27	100	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	16	13	12	12	13	12	12	12	16	12
Storage Length (ft)	0		125	185		0	110		0	0		0
Storage Lanes	0		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		305			2199			405			148	
Travel Time (s)		6.9			50.0			9.2			3.4	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)							34%					
Lane Group Flow (vph)	0	549	531	111	555	0	307	291	0	0	59	0
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Detector Phase	4	4	5	3	8		5	5		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)	22.5	22.5	22.5	10.0	22.5		22.5	22.5		17.0	17.0	
Total Split (s)	45.0	45.0	30.0	15.0	60.0		30.0	30.0		17.0	17.0	
Total Split (%)	36.0%	36.0%	24.0%	12.0%	48.0%		24.0%	24.0%		13.6%	13.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag	Lead	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		None	None	
v/c Ratio		0.73	0.40	0.57	0.54		0.73	0.70			0.38	
Control Delay		36.4	3.3	60.5	21.2		49.9	45.9			49.2	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		36.4	3.3	60.5	21.2		49.9	45.9			49.2	
Queue Length 50th (ft)		302	35	71	226		194	170			31	
Queue Length 95th (ft)		#652	74	#179	501		#437	#391			75	
Internal Link Dist (ft)		225			2119			325			68	
Turn Bay Length (ft)			125	185			110					
Base Capacity (vph)		800	1363	208	1082		460	451			213	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.69	0.39	0.53	0.51		0.67	0.65			0.28	

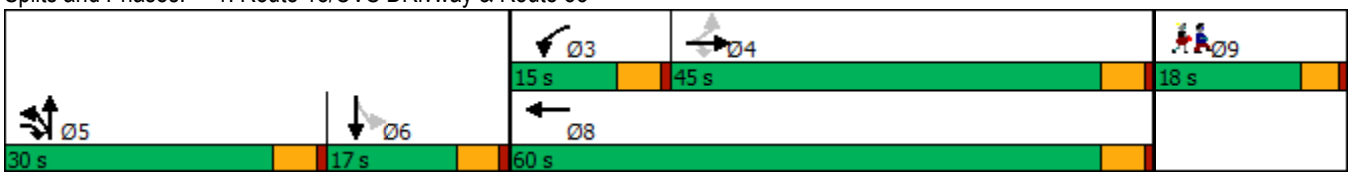
Intersection Summary	
Area Type:	Other
Cycle Length: 125	

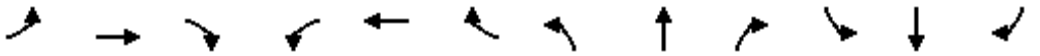
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	14%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 102.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18/CVS DRivway & Route 53

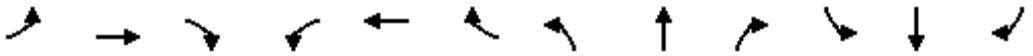




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	449	483	102	509	2	442	27	100	19	18	11
Future Volume (vph)	51	449	483	102	509	2	442	27	100	19	18	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	16	13	12	12	13	12	12	12	16	12
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.95			0.97	
Flt Protected		0.99	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2123	1812	1865	1899		1737	1644			2045	
Flt Permitted		0.90	1.00	0.95	1.00		0.95	0.97			0.74	
Satd. Flow (perm)		1917	1812	1865	1899		1737	1644			1546	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.81	0.81	0.81
Adj. Flow (vph)	56	493	531	111	553	2	465	28	105	23	22	14
RTOR Reduction (vph)	0	0	141	0	0	0	0	16	0	0	9	0
Lane Group Flow (vph)	0	549	390	111	555	0	307	275	0	0	50	0
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	pm+ov	Prot	NA		Split	NA		Perm	NA	
Protected Phases		4	5	3	8		5	5			6	
Permitted Phases	4		4							6		
Actuated Green, G (s)		39.1	62.8	9.7	53.8		23.7	23.7			6.9	
Effective Green, g (s)		40.1	64.8	10.7	54.8		24.7	24.7			7.9	
Actuated g/C Ratio		0.38	0.61	0.10	0.51		0.23	0.23			0.07	
Clearance Time (s)		5.0	5.0	5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		720	1100	187	975		402	380			114	
v/s Ratio Prot			0.08	0.06	c0.29		c0.18	0.17				
v/s Ratio Perm		c0.29	0.13								c0.03	
v/c Ratio		0.76	0.35	0.59	0.57		0.76	0.72			0.44	
Uniform Delay, d1		29.1	10.5	45.9	17.8		38.3	37.8			47.3	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		4.8	0.2	5.0	0.8		8.4	6.7			2.7	
Delay (s)		33.9	10.7	50.9	18.6		46.6	44.5			49.9	
Level of Service		C	B	D	B		D	D			D	
Approach Delay (s)		22.5			24.0			45.6			49.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	20.5
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Future Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	688	0	383	512	0	253	579	381	143	782	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	16.0	29.0		20.0	33.0		14.0	43.0	20.0	17.0	46.0	
Total Split (%)	11.3%	20.4%		14.1%	23.2%		9.9%	30.3%	14.1%	12.0%	32.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.56	0.77		1.02	0.50		0.90	0.60	0.39	0.62	0.75	
Control Delay	28.6	40.6		80.8	32.7		75.3	35.9	3.0	57.6	36.7	
Queue Delay	0.0	0.0		0.0	0.0		50.7	1.4	3.0	0.0	0.0	
Total Delay	28.6	40.6		80.8	32.7		126.0	37.3	6.0	57.6	36.7	
Queue Length 50th (ft)	78	187		176	127		131	161	0	83	214	
Queue Length 95th (ft)	#228	#424		#575	264		#348	278	55	#225	356	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	387	899		374	1030		280	1414	981	235	1485	
Starvation Cap Reductn	0	0		0	0		67	605	481	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.56	0.77		1.02	0.50		1.19	0.72	0.76	0.61	0.53	

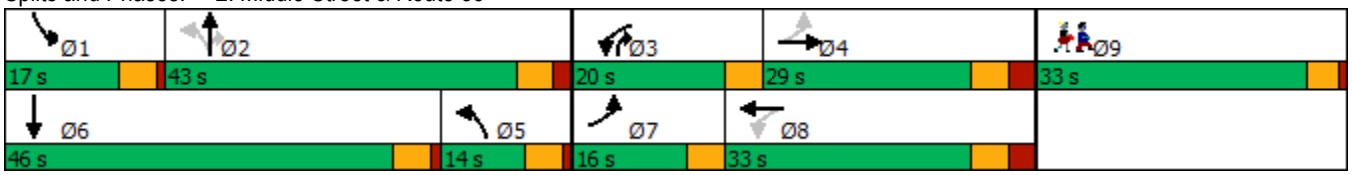
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 101.5	

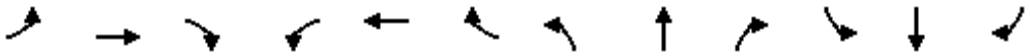
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 150
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

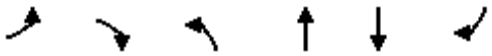
Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Future Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3418		1805	3485		1787	3610	1615	1805	3476	
Flt Permitted	0.36	1.00		0.15	1.00		0.33	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	677	3418		288	3485		613	3610	1615	1805	3476	
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Adj. Flow (vph)	218	458	230	383	401	111	253	579	381	143	588	194
RTOR Reduction (vph)	0	41	0	0	16	0	0	0	217	0	23	0
Lane Group Flow (vph)	218	647	0	383	496	0	253	579	164	143	759	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	34.6	22.4		42.7	26.5		25.9	24.9	41.2	11.9	28.6	
Effective Green, g (s)	34.6	25.4		42.7	29.5		26.9	26.9	45.2	12.9	29.6	
Actuated g/C Ratio	0.33	0.24		0.41	0.28		0.26	0.26	0.43	0.12	0.28	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	354	828		353	980		271	926	696	222	981	
v/s Ratio Prot	0.07	0.19		c0.17	0.14		c0.09	0.16	0.04	0.08	c0.22	
v/s Ratio Perm	0.13			c0.27			c0.15		0.06			
v/c Ratio	0.62	0.78		1.08	0.51		0.93	0.63	0.24	0.64	0.77	
Uniform Delay, d1	26.9	37.1		29.2	31.5		38.2	34.5	18.9	43.8	34.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.2	4.8		72.6	0.4		37.0	1.3	0.2	6.3	3.9	
Delay (s)	30.1	41.9		101.7	32.0		75.2	35.8	19.0	50.0	38.4	
Level of Service	C	D		F	C		E	D	B	D	D	
Approach Delay (s)		39.1			61.8			38.8			40.2	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	20.5
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

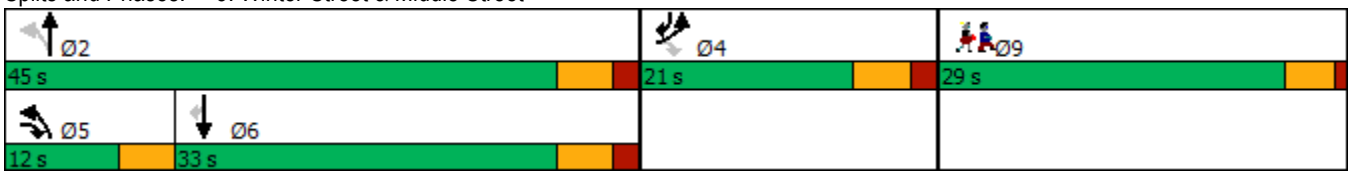


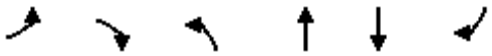
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	531	148	108	634	542	548	
Future Volume (vph)	531	148	108	634	542	548	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	120	0	65			0	
Storage Lanes	2	1	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	269			265	202		
Travel Time (s)	6.1			6.0	4.6		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.86	0.86	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	547	153	111	654	630	637	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov	
Protected Phases	4	5	5	2	6	4	9
Permitted Phases		4	2			6	
Detector Phase	4	5	5	2	6	4	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	19.0	12.0	12.0	22.5	22.5	19.0	29.0
Total Split (s)	21.0	12.0	12.0	45.0	33.0	21.0	29.0
Total Split (%)	22.1%	12.6%	12.6%	47.4%	34.7%	22.1%	31%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5
All-Red Time (s)	2.0	0.0	0.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	3.0	1.0	4.0	4.0	4.0	4.0	
Lead/Lag		Lead	Lead		Lag		
Lead-Lag Optimize?							
Recall Mode	None	None	None	Min	Min	None	None
v/c Ratio	0.51	0.16	0.28	0.35	0.55	0.49	
Control Delay	22.0	2.2	10.9	10.0	19.7	2.1	
Queue Delay	0.0	0.0	0.0	0.0	0.2	1.6	
Total Delay	22.0	2.2	10.9	10.0	19.9	3.7	
Queue Length 50th (ft)	70	0	16	55	86	0	
Queue Length 95th (ft)	#207	21	65	163	190	34	
Internal Link Dist (ft)	189			185	122		
Turn Bay Length (ft)	120		65				
Base Capacity (vph)	1121	959	409	2633	1862	1312	
Starvation Cap Reductn	0	0	0	0	556	472	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.49	0.16	0.27	0.25	0.48	0.76	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 59.2	

Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Winter Street & Middle Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	531	148	108	634	542	548
Future Volume (vph)	531	148	108	634	542	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3502	1615	1787	3610	3610	1615
Flt Permitted	0.95	1.00	0.22	1.00	1.00	1.00
Satd. Flow (perm)	3502	1615	411	3610	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.86	0.86
Adj. Flow (vph)	547	153	111	654	630	637
RTOR Reduction (vph)	0	83	0	0	0	272
Lane Group Flow (vph)	547	70	111	654	630	365
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	14.9	22.7	28.7	28.7	16.9	31.8
Effective Green, g (s)	17.9	28.7	28.7	30.7	18.9	35.8
Actuated g/C Ratio	0.29	0.46	0.46	0.49	0.30	0.57
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1002	741	360	1773	1091	1028
v/s Ratio Prot	c0.16	0.02	0.04	c0.18	c0.17	0.10
v/s Ratio Perm		0.03	0.10			0.13
v/c Ratio	0.55	0.09	0.31	0.37	0.58	0.35
Uniform Delay, d1	18.9	9.6	10.6	9.9	18.4	7.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.5	0.1	0.7	0.2
Delay (s)	19.5	9.6	11.1	10.0	19.2	7.4
Level of Service	B	A	B	B	B	A
Approach Delay (s)	17.3			10.2	13.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	789	6	34	761	7	35
Future Volume (vph)	789	6	34	761	7	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	2199			1347	468	
Travel Time (s)	50.0			30.6	10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	865	0	0	864	46	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.8

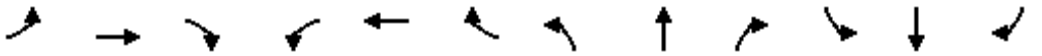
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	789	6	34	761	7	35
Future Vol, veh/h	789	6	34	761	7	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	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	858	7	37	827	8	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	865	0	1763	862
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	901	-
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	-	-	778	-	93	355
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	396	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	778	-	85	355
Mov Cap-2 Maneuver	-	-	-	-	85	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	24.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	232	-	-	778	-
HCM Lane V/C Ratio	0.197	-	-	0.048	-
HCM Control Delay (s)	24.3	-	-	9.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

2028 Build with Mitigation Conditions Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Future Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	0		0	215		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		323			291			202			372	
Travel Time (s)		7.3			6.6			4.6			8.5	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	688	0	383	512	0	253	579	381	143	782	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Detector Phase	7	4		3	8		5	2	3	1	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)	10.0	22.5		11.0	22.5		10.0	22.5	11.0	10.0	22.5	
Total Split (s)	18.0	27.0		24.0	33.0		15.0	41.0	24.0	17.0	43.0	
Total Split (%)	12.7%	19.0%		16.9%	23.2%		10.6%	28.9%	16.9%	12.0%	30.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	3.0		0.0	3.0		1.0	2.0	0.0	1.0	1.0	
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-1.0	-2.0	-2.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	Min		None	Min		None	None	None	None	None	
v/c Ratio	0.54	0.85		0.88	0.50		0.89	0.60	0.37	0.64	0.77	
Control Delay	27.5	48.7		49.2	33.9		73.9	36.6	2.8	60.3	39.1	
Queue Delay	0.0	0.0		0.0	0.0		52.1	3.7	2.9	0.0	0.0	
Total Delay	27.5	48.7		49.2	33.9		126.0	40.3	5.7	60.3	39.1	
Queue Length 50th (ft)	81	204		175	135		135	166	0	87	225	
Queue Length 95th (ft)	205	#450		#524	264		#361	284	53	#225	370	
Internal Link Dist (ft)		243			211			122			292	
Turn Bay Length (ft)	170			200						215		
Base Capacity (vph)	414	805		433	1020		284	1298	1024	228	1336	
Starvation Cap Reductn	0	0		0	0		71	613	521	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.53	0.85		0.88	0.50		1.19	0.85	0.76	0.63	0.59	

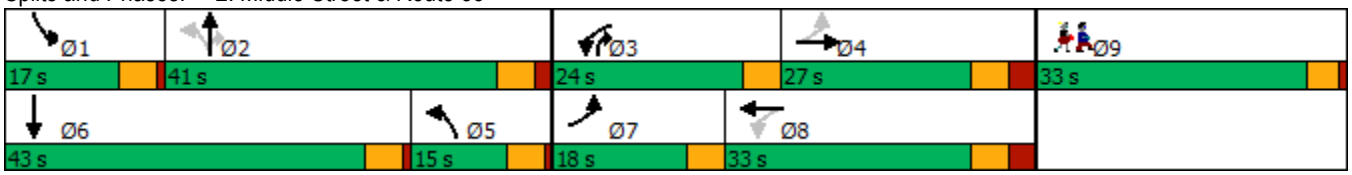
Intersection Summary	
Area Type:	Other
Cycle Length: 142	
Actuated Cycle Length: 104.5	

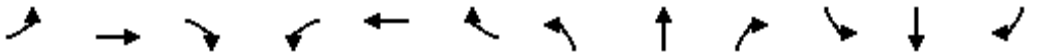
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Right Turn on Red	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Natural Cycle: 150
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Middle Street & Route 53





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Future Volume (vph)	198	417	209	364	381	105	243	556	366	126	517	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	2.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3418		1805	3485		1787	3610	1615	1805	3476	
Flt Permitted	0.40	1.00		0.16	1.00		0.31	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	754	3418		313	3485		579	3610	1615	1805	3476	
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96	0.88	0.88	0.88
Adj. Flow (vph)	218	458	230	383	401	111	253	579	381	143	588	194
RTOR Reduction (vph)	0	42	0	0	16	0	0	0	203	0	22	0
Lane Group Flow (vph)	218	646	0	383	496	0	253	579	178	143	760	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	33.8	20.3		44.6	27.1		27.1	26.1	46.4	11.9	28.8	
Effective Green, g (s)	33.8	23.3		44.6	30.1		28.1	28.1	50.4	12.9	29.8	
Actuated g/C Ratio	0.31	0.22		0.41	0.28		0.26	0.26	0.47	0.12	0.28	
Clearance Time (s)	4.0	7.0		4.0	7.0		5.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	367	737		409	971		275	939	753	215	959	
v/s Ratio Prot	0.07	0.19		c0.18	0.14		c0.10	0.16	0.05	0.08	c0.22	
v/s Ratio Perm	0.11			c0.21			c0.14		0.06			
v/c Ratio	0.59	0.88		0.94	0.51		0.92	0.62	0.24	0.67	0.79	
Uniform Delay, d1	29.0	41.0		29.3	32.8		39.5	35.2	17.3	45.5	36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	11.4		28.7	0.5		33.8	1.2	0.2	7.5	4.5	
Delay (s)	31.6	52.4		58.1	33.2		73.3	36.4	17.4	53.0	40.8	
Level of Service	C	D		E	C		E	D	B	D	D	
Approach Delay (s)		47.4			43.8			38.1			42.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			