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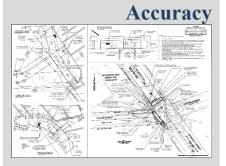
# Traffic Impact and Access Study

Retail/Bank Expansion 225 Shrewsbury Street Worcester, Massachusetts

Quality

### **Prepared for:**

Lundgren Equity Partners 163 Washington Street Auburn, MA 01501









May 31, 2024



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Civil • Structural • Transportation • Surveying

### **Traffic Impact and Access Study**

Reg:

To: Mr. Tyler Alten

Lundgren Equity Partners 163 Washington Street Auburn, MA 01501

Retail/Bank Expansion

225 Shrewsbury Street

Worcester, Massachusetts

From: Shaun Kelly, Sr. Project Manager

Patrick Bradley, Traffic Engineer

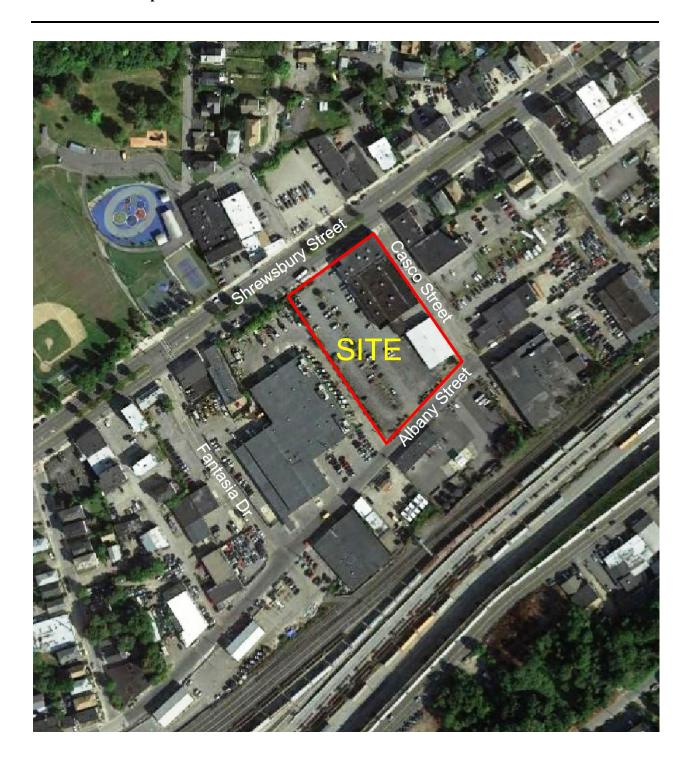
Date: May 31, 2024 Project #: 24022

#### INTRODUCTION

Chappell Engineering Associates, LLC (CEA) has conducted this Traffic Impact and Access Study for the proposed expansion of the retail and bank space located at 225 Shrewsbury Street in Worcester, Massachusetts. The site currently contains the Shrewsbury Street Marketplace and a vacant building formerly used to store ambulances and is located on the south side of Shrewsbury Street abutting Casco Street and Albany Street. Access to the site is currently provided via a right-in/right-out only driveway on Shrewsbury Street, an exit-only driveway on Casco Street, and a full access/egress driveway on Albany Street.

As proposed, the former ambulance storage building will be razed and replaced with an approximately 15,375 square foot building addition consisting of 9,500 square feet of retail space and a 5,100 square foot new DCU bank with drive-through lanes. A 775 square foot hallway is proposed between the existing DCU bank building and the proposed retail space to provide access to/from Casco Street from the parking area. The existing 5,100 square foot bank will be retrofitted with a new retail use. Parking will be shared with the Shrewsbury Street Marketplace. Access to the site will be maintained via the Shrewsbury Street driveway, which will be modified to provide larger turning radii and will continue to be a right-in/right-out only driveway. The Casco Street driveway will be relocated closer to Albany Street and will serve as an exit-only driveway for the DCU bank drive-through. The Albany Street driveway will be relocated closer to the site's western property line and will maintain full access/egress from the site. The location of the site with respect to the area roadway network is shown on Figure 1.

Figure 1 **Site Location Map** 



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The site was approved in 2022 for a residential apartment building. At the time, the former ambulance storage building was proposed to be razed and replaced with a seven-story, 218-unit apartment building with parking underneath at ground level. The existing Shrewsbury Street Marketplace was proposed to remain and share parking with the new apartment building.

This report has been prepared to assess the safety of the proposed site driveways, estimate the increase in traffic as a result of site expansion, compare that increase to the traffic previously approved for the apartment building, and evaluate the impacts of this traffic on the adjacent streets. As this report shows, ample sight distances exist at the site driveway locations to allow for safe operation, exceeding minimum requirements. It is recommended that sightlines at the driveways be kept clear of any obstructions such as landscaping or signs.

The retail expansion project will add between 26 and 116 peak hour vehicle trips (total vehicles entering and exiting the site) to the existing site traffic generation. When compared with the prior approved apartment development, the current project will actually generate less traffic during the critical weekday peak commuter hours and slightly more traffic during the Saturday peak hour. A substantial portion of retail traffic comes from the existing traffic passing by the site today (referred to as pass-by trips) and is therefore not new to the area. Without taking any credit for pass-by trips, traffic-volume increases on the surrounding streets are expected in the range of 10 to 53 additional vehicles during peak hours. These increases represent, on average, approximately one additional vehicle every one to six minutes. Smaller increases are expected during all other times of the day.

The site driveways are expected to operate at acceptable levels with vehicle queues of one vehicle. Traffic was occasionally observed making illegal movements at the Shrewsbury Street and Casco Street site driveways. It is recommended that improvements be made to increase driver awareness of the turn restrictions. The Shrewsbury Street and Casco Street intersection is expected to operate at acceptable levels of service under Build traffic conditions.

Queue studies conducted at the existing DCU Bank drive-through lanes show that maximum observed queues currently impede on-site circulation. The proposed drive-through lanes can easily accommodate the observed maximum queues and on-site circulation will be significantly improved as a result.

#### **EXISTING CONDITIONS**

#### **Study Area**

Evaluation of the traffic impacts associated with the proposed site redevelopment requires an evaluation of existing and projected traffic volumes, the volume of traffic expected to be generated by the project, and the impact that this traffic will have on the adjacent streets and nearby intersections. In preparing this study, the following intersections were analyzed and evaluated:

- Shrewsbury Street at Casco Street
- Shrewsbury Street at Oleum Court/Site driveway
- Casco Street at site driveway
- Albany Street at site driveway

As documented in this report, the development is expected to have a negligible effect on traffic operations beyond this study area. The study area roadways and intersection are described below:

**Shrewsbury Street** is under local jurisdiction and is a four-lane, urban principle arterial roadway (U3). Direction of travel is separated by a raised median. One-hour on-street parking and sidewalks are provided along both sides of the roadway and exclusive left-turn lanes are provided at major intersection locations. Shrewsbury Street provides connections between Worcester and Interstate I-290 to the southwest and Shrewsbury and Route 9 to the northeast. The posted speed limit along Shrewsbury Street is 30 miles per hour (mph) within the study area. Pavement and parking markings are generally in good condition. Land uses along Shrewsbury Street include primarily retail and commercial uses.

Casco Street is a local two-lane roadway (U7) with sidewalks on both sides of the roadway. There are no pavement markings or a posted speed limit and one-hour parking is allowed on both sides of the roadway. Casco Street provides connections between Shrewsbury Street and Albany Street and the pavement is generally in fair condition. Land use along Casco Street is exclusively commercial.

Albany Street is a local two-lane roadway (U7). There are no pavement markings or a posted speed limit and parking is allowed on both sides of the roadway. Albany Street generally parallels Shrewsbury Street and provides access to mostly commercial and industrial uses with the closest connections to Shrewsbury Street from the site via Casco Street and Fantasia Drive, which provides a signalized intersection with Shrewsbury Street.

**Oleum Court** is a local two-lane roadway with no sidewalks along either side of the road, and pavement is generally in poor condition. Oleum Court is approximately 230 feet long and provides a connection between Shrewsbury Street and Verdi Road/East Park Terrace. There are no pavement markings except for a stop line and crosswalk at its intersection with Shrewsbury Street. There is no posted speed limit. Land use along Oleum Court is predominantly commercial.

Shrewsbury Street meets Oleum Court and the Shrewsbury Street Marketplace driveway to form a four-way offset unsignalized intersection. The site driveway northbound approach is offset to the east from Oleum Court and operates as a right in/right out only driveway, with left-turns and through movements prohibited via the median break that is provided for Oleum Court. The Oleum Court southbound approach operates under STOP control and consists of a single shared use lane. The Shrewsbury Street westbound approach operates freely and consists of a through lane and a shared through/right-turn lane, while the eastbound approach consists of a dedicated left turn lane, a through lane and a shared through/right-turn lane. Turning movements are prohibited for

westbound traffic on Shrewsbury Street via the median break that serves Oleum Court. A painted crosswalk is provided across Oleum Court. On-street parking is provided along both sides of Shrewsbury Street at this intersection. Illumination is provided via overhead streetlights, which are provided on both sides of Shrewsbury Street at this intersection.

The site driveway meets Casco Street to form a three-way unsignalized intersection. The Casco Street northbound and southbound approaches consist of a through lane in each direction while the site driveway eastbound approach provides a wide exit-only approach and is primarily used by DCU bank customers who use the bank drive-through. Although there are no stop signs, this approach operates under stop control. In addition, there are no entering sign restrictions along Casco Street but there is a "DO NOT ENTER" sign posted over the driveway on the bank drive-through canopy.

The Shrewsbury Street Marketplace rear driveway meets Albany Street to form a three-way unsignalized intersection. The Albany Street eastbound and westbound approaches consist of a general-purpose lane. The site driveway southbound approach provides a single approach lane. Although there are no stop signs, the site driveway operates under stop control.

#### **Traffic Volumes**

Base traffic conditions within the study area were developed by conducting automatic traffic recorder (ATR) counts on Shrewsbury Street adjacent to the site to collect weekday daily traffic volumes and by conducting manual turning movement and vehicle classification counts (TMCs) at the study area intersections. The ATR data were collected in June 2018 while the TMC data are composed of counts performed in July 2023 as well as newer counts performed in March and April 2024. All count data are provided in the Appendix. The TMCs were performed during the weekday AM peak period (7:00 to 9:00 AM), the weekday PM peak period (4:00 to 6:00 PM), and the Saturday midday peak period (11:00 AM to 2:00 PM) to collect peak hour data during times when both the adjacent street volumes are highest, and the development generates the greatest volume of traffic. The July 2023 TMC data were collected for 12 consecutive hours at the Shrewsbury Street Marketplace driveway, encompassing both the AM and PM peak periods. The count data indicates that the weekday AM peak hour typically occurs from 7:30 to 8:30 AM, the weekday PM peak hour occurs from 4:15 to 5:15 PM, and the Saturday Midday peak hour occurs from 11:00 AM to 12:00 PM.

To determine if the count data needed to be adjusted to represent annual average month conditions consistent with state guidelines for traffic impact assessment, historical traffic volume data were obtained from Massachusetts Department of Transportation (MassDOT). The closest permanent count station to the project site is located on Interstate 290 north of the Route 9 interchange (Station No. 3333). Based on this information, traffic during the month of March is approximately one percent below annual average-month conditions while April and July were both above annual average-month conditions (three percent and two percent above, respectively). Traffic during the month of June represents the annual average-month conditions. Accordingly, the March data were

upwardly adjusted by one percent while the remaining counts were not adjusted to represent a conservative (above annual average-month) condition. The MassDOT seasonal adjustment data are provided in the Appendix.

The MassDOT *Traffic and Safety Engineering 25% Design Submission Guidelines* were updated on May 31, 2022. These new directives note that traffic volume data collected after March 1, 2022, are no longer subject to any adjustments to represent pre-pandemic traffic volume conditions, except in areas where land use is predominantly office. Therefore, since the TMC data were collected in July 2023 and in March/April 2024 and land use in the area is predominantly residential and commercial, COVID adjustments do not need to be applied to the data. The 2023 TMC data was adjusted to the present year 2024 to reflect existing conditions based on traffic growth rates described in the *Traffic Growth* section of this report. The 2024 Existing peak hour traffic flow networks are shown graphically on Figure 2.

The ATR data were obtained in 2018 (pre-COVID) and were thus adjusted to the present year 2024 to reflect existing conditions based on traffic growth rates described in the *Traffic Growth* section of this report. The daily and peak hour traffic flows are summarized in Table 1.

Table 1
Existing Traffic Volume Summary

Location	Daily Volume <sup>a</sup>		k Hour lume <sup>b</sup>	K-Factor <sup>c</sup>	Directional Distribution d
Shrewsbury Street Adjacent to the Site	30,216	AM: PM: Sat:	1,938 2,449 1,853	6.4% 8.1%	61% SB 52% SB 61% NB

<sup>&</sup>lt;sup>a</sup> In vehicles per day.

### **Crash Data**

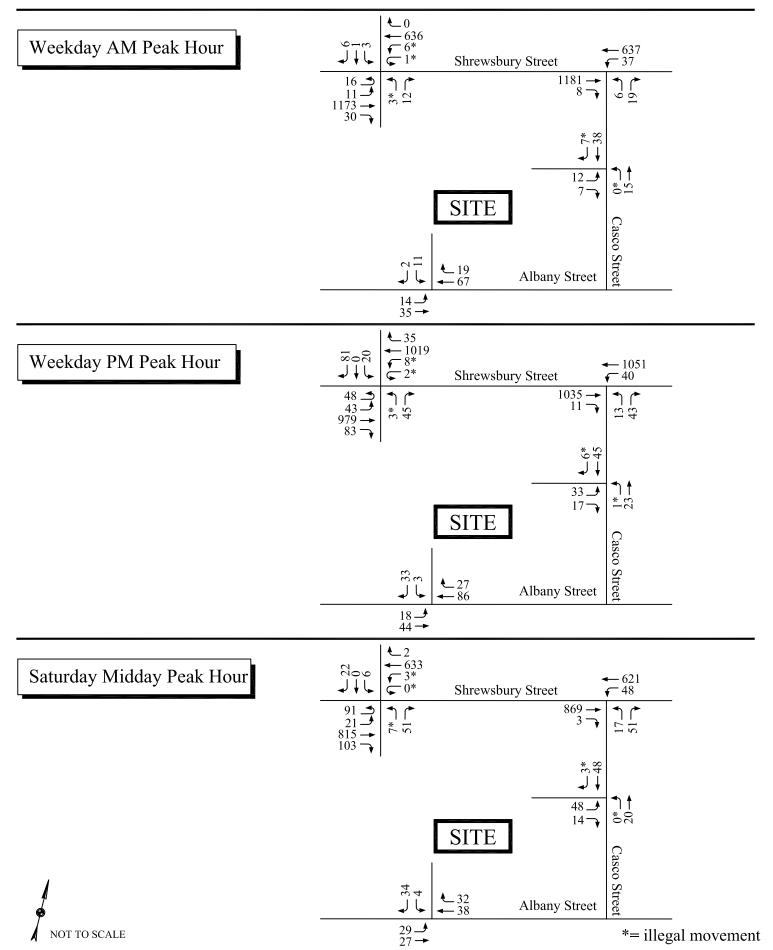
Crash data for the study intersections were obtained from MassDOT for the period between 2015 and 2019, the latest five years of available data excluding 2020 which was impacted by COVID conditions. A summary of the MassDOT crash data is provided in Table 2. In addition to the summary, crash occurrence should also be compared to the volume of traffic through a particular intersection to determine any significance. Accordingly, an crash rate was calculated for the intersection and compared with the statewide and district-wide (District 3) averages. An intersection crash rate is a measure of the frequency of crashes compared to the volume of traffic through an intersection and is presented in accidents per million entering vehicles (acc/mev). For

<sup>&</sup>lt;sup>b</sup> In vehicles per hour.

<sup>&</sup>lt;sup>c</sup> Percentage of daily traffic occurring during the peak hour.

<sup>&</sup>lt;sup>d</sup> SB = southbound, NB = northbound.

Figure 2 2024 Existing Peak Hour Traffic Volumes



unsignalized intersections, the statewide average crash rate is 0.57 acc/mev and the district-wide crash rate is 0.61 acc/mev. A comparison of the calculated crash rate to the statewide and district-wide averages can be used to establish the significance of crash occurrence and whether or not potential safety problems exist. The crash rate worksheets are provided in the Appendix.

Table 2 Crash Summary

	Number of Crashes				Severity <sup>a</sup>		Crash Type b					% During	
Location	Total	Avg./ Year	Crash Rate <sup>c</sup>	PD	PI	NR	СМ	RE	НО	SS	Ped	Other	Wet/Icy Conditions
Shrewsbury Street at Casco Street	16	3.2	0.31	7	6	3	11	3	1	1	0	0	13%
Shrewsbury Street at Site Driveway	22	4.4	0.39	9	9	4	10	5	0	4	0	3	9%
Casco Street at Site Driveway	0	0.0	0.00	0	0	0	0	0	0	0	0	0	0%
Albany Street at Site Driveway	0	0.0	0.00	0	0	0	0	0	0	0	0	0	0%

Source: MassDOT Traffic Operations Safety Management System – 2015 through 2019 data.

As shown in Table 2, the intersection of Shrewsbury Street and Casco Street experienced 16 crashes over the five-year period, averaging just over three crashes per year. Of the 16 total collisions, seven resulted in property damage only and six involved non-fatal injuries. The severity of the remaining three crashes was not reported. There were 11 angle type collisions (69 percent), 3 rear-end type collisions (19 percent), one sideswipe type collision (six percent) and one head-on vehicle type collision (six percent). Of the 16 total crashes, two (12.5%) occurred during wet or icy roadway conditions. The calculated crash rate of 0.31 acc/mev is lower than both the statewide and district wide averages for unsignalized intersections.

At the Shrewsbury Street, Oleum Court and site driveway intersection, there were a total of 22 reported crashes over the five-year period, averaging just over four crashes per year. Of the 22 total collisions, nine resulted in property damage only and nine involved non-fatal injuries. The

<sup>&</sup>lt;sup>a</sup> PD = property damage only; PI = personal injury; NR = not reported/unknown.

<sup>&</sup>lt;sup>b</sup> CM = cross movement/angle; RE = rear end; HO = head on; SS = side-swipe; Ped = pedestrian.

<sup>&</sup>lt;sup>c</sup> Measured in accidents per million entering vehicles.

severity of the remaining four crashes was not reported. There were 10 angle type collisions (45 percent), 5 rear-end type collisions (23 percent), four sideswipe type collisions (18 percent), one head-on vehicle type collision (five percent), one front to rear type collision (five percent). The remaining crash types were not reported. Of the 22 total crashes, two (nine percent) occurred during wet or icy roadway conditions. The calculated crash rate of 0.39 acc/mev is lower than both the statewide and district wide averages for unsignalized intersections.

There were no reported crashes at the site driveway intersections with Casco Street or Albany Street over the five-year analysis period. It should be noted that none of the study area intersections are listed as top crash locations in the MassDOT database of Highway Safety Improvement Program (HSIP) eligible clusters.

#### **Vehicle Speeds**

Speed measurements were conducted along Shrewsbury Street adjacent to the site by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints. The travel time was recorded using automatic traffic recorders and the speed is derived by dividing the elapsed time into the measured distance between checkpoints. The results of the speed measurements are summarized in Table 3.

Table 3 Observed Travel Speeds <sup>a</sup>

Location/Direction	Posted Speed Limit	Average Speed	85 <sup>th</sup> Percentile Speed <sup>b</sup>
Shrewsbury Street Adjacent to the Site:			
Eastbound	30	32	38
Westbound	30	31	38

<sup>&</sup>lt;sup>a</sup> In miles per hour (mph).

As shown, the average speeds along Shrewsbury Street adjacent to the site driveway were slightly above the posted speed limit. The 85<sup>th</sup> percentile speeds were recorded to be 8 mph higher than the posted speed limit of 30 miles per hour (mph) in both directions. These speeds were accordingly used in the calculation of minimum sight distance requirements, as described below.

<sup>&</sup>lt;sup>b</sup> Speed at, or below which 85 percent of all observed vehicles travel.

#### **Sight Distance**

To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at the site driveway intersections to determine if the available sight distances for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO).<sup>1</sup> AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported. The MassDOT and the Executive Office of Energy and Environmental Affairs (EEA) require the use of AASHTO sight distance standards when preparing traffic impact assessments and studies, as stated in their guidelines for traffic impact assessments.

Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. Stopping sight distance is measured from an eye height of 3.5 feet to an object height of 2 feet above street level, equivalent to the taillight height of a passenger car. The SSD is measured along the centerline of the traveled way of the major road.

Intersection sight distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. By definition, ISD is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level. The use of an object height equal to the driver eye height makes intersection sight distances reciprocal (i.e., if one driver can see another vehicle, then the driver of that vehicle can also see the first vehicle). When the minor street is on an upgrade that exceeds 3 percent, grade correction factors are applied.

SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. However, the ISD must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. In accordance with the AASHTO manual, "If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road." Accordingly, ISD should be at least equal to the distance required to allow a driver approaching the minor road to safely stop.

<sup>&</sup>lt;sup>1</sup>A Policy on Geometric Design of Highways and Streets, 7<sup>th</sup> Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018.

The available intersection sight distances at the Shrewsbury Street driveway location were measured and compared to minimum requirements as established by AASHTO based on the observed speeds and are shown in Table 4. Although no posted speed limit was identified on Casco Street or Albany Street within the study area, a design speed of 30 mph was assumed. Sight lines from the Casco Street driveway extend to the ends of the roadway to the intersections with Shrewsbury Street and with Albany Street. Therefore, the sightline measurements are based on a turning speed of 15 mph as these movements can be seen from the site driveway approach.

Table 4
Sight Distance Summary

	Sight Distance (feet)							
Location/Direction	Measured	Minimum Required (SSD) <sup>a</sup>	Desirable (ISD) <sup>b</sup>					
Shrewsbury Street at Site Driveway: West of intersection (right-turns out only)	400+	280	335					
Casco Street at Bank Exit Driveway: North of intersection	325°	80	170					
South of intersection  Albany Street at	90°	80	170					
Full Access Driveway: East of intersection West of intersection	500+ 500+	200 200	335 335					

<sup>&</sup>lt;sup>a</sup> Values based on AASHTO SSD requirements for the observed 85<sup>th</sup> percentile travel speed of 38 mph on Shrewsbury Street, a turning speed of 15 mph on Casco Street, and an assumed design speed of 30 mph on Albany Street.

As shown in Table 4, ample sight distances exist at the proposed site driveway locations to allow for safe operation, exceeding minimum requirements. It is recommended that any proposed landscaping or signs in the vicinity of the site driveways be kept low (maximum 2 feet in height from street level), or set back outside the sight triangles (as defined by AASHTO) so as not to impede the available sight distances.

<sup>&</sup>lt;sup>b</sup> Values based on AASHTO ISD requirements for posted speed limit of 30 mph on Shrewsbury Street, a turning speed of 15 mph on Casco Street, and an assumed design speed of 30 mph on Albany Street.

<sup>&</sup>lt;sup>c</sup> Values based on distances to adjacent intersections.

#### **Public Transportation**

Worcester is serviced by the Worcester Regional Transit Authority (WRTA). WRTA Bus Route 15 (Shrewsbury Center via Shrewsbury Street and Route 9) provides local bus service and travels in front of the site along Shrewsbury Street. The route services facilities including Cristoforo Colombo Park, East View Apartments, UMass Medical Center, White City Plaza, Shrewsbury Towers, Shrewsbury Town Hall, Shrewsbury Senior Center, Shrewsbury center, and Union Station. This route typically operates from 5:50 AM to 9:10 PM on weekdays and 9:50 AM to 5:50 PM on Saturdays at approximately one-hour headways. At Union Station in Worcester, connections can be made to Greyhound and Peter Pan Bus Lines, Amtrak, and the MBTA commuter rail service. There is also a 500-space parking garage located behind Union Station. Current maps and schedules can be found on the WRTA website at www.therta.com.

#### **Existing Pedestrian and Bicycle Accommodation**

A sidewalk is provided along both sides of Shrewsbury Street and Casco Street within the study area. There are some sections of sidewalks along Albany Street, but they do not extend through the study area. Bicycle accommodations are not provided along the roadways within the study area. A crosswalk is provided across the Casco Street approach to Shrewsbury Street and a defined sidewalk across the site driveway approach to Shrewsbury Street.

#### **FUTURE CONDITIONS**

#### **Traffic Growth**

Future traffic conditions were projected to the year 2031, representing a 7-year design horizon consistent with state requirements for traffic impact analysis. To project traffic conditions within this design horizon, two components of traffic growth were considered. First, an annual average traffic growth rate was determined to account for general population growth and smaller development projects (i.e. residential subdivisions) that may impact traffic in the site vicinity. Based on historical traffic volume information from a MassDOT count station on Shrewsbury Street south of Route 9 (Station No. 3979), traffic volumes have increased an average of 0.79 percent per year based on the latest years of available data. To provide a conservative assessment, a one percent per year growth rate was used to bring the 2024 Existing volumes to 2031 (7-year growth) before the planned development volumes were added.

Second, any planned or approved specific developments in the area that would generate a significant volume of traffic on study area roadways within the next seven years were included. Based on discussions with the City of Worcester, the following developments were included:

- 224 Shrewsbury Street construction of a new five-story multifamily residential building consisting of 73 units with parking underneath. The traffic to be generated by this project was taken from the traffic study<sup>2</sup> prepared for the project. The distribution of that traffic on the study area roadways is provided in the Appendix.
- 393-397 Shrewsbury Street construction of a new building consisting of 2,400 square feet of ground floor commercial space with 24 residential units located above. Of the 24 units, there will be eight one-bedroom units and 16 two-bedroom units. The traffic to be generated by this project was taken from the traffic study<sup>3</sup> prepared for the project. The distribution of that traffic on the study area roadways is provided in the Appendix.

#### **No-Build Conditions**

The 2031 No-Build networks were accordingly developed by applying a compounded 1.0 percent annual growth rate (7.2 percent over seven years) to the existing adjacent street volumes and by assuming construction of the above-referenced development projects. The 2031 No-Build peak-hour traffic-flow networks are shown on Figure 3.

#### **Trip Generation**

The traffic to be generated by the retail expansion project was estimated using the Institute of Transportation Engineering (ITE) *Trip Generation Manual.*<sup>4</sup> As proposed, the existing vacant ambulance warehouse will be razed and replaced with a new 15,375 sf mixed use building. The existing DCU bank on site will be moved to part of this new building, with the old space being retrofitted with a new retail use. Accordingly, Land Use Code 822 (Strip Retail Plaza - less than 40,000 sf) and LUC 912 (Drive-In Bank) were used in estimating the traffic generation characteristics of the project, as shown in Table 5. Higher square footages than what are proposed were used in the calculation for the new bank and retail spaces to provide a conservative trip generation estimate. The trip generation calculations are provided in the Appendix.

<sup>&</sup>lt;sup>2</sup> Traffic Impact Assessment, Proposed Apartment Building, 224 Shrewsbury Street, Worcester, MA; prepared for Highpoint Engineering, Inc; prepared by Chappell Engineering Associates, LLC, Inc; August 7, 2023

<sup>&</sup>lt;sup>3</sup> Traffic Impact Assessment, Proposed Mixed-Use Development, 393-397 Shrewsbury Street, Worcester, MA; prepared for Wei Dong Wilson Wang; prepared by Kimley-Horn and Associates, Inc; June 2023

<sup>&</sup>lt;sup>4</sup> Trip Generation Manual, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

Figure 3 2031 No Build Peak Hour Traffic Volumes

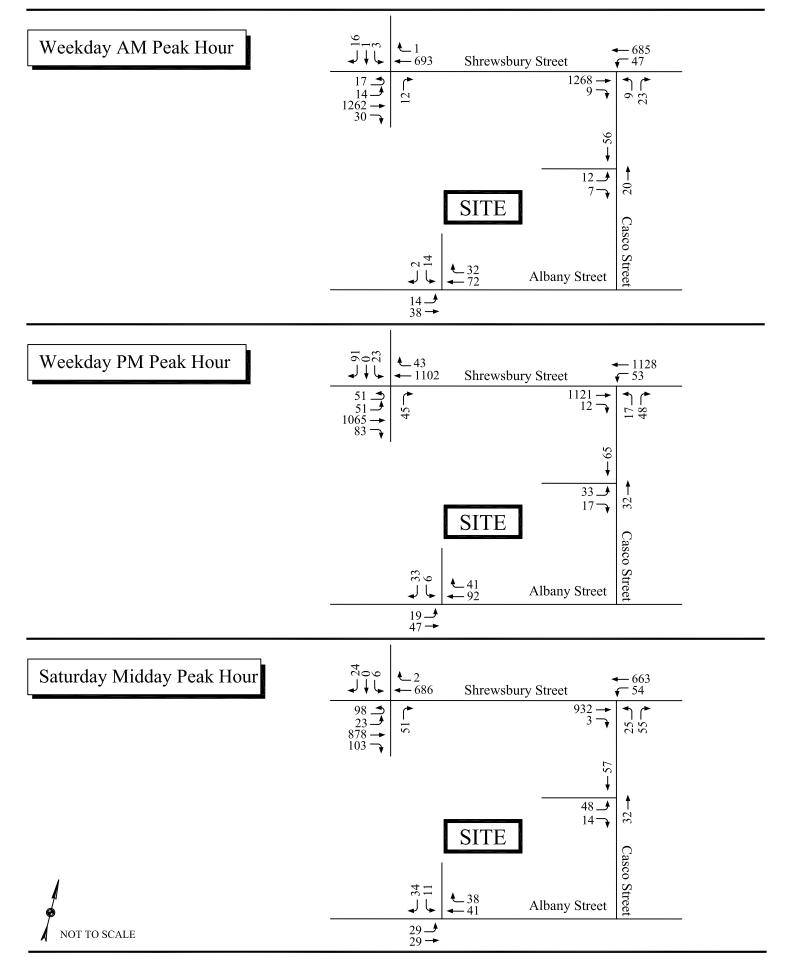


Table 5
Trip Generation Summary

Time Period	Proposed Bank <sup>a</sup>	Existing Bank <sup>b</sup>	Additional Bank Trips °	Proposed Retail Space <sup>d</sup>	Existing Retail Space e	Additional Retail Trips <sup>f</sup>	Total Additional Trips <sup>g</sup>
Weekday Daily	570	510	60	1,743	1,104	639	699
Weekday AM Peak Enter Exit	33 24	30 21	3 3	40 <u>27</u>	28 19	12 8	15 11
Total	<u>24</u> 57	<u>21</u> 51	$\frac{3}{6}$	67	<u>19</u> 47	$\frac{8}{20}$	$\frac{11}{26}$
Weekday PM Peak							
Enter	60	54	6	97	66	31	37
Exit	60	<u>53</u>	$\frac{7}{13}$	96	65	31	38 75
Total	120	107	13	193	131	62	75
Saturday Daily	490	440	50	3,070	1,770	1,300	1,350
Sat. Midday Peak							
Enter	77	68	9	120	69	51	60
Exit	$\frac{73}{150}$	<u>66</u> 134	<u>7</u> 16	116 236	<u>67</u> 136	$\frac{49}{100}$	<u>56</u> 116
Total	130	134	10	230	130	100	110

<sup>&</sup>lt;sup>a</sup> ITE Land Use Code 912 (Drive-In Bank) trip rates applied to 5,700 square feet.

As shown, the proposed retail and bank expansion development will generate 699 additional trips (350 in and 349 out) on a weekday daily basis, of which 26 trips (15 in and 11 out) will occur during the weekday AM peak hour and 75 trips (37 in and 38 out) will occur during the weekday PM peak hour. On a typical Saturday, the expansion project is expected to generate 1,350 additional trips (675 in and 675 out) of which 116 trips (60 in and 56 out) will occur during the Saturday midday peak hour.

It is important to note that a substantial portion of retail traffic comes from the existing traffic passing by the site today (referred to as pass-by traffic) and is therefore not new to the area. Based on projections from the ITE *Trip Generation Manual*, pass-by traffic can account for 31 to 40 percent of the total traffic generated by retail establishments, depending on the time period. For the purpose of this report, no adjustments for pass-by traffic were made to present a conservative analytical framework.

<sup>&</sup>lt;sup>b</sup> ITE Land Use Code 912 (Drive-In Bank) trip rates applied to 5,100 square feet.

<sup>&</sup>lt;sup>c</sup> Difference between proposed bank trips and existing bank trips.

<sup>&</sup>lt;sup>d</sup> ITE Land Use Code 822 (Strip Retail Plaza) trip rates applied to 35,872 square feet.

<sup>&</sup>lt;sup>e</sup> ITE Land Use Code 822 (Strip Retail Plaza) trip rates applied to 20,712 square feet.

<sup>&</sup>lt;sup>f</sup> Difference between proposed retail trips and existing retail trips.

<sup>&</sup>lt;sup>g</sup> Total of additional bank trips and additional retail trips.

The site was approved in 2022 for a seven-story, 218-unit apartment building in place of the vacant ambulance warehouse. Accordingly, a comparison was made between the trip generation of the previously approved apartment building and the currently proposed retail and bank expansion development to determine the difference in site traffic generation between the two uses. Table 6 summarizes this comparison based on methodology as used in the 2022 approved traffic study<sup>5</sup>.

Table 6
Trip Generation Comparison

Time Period	Proposed Retail/Bank Expansion <sup>a</sup>	Approved Multifamily Housing <sup>b</sup>	Change in Site Trips
Weekday Daily	699	990	-291
Weekday AM Peak Hour			
Enter	15	19	-4
<u>Exit</u>	$\frac{11}{26}$	<u>65</u> 84	<u>-54</u> -58
Total	26	84	-58
Weekday PM Peak Hour			
Enter	37	52	-15
<u>Exit</u>	<u>38</u>	33 85	+ <u>5</u> -10
Total	75	85	-10
Saturday Daily	1,350	994	+356
Sat. Midday Peak Hour			
Enter	60	45	+15
<u>Exit</u>	<u>56</u>	<u>43</u> 88	<u>+13</u>
Total	116	88	+28

<sup>&</sup>lt;sup>a</sup> From Table 5.

As shown, the proposed retail and bank expansion project will generate less traffic than the formerly approved apartment building on a weekday daily and peak hour basis. During the critical commuter peak hours, the currently proposed project will generate between 10 and 58 fewer trips than the previously approved apartment building. Since retail developments generate the majority of their traffic on a Saturday, the current project will generate 28 trips more during the Saturday peak hour than the prior approved apartment building.

<sup>&</sup>lt;sup>b</sup> From *Traffic Impact and Access Study, Proposed Apartment Building, 225 Shrewsbury Street, Worcester, MA;* prepared for Highpoint Engineering, Inc.; prepared by Ron Müller & Associates; August 7, 2022. Saturday volumes from ITE Land Use Code 221 (Multifamily Housing - Midrise) based on 218 dwelling units.

<sup>&</sup>lt;sup>5</sup> Traffic Impact and Access Study, Proposed Apartment Building, 225 Shrewsbury Street, Worcester, MA; prepared for Highpoint Engineering, Inc.; prepared by Ron Müller & Associates; August 7, 2022.

### **Trip Distribution**

The distribution of retail and bank traffic on the area roadways is based on the roadway network, surrounding population densities, and existing travel patterns observed within the study area. Shrewsbury Street is a divided roadway with turn restrictions in place at the main driveway intersection with Shrewsbury Street (no left turns into or out of the site). There are no turn restrictions for traffic entering/exiting Casco Street and there are several options for cars to access Shrewsbury Street from Albany Street (via Fantasia Drive, Lyon Street, and South Hill Street). The overall distribution of traffic is expected to be 50 percent to/from Shrewsbury Street west and 45 percent to/from Shrewsbury Street east, with the remaining 5 percent to/from Albany Street west. However, due to the turn restrictions at the Shrewsbury Street driveway, entering traffic from the east would use Casco Street and Albany Street to turn into the site. Of the 45 percent of traffic exiting the site and destined to the east, 30 percent would use the Shrewsbury Street driveway, 10 percent would use the Casco Street driveway, and 5 percent would use the Albany Street driveway. Of the 50 percent of traffic exiting the site and destined to the west, 30 percent would access Shrewsbury Street via Casco Street (15% from the Casco Street driveway and 15% from the Albany Street driveway), and the remaining 20 percent would use the Albany Street driveway and head west to access Shrewsbury Street via Fantasia Drive, Lyon Street, or South Hill Street.

The distribution of bank traffic would follow the same overall distribution but would use different driveways. Due to the nature of the drive-in bank, most customers would utilize the drive-up tellers rather than going inside the bank. It was estimated that 80% of bank traffic would use the drive-up teller and therefore use the Casco Street driveway. The remaining bank traffic would use the other driveways, with a distribution as described above.

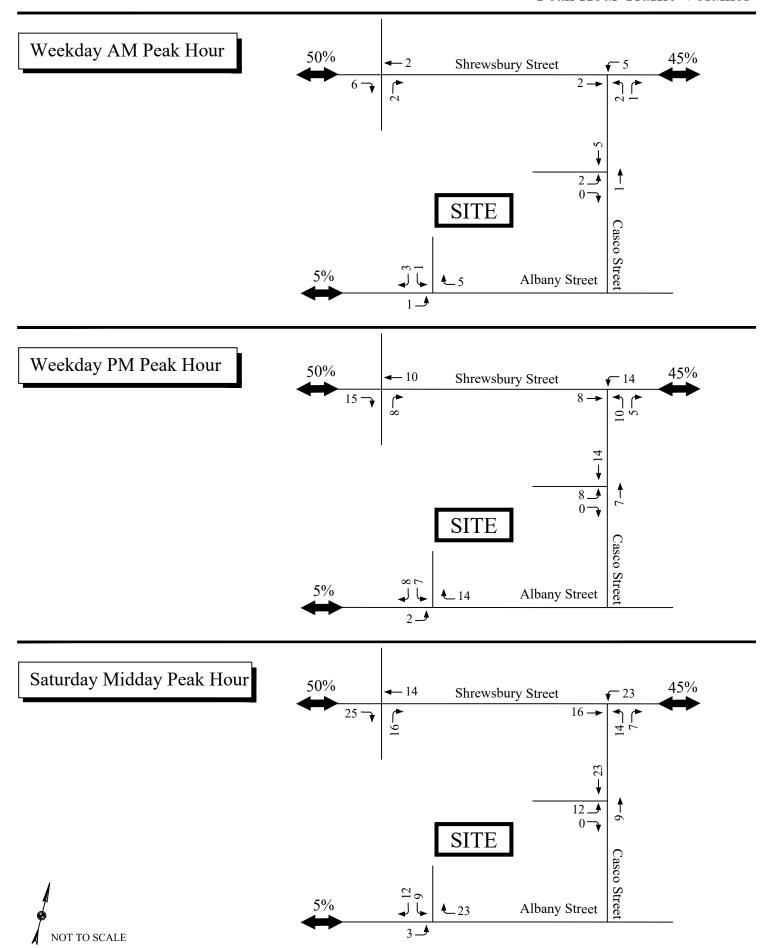
#### **Build Conditions**

Based on the above traffic generation and distribution estimates, the traffic volumes generated by the project were assigned to the roadway network as shown on Figures 4 and 5 and were added to the 2031 No-Build traffic volumes to develop the 2031 Build traffic volumes. The 2031 Build traffic volume networks are graphically depicted on Figure 6.

#### **Traffic Increases**

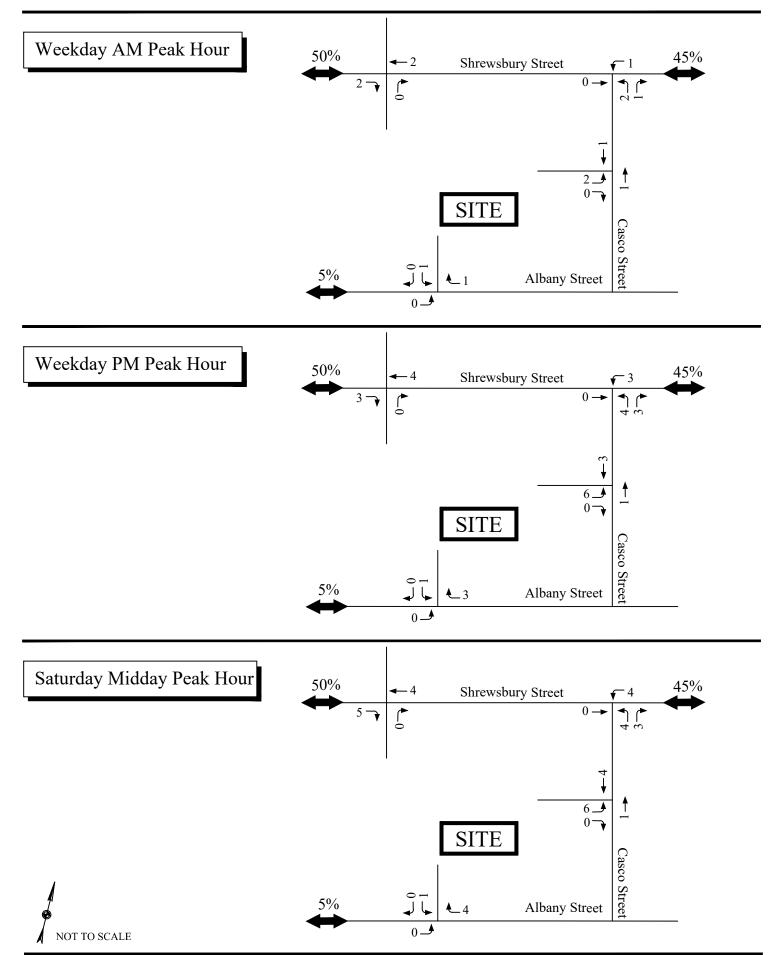
The proposed project will result in increases in traffic on the study area roadways. Without taking any credit for pass-by trips, traffic-volume increases on Shrewsbury Street are expected in the range of 10 to 53 additional vehicles during peak hours. These increases represent, on average, approximately one additional vehicle every one to six minutes. Traffic increases on Casco Street are expected in the range of 12 to 55 additional vehicles during peak hours, representing one additional vehicle every one to five minutes. Traffic increases on Albany Street are expected in the range of 8 to 37 additional vehicles during peak hours, representing one additional vehicle

Figure 4
Site Generated Traffic - Retail
Peak Hour Traffic Volumes



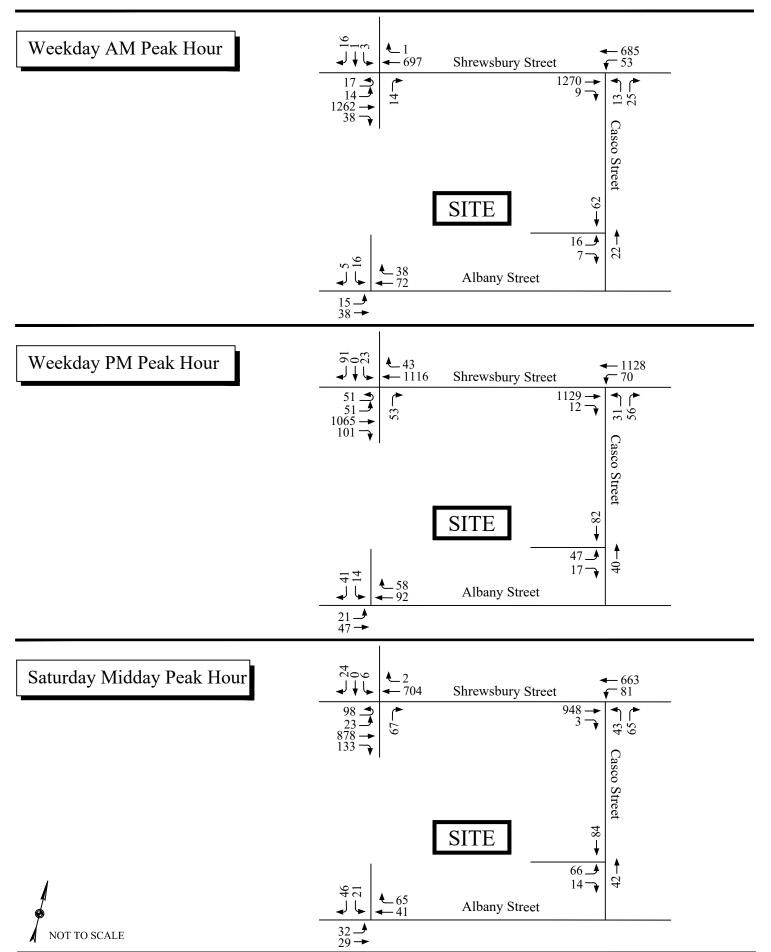
Civil, Structural & Transportation Services

Figure 5
Site Generated Traffic - Bank
Peak Hour Traffic Volumes



Civil, Structural & Transportation Services

Figure 6 2031 Build Peak Hour Traffic Volumes



every one and a half to seven and a half minutes. Smaller increases are expected during all other times of the day.

#### Site Access, Drive-Through Queuing, and On-Site Circulation

Access to the site is proposed via driveways on Shrewsbury Street, Albany Street, and Casco Street. The Casco Street site driveway, which currently only allows exiting traffic for the DCU bank drive-through, is proposed to be closed and moved closer to Albany Street. The driveway will continue to operate as an exit-only driveway and is proposed to be 12 feet wide with a pedestrian crosswalk connecting the existing sidewalk. The existing Albany Street driveway will be closed and moved near the southwest corner of the parcel. The driveway is proposed to be a two-way, 24-foot-wide driveway. The Shrewsbury Street driveway will be modified to provide a larger turning radius and will continue to be a right-in/right-out only driveway. Further turn restriction postings are proposed at this driveway, including a painted RIGHT TURN ONLY arrow and an additional NO LEFT TURN sign on the property. All driveways will be fitted with STOP lines and signs (R1-1). A DO NOT ENTER (R5-1) sign facing the public street will be added to the Casco Street driveway.

There are two 10-foot-wide lanes proposed to access the drive through area approximately 41 feet north of Albany Street adjacent to the driveway. The northernmost lane tapers into two 12-foot-wide lanes, which will be used to access the drive-up teller and ATM respectively. The southern lane provides an Exit Only Lane to the Casco Street driveway. DO NOT BLOCK INTERSECTION pavement striping will be placed at the start of the drive through lanes to prevent traffic queueing at the Albany Street driveway from blocking access to the drive through and vice versa. Additionally, a crosswalk is proposed across the two drive through lanes and the escape lane approximately 60 feet from the teller window/ATM. After the drive through lanes, a large queueing area is proposed where all three lanes will be able to maneuver and merge toward the Casco Street driveway.

The drive-in bank offers one teller window and one ATM lane. Based on the latest site plan, each drive-through lane will be able to accommodate approximately five vehicles in queue before the lanes merge, after which an additional two cars can be stored for a total of 12 vehicles. To estimate the expected queues in the drive-up teller window, drive-through queue studies performed by Ron Müller & Associates and conducted at eight existing bank locations throughout Massachusetts were reviewed. A summary of these queue studies is provided in the Appendix. Based on a total of 15 data points, the average of all maximum queues in the teller window lane was found to be two vehicles and the maximum queue observed at any one bank was four vehicles. At ATM lanes, the average of all maximum queues in the ATM lanes was found to be three vehicles and the maximum queue observed at any one bank was five vehicles. Given that a total of 5 queueing spaces are provided in each lane and an additional two vehicles can be accommodated before impacting on-site circulation, the proposed drive-through lanes can easily accommodate the anticipated maximum queues.

Drive-through queue studies were also conducted at the existing DCU Bank on Friday May 17 and Saturday May 18, 2024 to establish current queuing conditions within the drive-through lanes. These studies were performed during peak banking hours as defined in the ITE *Trip Generation Manual*. The results of these studies, which are provided in the Appendix, show that both the existing teller lane and the existing ATM lane experienced a maximum queue of 5 vehicles. The existing drive-through lanes provide vehicle queue storage for only 3 vehicles, so on-site circulation is currently impeded when queues exceed this storage capacity. The proposed drive-through lanes at the relocated bank can easily accommodate these existing queues and on-site circulations will be significantly improved as a result.

The parking lot will be reconfigured to better facilitate the flow of traffic on site. The general layout of the parking lot will remain the same with two main parking areas separated by a parking island. The island will be extended to encompass the entire frontage of the existing and proposed building, except for a 20-foot-wide drive aisle that will provide vehicular access between the two parking areas, accompanied by STOP lines and signs. An additional 5-foot-wide striped pedestrian walkway is proposed south of this cut through to allow for safe pedestrian access. A 570 square foot hallway is proposed between the existing DCU bank building and the proposed retail space to provide access to/from Casco Street from the parking area. A landscape buffer will be added at the southern edge of the proposed DCU bank and will connect to the center parking lot island. This will separate the drive-through lanes from the rest of the parking area, allowing for maximum queuing in these areas without impacting any parking and provide screening to hide the queueing vehicles. A "Drive Through Right Turn" sign will be added to the Shrewsbury Street entrance to direct traffic to the proper path toward the bank drive through lanes.

#### **CAPACITY ANALYSIS**

Level-of-service (LOS) analyses were conducted at the study area intersections under existing and projected volume conditions to determine the effect that the additional site-generated traffic will have on traffic operations. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual*<sup>6</sup> (HCM) and is described in the Appendix. For unsignalized intersections, the 95<sup>th</sup> percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). The queue length is a function of the capacity of the movement and the movement's degree of saturation. The level-of-service and queue results are presented in Table 7 and are discussed below. All analysis worksheets are provided in the Appendix.

<sup>&</sup>lt;sup>6</sup> Highway Capacity Manual 2010; Transportation Research Board; Washington, DC; 2010.

Table 7 **Level-of-Service Analysis Summary** 

Location/Peak Hour		2024	Existing			2031 N	o-Build			2031	Build	
Movement	v/ca	Del.b	LOSc	Queued	v/c	Del.	LOS	Queue	v/c	Del.	LOS	Queue
Shrewsbury Street at 225 Driveway/Oleum Court												
Weekday AM Peak												
EB Left	0.046	10.9	В	25	0.057	11.4	В	25	0.057	11.4	В	25
NB Right	0.046	14.2	В	25	0.054	15.0	C	25	0.059	15.1	C	25
SB All	0.048	16.5	C	25	0.080	14.9	В	25	0.080	14.9	В	25
Weekday PM Peak												
EB Left	0.265	18.9	C	25	0.339	22.6	В	25	0.345	23.1	C	50
NB Right	0.141	13.6	В	25	0.169	14.5	В	25	0.180	14.7	В	25
SB All	0.410	25.3	D	50	0.554	36.2	E	75	0.568	37.8	E	75
Saturday Midday Peak												
EB Left	0.201	12.5	В	25	0.237	13.6	В	25	0.240	13.8	В	25
NB Right	0.120	12.8	В	25	0.145	13.5	В	25	0.170	13.9	В	25
SB All	0.103	14.3	В	25	0.120	15.3	С	25	0.122	15.5	C	25
Shrewsbury Street at (	Casco Str	eet										
Weekday AM Peak												
NB All	0.158	19.3	C	25	0.263	24.9	C	25	0.300	26.4	D	50
WB Left	0.072	12.2	В	25	0.106	13.2	В	25	0.112	13.2	В	25
Weekday PM Peak												
NB All	0.196	17.8	C	25	0.301	22.5	C	50	0.397	27.1	D	50
WB Left	0.064	10.9	В	25	0.104	11.7	В	25	0.121	11.8	В	25
Saturday Midday Peak												
NB All	0.207	16.6	C	25	0.335	21.8	C	50	0.433	26.1	D	50
WB Left	0.207	10.7	В	25	0.333	11.3	В	25	0.144	11.6	В	25
TID Lett	0.077	10.7	ט	23	0.117	11.5	D	23	J.177	11.0	ט	

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<sup>&</sup>lt;sup>a</sup> Volume-to-capacity ratio.
<sup>b</sup> Average control delay (sec./vehicle).
<sup>c</sup> Level of service.

<sup>&</sup>lt;sup>d</sup> 95th percentile queue in feet, assuming 25 feet/vehicle.

Table 7 (Cont.) Level-of-Service Analysis Summary

Location/Peak Hour		2024	Existing			2031 N	lo-Build			2031	Build	
Movement	v/c <sup>a</sup>	Del. <sup>b</sup>	LOSc	Queued	v/c	Del.	LOS	Queue	v/c	Del.	LOS	Queue
Casco Street at Bank Drive Through												
Weekday AM Peak												
EB Left	0.016	8.9	Α	0	0.018	9.0	A	25	0.022	9.1	Α	25
EB Right	0.009	8.5	A	0	0.009	8.6	A	0	0.009	8.7	A	0
Weekday PM Peak												
EB Left	0.048	9.1	A	25	0.058	9.4	A	25	0.075	9.6	A	25
EB Right	0.023	8.6	A	25	0.023	8.8	A	25	0.024	8.8	A	25
Saturday Midday Peak												
EB Left	0.063	9.3	Α	25	0.075	9.6	Α	25	0.097	9.9	A	25
EB Right	0.017	8.7	A	25	0.017	8.8	A	25	0.018	8.9	A	25
Albany Street at Site I	Oriveway											
Weekday AM Peak												
EB Left	0.011	7.4	Α	0	0.012	7.5	Α	0	0.012	7.5	A	0
SB All	0.024	9.4	A	25	0.034	9.6	A	25	0.039	9.5	A	25
Weekday PM Peak												
EB Left	0.019	7.5	A	25	0.022	7.6	A	25	0.023	7.6	A	25
SB All	0.057	9.2	A	25	0.079	9.6	A	25	0.097	9.9	A	25
Saturday Midday Peak												
EB Left	0.026	7.5	A	25	0.028	7.5	A	25	0.030	7.6	A	25
SB All	0.050	8.9	A	25	0.079	9.4	A	25	0.097	9.6	A	25

<sup>&</sup>lt;sup>a</sup> Volume-to-capacity ratio.

As shown in Table 7, the Shrewsbury Street site driveway currently operates at LOS B or better and is expected to continue to operate at acceptable levels (LOS B to C) under both the future No-Build and Build conditions. Under all analyzed conditions and time periods, 95<sup>th</sup> percentile vehicle queues are not expected to exceed one vehicle.

The intersection of Casco Street and Shrewsbury Street currently operates at LOS C for all Casco Street traffic and LOS B for left turning vehicles from Shrewsbury Street. Traffic will continue to operate at acceptable levels of service under future No-Build and Build conditions. The addition of site traffic will increase delays by less than 5 seconds per vehicle and traffic exiting Casco Street will continue to operate at acceptable levels (LOS D). Vehicle platooning along Shrewsbury Street from upstream traffic signals creates gaps in the traffic flow. Actual delays for vehicles turning

<sup>&</sup>lt;sup>b</sup> Average control delay (sec./vehicle).

<sup>&</sup>lt;sup>c</sup> Level of service.

<sup>&</sup>lt;sup>d</sup> 95th percentile queue in feet, assuming 25 feet/vehicle.

from Casco Street onto Shrewsbury Street are therefore expected to be better than modeled. Vehicles also have the option to utilize the traffic signals at the intersections of Fantasia Drive at Shrewsbury Street and South Hill Street at Shrewsbury Street to avoid any delays on Casco Street.

The DCU Bank driveway and the Albany Street driveway currently operate at LOS A during all peak hours and are expected to continue to operate at desirable levels under both the future No-Build and Build conditions. Under all analyzed conditions and time periods, vehicle queues are expected at one vehicle.

#### TRANSPORTATION DEMAND MANAGEMENT MEASURES

The neighborhood of the project site is transit oriented in nature. Union Station is approximately 0.8 miles away providing train and bus services. There are also several WRTA stops near the site. Within walking distance, there are various destinations, including restaurants, retail stores, personal services and other various businesses. Downtown Worcester and Plantation Street, both of which are major employer hubs, are also within walking distance. The proponent is committed to implementing a number of Transportation Demand Management (TDM) measures to take advantage of the area's transportation options, in an effort to minimize dependency on automobile use and to promote healthy living.

**Pedestrian Linkages** – Casco Street will have pedestrian improvements as a part of this redevelopment. New sidewalk sections are proposed to connect the existing sidewalk at the former bank driveway. Additionally, a crosswalk with accompanying ADA compliant pedestrian curb ramps is proposed across the new bank drive through exit at the southeast corner of the property. A 775 square foot hallway is proposed between the existing and proposed buildings on site to allow for pedestrians on Casco Street to access the main site. This will also allow for a connection between the parking lot and the All Systems Go Esports Bar. The sidewalk along the frontage of the businesses on site will have an ADA compliant pedestrian crossing across the proposed bank drive through connecting to Albany Street. This will allow for any future proposed sidewalks on Albany Street to be connected to the site.

**Bicycle Accommodations** – A bicycle rack is proposed near the Shrewsbury Street driveway and will allow up to six bikes to park at once.

**Electric Vehicle Charging Stations** – To encourage cleaner modes of transportation, the proponent will install electric vehicle charging stations within the parking areas. Six spaces will be EV ready upon completion of the project with an additional 19 spaces designated as EV Future use.

#### TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis was conducted to determine if signal control could be warranted at the intersection of Shrewsbury Street and Oleum Court/the Shrewsbury Street Marketplace driveway. Consistent with the Manual on Uniform Traffic Control Devices (MUTCD)<sup>7</sup>, the volume-based signal warrants are based on the total volume of Shrewsbury Street traffic (both directions) and the higher of the two minor-street approaches. Based on the TMC traffic data that was collected, Oleum Court (with the addition of proposed site generated traffic from the 224 residential development) generates more traffic than the Shrewsbury Street Marketplace driveway even with the addition of the project generated traffic. The signal warrant analysis was therefore performed using Oleum Court as the minor street. The following volume-related warrants were evaluated:

- Warrant 1 Eight Hour Vehicular Volume
  - ➤ Condition A Minimum Vehicular Volume
  - ➤ Condition B Interruption of Continuous Traffic
  - > Combination of Conditions A and B
- Warrant 2 Four-Hour Vehicular Volume; and
- Warrant 3 One-Hour Vehicular Volume.

In accordance with the MUTCD, a traffic control signal may only be installed if at least one of the signal warrants is met. However, a number of factors are involved in determining if signal control should be installed, including intersection operations, safety, and engineering judgment. It is only in very rare circumstances that a traffic control signal is installed on the basis of the four-hour or peak hour warrants alone. Normally, at least one of the eight-hour warrants (Warrant 1, Condition A or B) should be met before signal control is considered. The four-hour and peak-hour volume warrants are applied only in unusual cases such as driveways serving large office/industrial complexes, manufacturing plants, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short period of time. These warrants do not apply to the intersection in question. In addition, the combination of Conditions A and B under Warrant 1 should only be applied after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. Table 8 summarizes the results of the signal warrant analysis and the detailed analysis is provided in the Appendix.

<sup>&</sup>lt;sup>7</sup>Manual on Uniform Traffic Control Devices; Federal Highway Administration; Washington, DC; December 2009; revised May 2012.

Table 8
Traffic Signal Warrant Analysis Summary

		Warrant	1	Warrant	Warrant	Signal
Intersection	A	В	Combo	No. 2	No. 3	Recommended?
Shrewsbury Street at Oleum Court/Shrewsbury Street Marketplace driveway	No	No	No	No	No	No

As shown in Table 8, the volumes exiting Oleum Court do not meet Warrant 1A, which MassDOT primarily uses as a basis for justifying installation of a new traffic signal. In addition, the volumes do not meet Warrant 1B or the combination of Warrant 1A and 1B.

Signal warrant analyses were also performed using the Shrewsbury Street Marketplace driveway volumes. These analyses show that the driveway volumes also do not meet any of the volume-based signal warrants.

Given the crash history experienced at the intersection of Shrewsbury Street and Oleum Court as shown in Table 2, Warrant 7, Crash Experience was also reviewed. This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. The need for a traffic control signal should only be considered if all of the following are met:

- 1. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
- 2. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage; and
- 3. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A, or the vph in both of the 80 percent columns of Condition B exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection.

Based on a review of the crash data as well as the volumes under the 80 percent columns of Warrant 1 Conditions A and B, the intersection does not meet the criteria of Warrant 7. Less than five crashes have occurred per year (which is below the minimum crash frequency threshold) of which only 45 percent of accidents (10 out of 22) were angle type collisions that could potentially be avoided through signal control.

#### **CONCLUSIONS**

Existing and future conditions at the study area intersections have been described and analyzed with respect to traffic operations and the impact of the apartment building project. Conclusions of this effort and recommendations are presented below.

- The site currently contains the Shrewsbury Street Marketplace and a vacant warehouse building that was formerly used to store ambulances. As proposed, the former ambulance storage building will be razed and replaced with an approximately 15,370 square foot building addition consisting of 9,100 square feet of retail space and a 5,700 square foot new DCU bank with drive-through lanes. A 570 square foot hallway is proposed between the existing DCU bank building and the proposed retail space to provide access to/from Casco Street from the parking area. The existing 5,100 square foot bank will be retrofitted for retail use.
- Existing access to the site is provided via driveways on Shrewsbury Street, Casco Street, and Albany Street. As part of the project, the Shrewsbury Street driveway will be modified to provide larger turning radii but will continue to be a right-in/right-out only driveway. The Casco Street site driveway is proposed to be closed and moved closer to Albany Street. The driveway will continue to operate as an exit-only driveway for the relocated bank. The existing Albany Street driveway will be closed and moved to the southwest corner of the parcel and allow full access/egress.
- The calculated crash rates at the study intersections, including the existing site driveways, are well below statewide and district-wide averages for unsignalized intersections and no trend in crash occurrence is apparent.
- Ample sight distances exist at the proposed site driveway locations to allow for safe operation, exceeding minimum requirements. It is recommended that any proposed landscaping or signs in the vicinity of the site driveways be kept low or set back outside the sight triangles so as not to impede the available sight distances.
- Future traffic conditions were projected to the year 2031, representing a 7-year design horizon consistent with state requirements for traffic impact analysis. Future No-Build conditions were developed by applying an annual traffic growth rate to the existing adjacent street volumes along with adding the traffic generated by other approved projects.
- As a result of the expansion project, the site is expected to generate 26 additional trips (15 in and 11 out) during the weekday AM peak hour and 75 additional trips (37 in and 38 out) during the weekday PM peak hour. During the Saturday peak hour, the project is expected to add 116 trips (60 in and 56 out).
- The site was approved in 2022 for a seven-story, 218-unit apartment building in place of the vacant ambulance warehouse. A trip generation comparison shows that the currently proposed

retail expansion project generates between 10 and 58 fewer trips than the previously approved apartment building. Since retail developments generate the majority of their traffic on a Saturday, the current project will generate 28 trips more during the Saturday peak hour than the prior approved apartment building.

- A substantial portion of retail traffic comes from the existing traffic passing by the site today (referred to as pass-by trips) and is therefore not new to the area. Without taking any credit for pass-by trips, traffic-volume increases on the surrounding streets are expected in the range of 10 to 53 additional vehicles during peak hours. These increases represent, on average, approximately one additional vehicle every one to six minutes. Smaller increases are expected during all other times of the day.
- Queue studies conducted at the existing DCU Bank drive-through lanes show a maximum of 5 vehicles in queue at both the teller and ATM lanes. As the existing drive-through lanes can accommodate only 3 vehicles in queue, on-site circulation is currently impeded when queues exceed this storage capacity.
- The proposed bank will also provide one drive-through teller lane and one drive-through ATM lane, each accommodating five vehicles in queue before the lanes merge, after which an additional two cars can be stored for a total of 12 vehicles. Based on the queue observations at the existing drive-through lanes, as well as several studies completed at similar drive-in banks in Massachusetts, the proposed drive-through lanes can easily accommodate the observed maximum queues and on-site circulation will be significantly improved as a result.
- Traffic was occasionally observed making illegal movements at the Shrewsbury Street and Casco Street site driveways. Proposed improvements include an additional NO LEFT TURN sign and a RIGHT TURN ONLY pavement arrow.
- The site driveways are expected to operate at acceptable levels during the peak hours with vehicle queues of one vehicle.
- The Shrewsbury Street and Casco Street intersection currently operates at acceptable levels of service and delays. Slight increases are expected during the No-Build and Build conditions with minimal increases in delay (less than 5 seconds per vehicle) expected with the inclusion of site traffic.
- Based on the review of both the traffic volumes and motor vehicle crash criteria, the
  intersection of Shrewsbury Street and the Site driveway does not currently meet and is not
  projected to meet any of the required thresholds to justify installation of a traffic signal at this
  location.

Civil • Structural • Transportation • Surveying

## **APPENDIX**

Traffic Count Data
Seasonal/Historical Adjustment Data and Bus Schedule
Crash Rate and Trip Generation Worksheets
Drive Through Queue Studies
Capacity Analysis Methodology and Worksheets
Traffic Signal Warrant Analysis

Traffic	<b>Count</b>	Data
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978-664-2565

Location: Shrewsbury Street Location: West of Casco Street City/State: Worcester, MA

18010VL1

Start	6/13/2018	V	VB	Hour	Totals	E	ΞB	Hour	Totals	Combin	ed Totals
Time	Wed	Morning	Afternoon	Morning		Morning	Afternoon	Morning		Morning	Afternoon
12:00		37	212			41	182				
12:15		28	231			37	180				
12:30		28	227			27	168				
12:45		25	229	118	899	17	161	122	691	240	1590
01:00		11	233	110	000	22	178	122	001	240	1000
01:15		19	203			18	188				
01:30		15	200			15	202				
01:45		15 11	216	56	852	23	185	78	753	134	1605
02:00		11	200	00	002	6	235	70	700	10-1	1000
02:15		11 14	244			16	219				
02:30		16	280			9	199				
02:45		17	216	58	940	11	203	42	856	100	1796
03:00		9	220	30	340	7	202	42	030	100	1730
03:15		17	246			6	258				
03:30		9	252			11	207				
03:45		16	232	51	950	11	231	35	898	86	1848
04:00		21	201	31	930	9	205	33	090	00	1040
04:00		21 33	237			15	261				
04:13		42	231			22	243				
04:45		57	220	153	889	15	265	61	974	214	1863
05:00		51	252	155	009	22	236	01	914	214	1003
05:00		31 75	232			21	244				
05:30		75 138	234			24	257				
05:45		138	215	402	937	38	214	105	951	507	1888
06:00		133	222	402	937	50	196	103	931	507	1000
06:00		194	186			53 69	181				
06:30		249	170			88	174				
		273	179 183	849	770	99	160	309	711	1158	1481
06:45		273	167	649	770			309	/11	1156	1461
07:00		221	163			131	171				
07:15		242 253	138			160	128 131				
07:30 07:45		289	126	1005	504	176 205		672	F7F	1677	4400
07:45		254	126	1005	594	165	145 121	6/2	575	16//	1169
06.00		254	137			174					
08:15		232	132			174	109				
08:30		241	123 128	070	500	135 141	109	C4.F	440	4500	000
08:45		251		978	520	141	101	615	440	1593	960
09:00		215	107			136	105				
09:15		211	132			138	100				
09:30		190	89 127	007	455	134	123	500	40.4	4005	070
09:45		211		827	455	130	96	538	424	1365	879
10:00		228	95			129	89				
10:15		184	67			164	81				
10:30		206	72	0.4.5	244	154	64		200	4.404	0.5=
10:45		196	80	814	314	140	59	587	293	1401	607
11:00		233	57			143	68				
11:15		218	47			156	70				
11:30		239	42 45		404	163	68	225	050	4505	
11:45		217	45	907	191	166	50	628	256	1535	447
Total		6218	8311			3792	7822			10010	16133
Percent		42.8%	57.2%			32.7%	67.3%			38.3%	61.7%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street City/State: Worcester, MA

18010VL1

Ctc.+	6/14/2018	14	/B	Harr	Totals		B	Harr	Totala	Combin	nd Totala
Start	6/14/2018 Thu			Morning	Afternoon			Morning	Totals Afternoon	Morning	ed Totals Afternoon
Time 12:00	ITIU	Morning 24	Afternoon 217	worning	Aitemoon	Morning 31	Afternoon 204	iviorning	Aitemoon	Morning	Alternoon
12:00		36	217			31	183				
12:13		30	246			27	187				
12:45		21	255	111	930	23	158	112	732	223	1662
01:00		15	238	111	930	18	160	112	132	223	1002
01:15		16	253			23	193				
01:30		22	238			8	198				
01:45		20	220	73	949	19	195	68	746	141	1695
02:00		19	227	73	343	15	216	00	740	171	1033
02:15		12	269			18	188				
02:30		19	252			15	193				
02:45		19	220	69	968	13	241	61	838	130	1806
03:00		10	218	03	300	8	223	01	030	130	1000
03:15		12	244			12	205				
03:30		17	240			9	262				
03:45		18	241	57	943	12	237	41	927	98	1870
04:00		18	208	31	343	13	231	71	321	30	1070
04:15		33	204			14	244				
04:30		37	202			7	272				
04:45		58	244	146	858	17	256	51	1003	197	1861
05:00		42	247	140	000	26	264	31	1005	137	1001
05:15		68	229			27	232				
05:30		128	220			27	275				
05:45		131	239	369	935	40	217	120	988	489	1923
06:00		131	189	303	333	59	189	120	300	403	1323
06:15		182	185			66	184				
06:30		232	208			85	224				
06:45		276	179	821	761	111	151	321	748	1142	1509
07:00		234	177	021	701	130	150	321	740	1172	1303
07:00		229	159			144	160				
07:30		273	154			157	178				
07:45		250	169	986	659	172	148	603	636	1589	1295
08:00		223	159	300	000	169	151	003	030	1000	1233
08:15		240	154			138	134				
08:30		247	128			151	132				
08:45		224	139	934	580	148	99	606	516	1540	1096
09:00		257	138	334	300	145	109	000	310	1340	1030
09:15		238	128			137	115				
09:30		230	114			130	113				
09:45		216	103	941	483	152	100	564	437	1505	920
10:00		196	82	<b>3</b> 71	400	150	92	004	407	1000	020
10:15		220	100			155	87				
10:30		222	102			153	94				
10:45		202	124	840	408	158	72	616	345	1456	753
11:00		222	66	0-10	400	159	76	0.10	0-10	1400	700
11:15		179	52			165	82				
11:30		232	57			172	76				
11:45		238	38	871	213	193	56	689	290	1560	503
Total		6218	8687	0/1	210	3852	8206	003	200	10070	16893
Percent		41.7%	58.3%			31.9%	68.1%			37.3%	62.7%
Grand											
Total		12436	16998			7644	16028			20080	33026
Percent		42.3%	57.7%			32.3%	67.7%			37.8%	62.2%

ADT ADT 26,553 AADT 26,553

18010VL1

Accurate Counts 978-664-2565

Location: Shrewsbury Street Location: West of Casco Street City/State: Worcester, MA

11:00 658 16:00 988 Week Average WB EB 26554 26554 07:00 996 14:00 954 EB Sun 0 WB EB 0 Sat WB EB 0 Ę. WB 12058 11:00 689 16:00 1003 26963 07:00 986 14:00 968 14905 07:00 672 16:00 974 26143 Wed 07:00 1005 15:00 950 14529 191 AADT 26,553 EB 0 Tue WB ADT 26,553 EB 6/11/2018 WB 01:00 02:00 03:00 04:00 07:00 Day Lane PM Peak Vol. Comb. Total ADT 12:00 AM AM Peak Vol. Start Time

978-664-2565

Location: Shrewsbury Street Location : West of Casco Street City/State: Worcester, MA

18010SP1

WB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/13/18	1	2	5	16	33	39	12	6	4	0	0	0	0	0	118
01:00	1	1	2	5	24	19	3	1	0	0	0	0	0	0	56
02:00	2	2	1	4	19	18	11	1	0	0	0	0	0	0	58
03:00	0	0	2	4	17	16	8	4	0	0	0	0	0	0	51
04:00	1	0	2	5	31	68	34	10	2	0	0	0	0	0	153
05:00	8	1	2	22	94	128	113	33	1	0	0	0	0	0	402
06:00	20	2	14	54	287	322	115	31	3	1	0	0	0	0	849
07:00	32	10	24	147	369	319	92	10	2	0	0	0	0	0	1005
08:00	52	20	83	204	378	185	44	12	0	0	0	0	0	0	978
09:00	34	30	126	246	228	123	37	2	0	0	1	0	0	0	827
10:00	51	46	108	203	268	117	17	4	0	0	0	0	0	0	814
11:00	40	44	120	254	282	129	29	8	1	0	0	0	0	0	907
12 PM	55	54	161	290	269	59	10	1	0	0	0	0	0	0	899
13:00	35	33	135	223	303	96	22	3	2	0	0	0	0	0	852
14:00	61	54	94	247	323	132	27	2	0	0	0	0	0	0	940
15:00	63	48	149	240	296	130	21	1	1	1	0	0	0	0	950
16:00	47	35	91	222	273	176	40	3	1	1	0	0	0	0	889
17:00	59	32	118	219	292	177	34	6	0	0	0	0	0	0	937
18:00	29	34	83	194	253	137	37	3	0	0	0	0	0	0	770
19:00	20	26	63	134	205	106	33	5	2	0	0	0	0	0	594
20:00	20	21	52	126	170	94	31	5	1	0	0	0	0	0	520
21:00	19	24	42	115	155	73	25	1	1	0	0	0	0	0	455
22:00	14	8	14	28	107	94	40	8	0	0	1	0	0	0	314
23:00	4	4	4	14	66	53	28	12	5	0	1	0	0	0	191
Total	668	531	1495	3216	4742	2810	863	172	26	3	3	0	0	0	14529

Daily 15th Percentile : 50th Percentile:

23 MPH 31 MPH 38 MPH 41 MPH 85th Percentile : 95th Percentile :

31 MPH 26-35 MPH 7958 54.8% 3877 Mean Speed(Average):
10 MPH Pace Speed:
Number in Pace:
Percent in Pace:
Number of Vehicles > 35 MPH:

Percent of Vehicles > 35 MPH: 26.7%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street

City/State: Worcester, MA 18010SP1

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/14/18	1	0	4	11	28	49	15	2	0	0	1	0	0	0	111
01:00	0	0	2	4	25	28	12	1	1	0	0	0	0	0	73
02:00	1	1	1	6	19	25	7	8	1	0	0	0	0	0	69
03:00	1	0	0	4	23	16	9	2	2	0	0	0	0	0	57
04:00	3	0	2	4	19	51	45	20	2	0	0	0	0	0	146
05:00	7	1	4	13	73	139	101	21	8	1	1	0	0	0	369
06:00	13	1	7	33	250	351	136	21	9	0	0	0	0	0	821
07:00	51	33	48	193	371	206	65	19	0	0	0	0	0	0	986
08:00	40	14	31	224	320	251	49	4	1	0	0	0	0	0	934
09:00	44	30	102	285	317	127	29	5	2	0	0	0	0	0	941
10:00	45	33	82	214	302	124	31	7	1	1	0	0	0	0	840
11:00	53	44	123	285	241	103	15	6	1	0	0	0	0	0	871
12 PM	56	62	182	341	205	73	10	1	0	0	0	0	0	0	930
13:00	71	35	148	329	253	96	10	6	1	0	0	0	0	0	949
14:00	52	32	106	331	312	119	15	0	1	0	0	0	0	0	968
15:00	65	71	150	259	280	96	17	4	1	0	0	0	0	0	943
16:00	52	34	81	190	312	144	40	5	0	0	0	0	0	0	858
17:00	58	41	105	283	297	127	19	5	0	0	0	0	0	0	935
18:00	39	39	87	212	233	118	29	4	0	0	0	0	0	0	761
19:00	26	22	61	153	244	127	23	3	0	0	0	0	0	0	659
20:00	31	23	59	182	179	82	19	4	1	0	0	0	0	0	580
21:00	29	20	48	116	146	93	22	7	2	0	0	0	0	0	483
22:00	18	16	22	79	130	98	37	8	0	0	0	0	0	0	408
23:00	6	6	15	27	53	71	26	7	2	0	0	0	0	0	213
Total	762	558	1470	3778	4632	2714	781	170	36	2	2	0	0	0	14905

Daily 15th Percentile: 23 MPH

50th Percentile: 30 MPH 85th Percentile: 37 MPH 95th Percentile: 41 MPH

 Mean Speed(Average):
 31 MPH

 10 MPH Pace Speed:
 26-35 MPH

 Number in Pace:
 8410

 Percent in Pace:
 56.4%

 Number of Vehicles > 35 MPH:
 3705

Grand 1430 1089 2965 6994 9374 5524 1644 342 62 5 5 0 0 0 29434

24.9%

Overall 15th Percentile: 23 MPH

Percent of Vehicles > 35 MPH:

 50th Percentile:
 31 MPH

 85th Percentile:
 37 MPH

 95th Percentile:
 41 MPH

 Mean Speed(Average):
 31 MPH

 10 MPH Pace Speed:
 26-35 MPH

 Number in Pace:
 16368

 Percent in Pace:
 55.6%

 Number of Vehicles > 35 MPH:
 7582

 Percent of Vehicles > 35 MPH:
 25.8%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street City/State: Worcester, MA

City/State: Worcester, MA 18010SP1

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/13/18	2	2	2	9	45	35	17	9	0	1	0	0	0	0	122
01:00	0	0	2	11	21	29	11	3	0	0	1	0	0	0	78
02:00	2	0	0	5	13	17	4	1	0	0	0	0	0	0	42
03:00	0	0	2	3	11	10	7	2	0	0	0	0	0	0	35
04:00	0	0	0	5	26	18	11	1	0	0	0	0	0	0	61
05:00	0	1	0	11	27	35	20	9	2	0	0	0	0	0	105
06:00	5	8	6	25	85	95	68	13	3	1	0	0	0	0	309
07:00	15	14	17	67	228	212	96	18	5	0	0	0	0	0	672
08:00	17	9	25	69	207	209	57	16	4	2	0	0	0	0	615
09:00	14	16	22	103	208	134	36	4	1	0	0	0	0	0	538
10:00	18	27	39	129	218	119	34	2	0	1	0	0	0	0	587
11:00	18	36	39	168	223	114	25	5	0	0	0	0	0	0	628
12 PM	29	23	51	192	251	115	27	3	0	0	0	0	0	0	691
13:00	34	25	52	168	281	154	36	3	0	0	0	0	0	0	753
14:00	28	32	84	199	339	139	28	5	2	0	0	0	0	0	856
15:00	24	18	81	236	362	134	35	7	1	0	0	0	0	0	898
16:00	28	26	87	288	361	147	33	4	0	0	0	0	0	0	974
17:00	20	20	60	238	385	188	39	0	1	0	0	0	0	0	951
18:00	15	11	24	140	287	197	32	4	1	0	0	0	0	0	711
19:00	13	15	35	131	206	141	28	4	1	1	0	0	0	0	575
20:00	9	14	24	85	169	107	25	5	1	1	0	0	0	0	440
21:00	7	18	24	88	140	96	43	8	0	0	0	0	0	0	424
22:00	5	10	14	45	111	81	21	6	0	0	0	0	0	0	293
23:00	3	3	12	23	79	76	46	11	3	0	0	0	0	0	256
Total	306	328	702	2438	4283	2602	779	143	25	7	11	0	0	0	11614

Daily 15th Percentile: 25 MPH

50th Percentile: 32 MPH 85th Percentile: 38 MPH 95th Percentile: 42 MPH

 Mean Speed(Average):
 32 MPH

 10 MPH Pace Speed:
 31-40 MPH

 Number in Pace:
 6885

 Percent in Pace:
 59.3%

 Number of Vehicles > 35 MPH:
 3557

 Percent of Vehicles > 35 MPH:
 30.6%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street

City/State: Worcester, MA 18010SP1

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/14/18	1	2	2	20	32	37	13	3	1	0	0	1	0	0	112
01:00	0	2	0	6	23	20	16	1	0	0	0	0	0	0	68
02:00	0	1	2	5	20	25	8	0	0	0	0	0	0	0	61
03:00	2	1	1	5	13	10	6	2	1	0	0	0	0	0	41
04:00	0	0	1	5	19	12	11	1	2	0	0	0	0	0	51
05:00	1	2	1	12	27	42	24	11	0	0	0	0	0	0	120
06:00	7	7	5	18	73	121	68	17	3	2	0	0	0	0	321
07:00	9	10	26	61	195	201	77	23	1	0	0	0	0	0	603
08:00	11	10	26	62	186	213	80	16	2	0	0	0	0	0	606
09:00	20	20	35	111	216	116	39	5	2	0	0	0	0	0	564
10:00	21	17	52	153	238	105	26	2	2	0	0	0	0	0	616
11:00	16	21	63	186	245	130	24	3	1	0	0	0	0	0	689
12 PM	25	35	92	200	246	116	16	2	0	0	0	0	0	0	732
13:00	15	23	74	231	250	122	29	1	1	0	0	0	0	0	746
14:00	26	31	66	274	288	119	31	3	0	0	0	0	0	0	838
15:00	43	30	64	254	344	147	41	2	2	0	0	0	0	0	927
16:00	51	38	123	303	351	119	14	4	0	0	0	0	0	0	1003
17:00	38	38	117	336	329	107	18	4	1	0	0	0	0	0	988
18:00	20	13	66	204	292	114	33	5	1	0	0	0	0	0	748
19:00	15	14	40	158	244	133	27	5	0	0	0	0	0	0	636
20:00	9	14	48	127	180	105	26	6	1	0	0	0	0	0	516
21:00	10	12	23	88	144	119	27	12	2	0	0	0	0	0	437
22:00	5	16	17	40	137	92	31	6	0	1	0	0	0	0	345
23:00	2	8	10	23	119	83	32	11	2	0	0	0	0	0	290
Total	347	365	954	2882	4211	2408	717	145	25	3	0	1	0	0	12058

Daily 15th Percentile: 25 MPH

50th Percentile: 31 MPH 85th Percentile: 38 MPH 95th Percentile: 42 MPH

 Mean Speed(Average):
 32 MPH

 10 MPH Pace Speed:
 26-35 MPH

 Number in Pace:
 7093

 Percent in Pace:
 58.8%

 er of Vehicles > 35 MPH:
 3299

Number of Vehicles > 35 MPH: 3299
Percent of Vehicles > 35 MPH: 27.4%

Gianu	652	693	1656	5320	8494	5010	1496	288	50	10	1	1	Λ	0 2	3672
Total	653	093	1030	3320	0494	3010	1430	200	50	10			U	0 20	3012

Overall 15th Percentile : 25 MPH

50th Percentile: 32 MPH 85th Percentile: 38 MPH 95th Percentile: 42 MPH

 Mean Speed(Average) :
 32 MPH

 10 MPH Pace Speed :
 26-35 MPH

 Number in Pace :
 13814

 Percent in Pace :
 58.4%

Number of Vehicles > 35 MPH: 6856
Percent of Vehicles > 35 MPH: 29.0%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street City/State: Worcester, MA

18010SP1

WB, EB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/13/18	3	4	7	25	78	74	29	15	4	1	0	0	0	0	240
01:00	1	1	4	16	45	48	14	4	0	0	1	0	0	0	134
02:00	4	2	1	9	32	35	15	2	0	0	0	0	0	0	100
03:00	0	0	4	7	28	26	15	6	0	0	0	0	0	0	86
04:00	1	0	2	10	57	86	45	11	2	0	0	0	0	0	214
05:00	8	2	2	33	121	163	133	42	3	0	0	0	0	0	507
06:00	25	10	20	79	372	417	183	44	6	2	0	0	0	0	1158
07:00	47	24	41	214	597	531	188	28	7	0	0	0	0	0	1677
08:00	69	29	108	273	585	394	101	28	4	2	0	0	0	0	1593
09:00	48	46	148	349	436	257	73	6	1	0	1	0	0	0	1365
10:00	69	73	147	332	486	236	51	6	0	1	0	0	0	0	1401
11:00	58	80	159	422	505	243	54	13	1	0	0	0	0	0	1535
12 PM	84	77	212	482	520	174	37	4	0	0	0	0	0	0	1590
13:00	69	58	187	391	584	250	58	6	2	0	0	0	0	0	1605
14:00	89	86	178	446	662	271	55	7	2	0	0	0	0	0	1796
15:00	87	66	230	476	658	264	56	8	2	1	0	0	0	0	1848
16:00	75	61	178	510	634	323	73	7	1	1	0	0	0	0	1863
17:00	79	52	178	457	677	365	73	6	1	0	0	0	0	0	1888
18:00	44	45	107	334	540	334	69	7	1	0	0	0	0	0	1481
19:00	33	41	98	265	411	247	61	9	3	1	0	0	0	0	1169
20:00	29	35	76	211	339	201	56	10	2	1	0	0	0	0	960
21:00	26	42	66	203	295	169	68	9	1	0	0	0	0	0	879
22:00	19	18	28	73	218	175	61	14	0	0	1	0	0	0	607
23:00	7	7	16	37	145	129	74	23	8	0	1	0	0	0	447
Total	974	859	2197	5654	9025	5412	1642	315	51	10	4	0	0	0	26143

24 MPH 31 MPH 38 MPH 42 MPH Daily 15th Percentile : 50th Percentile:

85th Percentile : 95th Percentile :

Mean Speed(Average):
10 MPH Pace Speed:
Number in Pace:
Percent in Pace:
Number of Vehicles > 35 MPH:
Percent of Vehicles > 35 MPH: 32 MPH 26-35 MPH 14679 56.1% 7434

28.4%

978-664-2565

Location: Shrewsbury Street Location: West of Casco Street

City/State: Worcester, MA 18010SP1

	_	_	_
1/1	0		_
vv	<b>D</b>	_	Г.

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76	
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
06/14/18	2	2	6	31	60	86	28	5	1	0	1	1	0	0	223
01:00	0	2	2	10	48	48	28	2	1	0	0	0	0	0	141
02:00	1	2	3	11	39	50	15	8	1	0	0	0	0	0	130
03:00	3	1	1	9	36	26	15	4	3	0	0	0	0	0	98
04:00	3	0	3	9	38	63	56	21	4	0	0	0	0	0	197
05:00	8	3	5	25	100	181	125	32	8	1	1	0	0	0	489
06:00	20	8	12	51	323	472	204	38	12	2	0	0	0	0	1142
07:00	60	43	74	254	566	407	142	42	1	0	0	0	0	0	1589
08:00	51	24	57	286	506	464	129	20	3	0	0	0	0	0	1540
09:00	64	50	137	396	533	243	68	10	4	0	0	0	0	0	1505
10:00	66	50	134	367	540	229	57	9	3	1	0	0	0	0	1456
11:00	69	65	186	471	486	233	39	9	2	0	0	0	0	0	1560
12 PM	81	97	274	541	451	189	26	3	0	0	0	0	0	0	1662
13:00	86	58	222	560	503	218	39	7	2	0	0	0	0	0	1695
14:00	78	63	172	605	600	238	46	3	1	0	0	0	0	0	1806
15:00	108	101	214	513	624	243	58	6	3	0	0	0	0	0	1870
16:00	103	72	204	493	663	263	54	9	0	0	0	0	0	0	1861
17:00	96	79	222	619	626	234	37	9	1	0	0	0	0	0	1923
18:00	59	52	153	416	525	232	62	9	1	0	0	0	0	0	1509
19:00	41	36	101	311	488	260	50	8	0	0	0	0	0	0	1295
20:00	40	37	107	309	359	187	45	10	2	0	0	0	0	0	1096
21:00	39	32	71	204	290	212	49	19	4	0	0	0	0	0	920
22:00	23	32	39	119	267	190	68	14	0	1	0	0	0	0	753
23:00	8	14	25	50	172	154	58	18	4	0	0	0	0	0	503
Total	1109	923	2424	6660	8843	5122	1498	315	61	5	2	1	0	0	26963

Daily 15th Percentile: 24 MPH

50th Percentile : 31 MPH 85th Percentile : 37 MPH 95th Percentile : 41 MPH

 Mean Speed(Average):
 31 MPH

 10 MPH Pace Speed:
 26-35 MPH

 Number in Pace:
 15503

 Percent in Pace:
 57.5%

Number of Vehicles > 35 MPH: 7004
Percent of Vehicles > 35 MPH: 26.0%

Grand 2083 1782 4621 12314 17868 10534 3140 630 112 6 0 0 53106 15 1

Overall 15th Percentile: 24 MPH

 50th Percentile:
 31 MPH

 85th Percentile:
 38 MPH

 95th Percentile:
 41 MPH

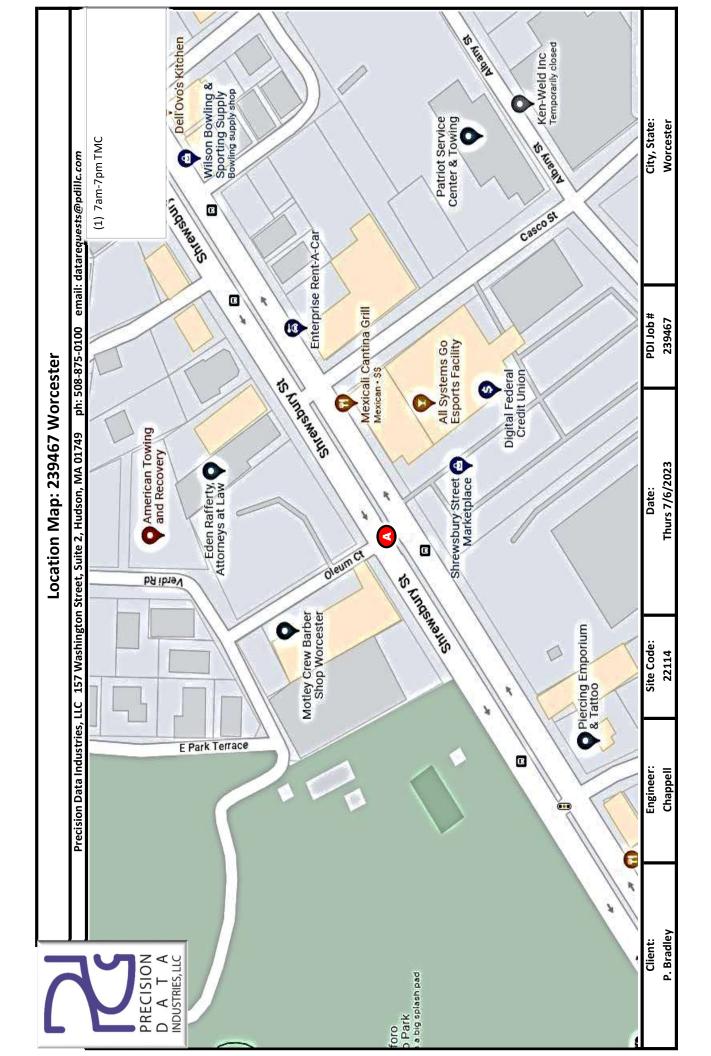
 Mean Speed(Average):
 31 MPH

 10 MPH Pace Speed:
 26-35 MPH

 Number in Pace:
 30182

 Percent in Pace:
 56.8%

Number of Vehicles > 35 MPH : 14438
Percent of Vehicles > 35 MPH : 27.2%



Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### Cars and Heavy Vehicles (Combined)

End Time:	7:00 PN	1					_	arc an	d Uaa	V.	hiclos	(Com	hinad\								
Class:		Ol-	Ch							vy ve	hicles		t Market	-l D-:			Chan	C.			
			um Stre					sbury St			Shrewsb				veway			sbury S			
	Right	Thru	m Nort		Total	Right	Thru	om East Left	U-Turn	Total	Right	Thru	m South		Total	Right	Thru	om Wes	U-Turn	Total	Total
7:00 AM	Right 0	1nru O	Lett 0	0-1um 0	Total 0	Right 0	105	Lert 2	0-14111	107	Right 2	O O	0	J-1urn 0	10tai	10	215	2	0-Turn 2	229	338
7:15 AM	0	0	1	0	1	0	126	1	0	127	4	0	0	0	4	10	264	3	6	283	415
7:30 AM	0	0	1	0	1	0	147	2	0	149	6	0	0	0	6	4	265	0	1	270	426
7:45 AM	4	0	0	0	4	0	153	1	0	154	2	0	0	0	2	6	284	5	7	302	462
Total	4	0	2	0	6	0	531	6	0	537	14	0	0	0	14	30	1028	10	16	1084	1641
8:00 AM	1	1	0	0	2	0	133	3	0	136	2	0	2	0	4	5	257	3	6	271	413
8:15 AM	1	0	2	0	3	0	156	0	1	157	2	0	1	0	3	15	240	3	2	260	423
8:30 AM	2	0	1	0	3	2	120	0	0	122	6	0	0	0	6	15	259	13	5	292	423
8:45 AM	7	0	1	0	8	6	143	0	0	149	9	0	0	0	9	9	259	15	7	290	456
Total	11	1	4	0	16	8	552	3	1	564	19	0	3	0	22	44	1015	34	20	1113	1715
9:00 AM	13	1	4	0	18	5	127	2	0	134	11	0	0	0	11	13	215	11	7	246	409
9:15 AM	2	0	1	0	3	1	144	1	0	146	5	0	0	0	5	12	216	6	7	241	395
9:30 AM	6	0	0	0	6	1	140	1	0	142	13	0	0	0	13	15	212	5	3	235	396
9:45 AM Total	5 26	0	7	0	7 34	5 12	133 544	1 5	0	139 561	10 39	0	0	0	10 39	16 56	197 840	12 34	8 25	233 955	389 1589
10:00 AM	4	1	1	0	6	2	140	2	0	144	12	0	1	0	13	18	221	8	8	255	418
10:15 AM 10:30 AM	11 3	0	1 1	0	12 4	1 4	121 139	3 1	0 0	125 144	10 14	0 0	1 1	0	11 15	17 13	213 189	3	8 11	241 216	389 379
10:45 AM	6	0	3	0	9	0	161	2	0	163	13	0	0	0	13	15	219	9	11	254	439
Total	24	1	6	0	31	7	561	8	0	576	49	0	3	0	52	63	842	23	38	966	1625
11:00 AM		0	2	0		3	138	1	1	143	13	0	1	0		19	162	7	10	198	365
11:00 AM	8	0	1	0	10 4	3	156	1 3	1 0	162	13	0	1 0	0	14 13	15	186	4	13	218	397
11:30 AM	7	0	0	0	7	6	160	2	0	168	14	0	0	0	14	17	188	4	5	214	403
11:45 AM	8	0	2	0	10	1	165	1	0	167	5	0	2	0	7	14	186	11	14	225	409
Total	26	0	5	0	31	13	619	7	1	640	45	0	3	0	48	65	722	26	42	855	1574
12:00 PM	12	0	3	0	15	4	181	1	0	186	13	1	1	0	15	21	212	10	5	248	464
12:15 PM	12	0	3	0	15	4	179	1	0	184	13	2	2	0	17	32	233	16	10	291	507
12:30 PM	8	0	1	0	9	4	159	1	0	164	18	0	0	0	18	24	212	9	12	257	448
12:45 PM	12	0	4	0	16	7	145	0	0	152	12	0	2	0	14	14	197	8	10	229	411
Total	44	0	11	0	55	19	664	3	0	686	56	3	5	0	64	91	854	43	37	1025	1830
1:00 PM	11	0	4	0	15	3	163	0	0	166	11	0	0	0	11	15	217	9	8	249	441
1:15 PM	6	1	2	0	9	6	160	1	1	168	11	0	0	0	11	13	215	11	13	252	440
1:30 PM	10	0	1	0	11	7	167	1	0	175	19	0	0	0	19	19	220	7	13	259	464
1:45 PM Total	12 39	1	3 10	0	15 50	20	178 668	3	1	183 692	12 53	0	0	0	12 53	20 67	226 878	12 39	16 50	274 1034	484 1829
2:00 PM	10	0	2	0	12	3	174	2	0	179	11	0	2	0	13	20	243	8	11	282	486
2:15 PM 2:30 PM	12 10	0	3 0	0	15 10	7 5	194 218	2 1	0 0	203 224	13 10	0 0	0 0	0	13 10	22 15	276 250	7 9	16 9	321 283	552 527
2:45 PM	10	0	4	0	14	5	206	0	0	211	15	0	1	0	16	25	210	7	11	253	494
Total	42	0	9	0	51	20	792	5	0	817	49	0	3	0	52	82	979	31	47	1139	2059
3:00 PM	12	0	2	0	14	5	211	2	0	218	14	0	0	0	14	18	226	10	6	260	506
3:15 PM	18	1	5	0	24	3	228	6	0	237	12	0	0	0	12	22	216	14	8	260	533
3:30 PM	16	0	3	0	19	2	253	1	0	256	13	0	0	0	13	24	246	9	12	291	579
3:45 PM	12	1	1	0	14	6	177	2	0	185	13	0	0	0	13	14	228	13	9	264	476
Total	58	2	11	0	71	16	869	11	0	896	52	0	0	0	52	78	916	46	35	1075	2094
4:00 PM	6	0	4	0	10	8	227	3	0	238	8	0	0	6	14	26	221	10	14	271	533
4:15 PM	11	0	5	0	16	7	240	2	0	249	23	0	0	0	23	18	204	13	10	245	533
4:30 PM	25	0	5	0	30	11	257	0	1	269	9	0	1	1	11	21	237	12	7	277	587
4:45 PM	22	0	2	0	24	13	252	4	0	269	8	0	0	0	8	21	226	13	11	271	572
Total	64	0	16	0	80	39	976	9	1	1025	48	0	1	7	56	86	888	48	42	1064	2225
5:00 PM	17	0	7	0	24	6	248	2	0	256	18	0	1	0	19	19	219	11	17	266	565
5:15 PM	16	0	6	0	22	5	252	2	1	260	10	0	1	0	11	22	233	7	13	275	568
5:30 PM	15	0	5	0	20	4	226	2	0	232	9	0	0	0	9	20	222	11	10	263	524
5:45 PM Total	14 62	0	3 21	0	17 83	4 19	223 949	0 6	0	227 975	7 44	0	3	0	8 47	23 84	193 867	33	11 51	231 1035	483 2140
6:00 PM	8	0	1	0	9	4	213	2	0	219	9	0	1	0	10	28	189	6	13	236	474
6:15 PM 6:30 PM	16 8	0	2 4	0	18 12	2 1	183 183	0 0	0	185 184	11 10	0	1 0	0	12 10	12 18	203 243	7 11	9 4	231 276	446 482
6:45 PM	12	0	2	0	14	3	162	1	0	166	13	0	0	0	13	18	232	9	4 17	276	482 470
Total	44	0	9	0	53	10	741	3	0	754	43	0	2	0	45	77	867	33	43	1020	1872
Grand Total	444		111		561	183	8466	69	5	8723	511	3	23	7	544		10696	400	446	12365	22193
Approach %	79.1	6 1.1	19.8	0.0	201	2.1	97.1	0.8	0.1	0/23	93.9	0.6	4.2	1.3	44ر	823 6.7	86.5	3.2	3.6	12303	22133
Total %	2.0	0.0	0.5	0.0	2.5	0.8	38.1	0.3	0.0	39.3	2.3	0.0	0.1	0.0	2.5	3.7	48.2	1.8	2.0	55.7	
1	-																				

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Cars and Heavy Vehicles (Combined)**

Class:							С	ars ar	nd Hea	ıvy Ve	hicles	(Com	bined	)							_
		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsh	ury Stre	et Marke	tplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Exiting Leg Total					586					11323					905					9379	22193
Cars	437	6	111	0	554	179	8264	69	5	8517	508	2	21	7	538	816	10408	396	441	12061	21670
% Cars	98.4	100.0	100.0	0.0	98.8	97.8	97.6	100.0	100.0	97.6	99.4	66.7	91.3	100.0	98.9	99.1	97.3	99.0	98.9	97.5	97.6
Exiting Leg Total					577					11032					898					9163	21670
Heavy Vehicles	7	0	0	0	7	4	202	0	0	206	3	1	2	0	6	7	288	4	5	304	523
% Heavy Vehicles	1.6	0.0	0.0	0.0	1.2	2.2	2.4	0.0	0.0	2.4	0.6	33.3	8.7	0.0	1.1	0.9	2.7	1.0	1.1	2.5	2.4
Exiting Leg Total					9					291					7					216	523

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

7:30 AM	ĺ	Ole	um Str	eet	Ĭ		Shrew	sbury S	treet		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	0	1	0	1	0	147	2	0	149	6	0	0	0	6	4	265	0	1	270	426
7:45 AM	4	0	0	0	4	0	153	1	0	154	2	0	0	0	2	6	284	5	7	302	462
8:00 AM	1	1	0	0	2	0	133	3	0	136	2	0	2	0	4	5	257	3	6	271	413
8:15 AM	1	0	2	0	3	0	156	0	1	157	2	0	1	0	3	15	240	3	2	260	423
Total Volume	6	1	3	0	10	0	589	6	1	596	12	0	3	0	15	30	1046	11	16	1103	1724
% Approach Total	60.0	10.0	30.0	0.0		0.0	98.8	1.0	0.2		80.0	0.0	20.0	0.0		2.7	94.8	1.0	1.5		
PHF	0.375	0.250	0.375	0.000	0.625	0.000	0.944	0.500	0.250	0.949	0.500	0.000	0.375	0.000	0.625	0.500	0.921	0.550	0.571	0.913	0.933
Cars		1	2	0	9	0	565	6	1	572	12	0	3	0	15	30	1013	10	16	1069	1665
Cars %	83.3	100.0	100.0	0.0	90.0	-	95.9	100.0	100.0	96.0		0.0	100.0		100.0		96.8	90.9		96.9	96.6
Heavy Vehicles	1	0.001	0.00	0.0	1	0.0	24	0.001	0	24		0.0	0.00	0.0	0.001	0.001	33	1	0	34	59
Heavy Vehicles %	16.7	0.0	0.0	0.0	10.0	-	4.1	0.0	0.0	4.0	_	0.0	0.0	0.0	0.0	0.0	3.2	9.1	0.0	3.1	3.4
Cars Enter Leg	5	1	3	0	9	0	565	6	1	572	12	0	3	0	15	30	1013	10	16	1069	1665
Heavy Enter Leg	1	0	0	0	1	0	24	0	1	24		0	0	0	13	0	33	10	0	34	59
Total Entering Leg	6	1	3	0	10		589	6	1	596		0	3	0	15	30	1046	11	16	1103	1724
Cars Exiting Leg		_		-				_	_			_	_	_	_					589	1665
Heavy Exiting Leg					10					1029 33					37					25	
Total Exiting Leg					11					1062					37					614	59 1724
										1002	I				37					314	1,24

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

1:45 PM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
1:45 PM	12	0	3	0	15	4	178	1	0	183	12	0	0	0	12	20	226	12	16	274	484
2:00 PM	10	0	2	0	12	3	174	2	0	179	11	0	2	0	13	20	243	8	11	282	486
2:15 PM	12	0	3	0	15	7	194	2	0	203	13	0	0	0	13	22	276	7	16	321	552
2:30 PM	10	0	0	0	10	5	218	1	0	224	10	0	0	0	10	15	250	9	9	283	527
Total Volume	44	0	8	0	52	19	764	6	0	789	46	0	2	0	48	77	995	36	52	1160	2049
% Approach Total	84.6	0.0	15.4	0.0		2.4	96.8	0.8	0.0		95.8	0.0	4.2	0.0		6.6	85.8	3.1	4.5		
PHF	0.917	0.000	0.667	0.000	0.867	0.679	0.876	0.750	0.000	0.881	0.885	0.000	0.250	0.000	0.923	0.875	0.901	0.750	0.813	0.903	0.928
Cars	43	0	8	0	51	19	743	6	0	768	46	0	2	0	48	76	969	35	52	1132	1999
Cars %	97.7	0.0	100.0		98.1	100.0	97.3	100.0	0.0	97.3	-	0.0	100.0	0.0	100.0	98.7	97.4	97.2	100.0	97.6	97.6
Heavy Vehicles	1	0	0	0	1	0	21	0	0	21	0	0	0	0	0	1	26	1	0	28	50
Heavy Vehicles %	2.3	0.0	0.0	0.0	1.9	0.0	2.7	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	1.3	2.6	2.8	0.0	2.4	2.4
Cars Enter Leg	43	0	8	0	51	19	743	6	0	768	46	0	2	0	48	76	969	35	52	1132	1999
Heavy Enter Leg	1	0	0	0	1	0	21	0	0	21	0	0	0	0	0	1	26	1	0	28	50
Total Entering Leg	44	0	8	0	52	19	764	6	0	789	46	0	2	0	48	77	995	36	52	1160	2049
Cars Exiting Leg	I				54					1023					82					840	1999
Heavy Exiting Leg					1					26					1					22	50
Total Exiting Leg					55					1049					83					862	2049

4:30 PM		Ole	um Stre	eet			Shrew	sbury S	treet		Shrewsb	ury Stree	et Marke	tplace Di	riveway		Shrew	sbury S	treet		
		fro	m Nort	:h			fr	om Eas	t			fro	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	25	0	5	0	30	11	257	0	1	269	9	0	1	1	11	21	237	12	7	277	587
4:45 PM	22	0	2	0	24	13	252	4	0	269	8	0	0	0	8	21	226	13	11	271	572
5:00 PM	17	0	7	0	24	6	248	2	0	256	18	0	1	0	19	19	219	11	17	266	565
5:15 PM	16	0	6	0	22	5	252	2	1	260	10	0	1	0	11	22	233	7	13	275	568
Total Volume	80	0	20	0	100	35	1009	8	2	1054	45	0	3	1	49	83	915	43	48	1089	2292
% Approach Total	80.0	0.0	20.0	0.0		3.3	95.7	0.8	0.2		91.8	0.0	6.1	2.0		7.6	84.0	3.9	4.4		
PHF	0.800	0.000	0.714	0.000	0.833	0.673	0.982	0.500	0.500	0.980	0.625	0.000	0.750	0.250	0.645	0.943	0.965	0.827	0.706	0.983	0.976
Cars	80	0	20	0	100	35	1002	8	2	1047	45	0	3	1	49	82	904	43	47	1076	2272

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Class:

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

**Cars and Heavy Vehicles (Combined)** 

												•		•							
		Ole	um Str	eet			Shrew	sbury S	Street		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	om Nor	th			fı	om Eas	st			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Cars %	100.0	0.0	100.0	0.0	100.0	100.0	99.3	100.0	100.0	99.3	100.0	0.0	100.0	100.0	100.0	98.8	98.8	100.0	97.9	98.8	99.1
Heavy Vehicles	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	1	11	0	1	13	20
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	1.2	1.2	0.0	2.1	1.2	0.9
Cars Enter Leg	80	0	20	0	100	35	1002	8	2	1047	45	0	3	1	49	82	904	43	47	1076	2272
Heavy Enter Leg	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	1	11	0	1	13	20
Total Entering Leg	80	0	20	0	100	35	1009	8	2	1054	45	0	3	1	49	83	915	43	48	1089	2292
Cars Exiting Leg					78					971					91					1132	2272
Heavy Exiting Leg					0					11					1					8	20
Total Exiting Leg					78					982					92					1140	2292

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Class:	7:00 PIV	1								Ca	ırs										
		Ole	um Stre	et			Shrew	sbury S	treet			ury Stree	et Market	place Dri	veway		Shrew	sbury St	treet		
		fro	m Nort	h			fr	om East	t			fro	m South	ı			fro	om Wes	t		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left I	J-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	94	2	0	96	2	0	0	0	2	10	208	2	2	222	320
7:15 AM	0	0	1	0	1	0	126	1	0	127	4	0	0	0	4	10	256	3	6	275	407
7:30 AM 7:45 AM	0 4	0	1 0	0 0	1 4	0	140 147	2 1	0	142 148	6 2	0	0 0	0 0	6	4 6	258 274	0 4	1 7	263 291	412 445
Total	4	0	2	0	6	0	507	6	0	513	14	0	0	0	14	30	996	9	16	1051	1584
8:00 AM 8:15 AM	0 1	1	0 2	0	1	0	127 151	3 0	0 1	130 152	2 2	0	2 1	0 0	4 3	5 15	249 232	3	6 2	263 252	398 410
8:30 AM	2	0	1	0	3	2	113	0	0	115	6	0	0	0	6	15	246	12	5	278	402
8:45 AM	6	0	1	0	7	6	138	0	0	144	9	0	0	0	9	9	251	15	7	282	442
Total	9	1	4	0	14	8	529	3	1	541	19	0	3	0	22	44	978	33	20	1075	1652
9:00 AM	13	1	4	0	18	5	123	2	0	130	11	0	0	0	11	13	209	11	7	240	399
9:15 AM	2	0	1	0	3	1	142	1	0	144	5	0	0	0	5	12	211	6	7	236	388
9:30 AM	6	0	0	0	6	1	136	1	0	138	13	0	0	0	13	15	203	5	3	226	383
9:45 AM	5	0	2	0	7	5	128	1	0	134	9	0	0	0	9	14	188	12	8	222	372
Total	26	1	7	0	34	12	529	5	0	546	38	0	0	0	38	54	811	34	25	924	1542
10:00 AM	4	1	1	0	6	2	134	2	0	138	11	0	0	0	11	17	217	7	8	249	404
10:15 AM	10	0	1	0	11	1	119	3	0	123	10	0	1	0	11	16	205	3	8	232	377
10:30 AM	3	0	1	0	4	4	134	1	0	139	14	0	0	0	14	13	181	3	11	208	365
10:45 AM Total	6 23	1	3 6	0	9 30	7	155 542	2 8	0	157 557	13 48	0	0	0	13 49	15 61	213 816	9 22	38	248 937	427 1573
							542	٥	U		40										
11:00 AM	8	0	2	0	10	3	131	1	1	136	13	0	1	0	14	19	158	7	9	193	353
11:15 AM 11:30 AM	3 7	0	1 0	0 0	4 7	3 6	152 151	3 2	0	158 159	13 14	0	0 0	0 0	13 14	15 17	177 183	4 4	12 5	208 209	383 389
11:45 AM	8	0	2	0	10	1	158	1	0	160	5	0	2	0	7	14	181	11	14	220	397
Total	26	0	5	0	31	13	592	7	1	613	45	0	3	0	48	65	699	26	40	830	1522
12:00 PM	12	0	3	0	15	4	175	1	0	180	13	1	1	0	15	21	200	10	5	236	446
12:15 PM	12	0	3	0	15	4	173	1	0	182	12	1	2	0	15	32	221	16	10	279	491
12:30 PM	8	0	1	0	9	4	151	1	0	156	18	0	0	0	18	24	210	9	12	255	438
12:45 PM	12	0	4	0	16	7	145	0	0	152	12	0	2	0	14	14	189	8	10	221	403
Total	44	0	11	0	55	19	648	3	0	670	55	2	5	0	62	91	820	43	37	991	1778
1:00 PM	9	0	4	0	13	2	153	0	0	155	11	0	0	0	11	15	212	9	8	244	423
1:15 PM	6	1	2	0	9	6	160	1	1	168	11	0	0	0	11	13	209	11	12	245	433
1:30 PM	10	0	1	0	11	7	162	1	0	170	19	0	0	0	19	19	213	7	13	252	452
1:45 PM	12	0	3	0	15	4	173	1	0	178	12	0	0	0	12	20	220	12	16	268	473
Total	37	1	10	0	48	19	648	3	1	671	53	0	0	0	53	67	854	39	49	1009	1781
2:00 PM	9	0	2	0	11	3	169	2	0	174	11	0	2	0	13	19	236	7	11	273	471
2:15 PM	12	0	3	0	15	7	187	2	0	196	13	0	0	0	13	22	268	7	16	313	537
2:30 PM 2:45 PM	10 10	0	0 4	0 0	10 14	5 5	214 203	1 0	0	220 208	10 15	0	0 1	0 0	10 16	15 25	245 207	9 7	9 11	278 250	518 488
Total	41	0	9	0	50	20	773	5	0	798	49	0	3	0	52	81	956	30	47	1114	2014
3:00 PM	1 12	0	2	0	14	4	200	2	•	244	I 44	0	0	0	14	10		10	_	252	404
3:15 PM	12 18	0	2 5	0 0	14 24	4	208 220	2 6	0	214 229	14 12	0	0 0	0 0	14	18 21	218 208	10 14	6 8	252 251	494 516
3:30 PM	16	0	3	0	19	1	252	1	0	254	13	0	0	0	13	24	237	9	12	282	568
3:45 PM	11	1	1	0	13	5	177	2	0	184	13	0	0	0	13	14	221	13	8	256	466
Total	57	2	11	0	70	13	857	11	0	881	52	0	0	0	52	77	884	46	34	1041	2044
4:00 PM	6	0	4	0	10	8	225	3	0	236	8	0	0	6	14	26	215	10	14	265	525
4:15 PM	11	0	5	0	16	7	234	2	0	243	23	0	0	0	23	18	203	13	10	244	526
4:30 PM	25	0	5	0	30	11	256	0	1	268	9	0	1	1	11	21	232	12	7	272	581
4:45 PM	22	0	2	0	24	13	249	4	0	266	8	0	0	0	8	20	223	13	11	267	565
Total	64	0	16	0	80	39	964	9	1	1013	48	0	1	7	56	85	873	48	42	1048	2197
5:00 PM	17	0	7	0	24	6	245	2	0	253	18	0	1	0	19	19	219	11	16	265	561
5:15 PM	16	0	6	0	22	5	252	2	1	260	10	0	1	0	11	22	230	7	13	272	565
5:30 PM 5:45 PM	15	0	5 3	0	20	4	223	2 0	0	229	9 7	0	0	0	9	20	222	11 4	10	263	521
Total	14 62	0	21	0	17 83	19	221 941	6	1	225 967	44	0	3	0	8 47	23 84	190 861	33	50	228 1028	478 2125
!																					
6:00 PM 6:15 PM	8 16	0	1 2	0 0	9 18	4 2	212 180	2	0	218 182	9 11	0	1 1	0 0	10 12	28 12	185 202	6 7	13 9	232 230	469 442
6:30 PM	8	0	4	0	18	1	180	0	0	182	10	0	0	0	10	18	202	11	4	275	442 478
6:45 PM	12	0	2	0	14	3	162	1	0	166	13	0	0	0	13	19	231	9	17	276	469
Total	44	0	9	0	53	10	734	3	0	747	43	0	2	0	45	77	860	33	43	1013	1858
	1										1										
Grand Total	437	6	111	0	554	179	8264	69	5	8517	508	2	21	7	538		10408	396		12061	21670
Approach %	78.9	1.1	20.0	0.0	I	2.1	97.0	0.8	0.1		94.4	0.4	3.9	1.3		6.8	86.3	3.3	3.7		

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Class:										Ca	ırs										
		Ole	eum Str	eet			Shrew	sbury S	Street		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fr	om Nor	th			fr	om Eas	st			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Total %	2.0	0.0	0.5	0.0	2.6	0.8	38.1	0.3	0.0	39.3	2.3	0.0	0.1	0.0	2.5	3.8	48.0	1.8	2.0	55.7	
Exiting Leg Total					577					11032					898					9163	21670

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

7:30 AM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsk	oury Stree	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fro	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	0	1	0	1	0	140	2	0	142	6	0	0	0	6	4	258	0	1	263	412
7:45 AM	4	0	0	0	4	0	147	1	0	148	2	0	0	0	2	6	274	4	7	291	445
8:00 AM	0	1	0	0	1	0	127	3	0	130	2	0	2	0	4	5	249	3	6	263	398
8:15 AM	1	0	2	0	3	0	151	0	1	152	2	0	1	0	3	15	232	3	2	252	410
Total Volume	5	1	3	0	9	0	565	6	1	572	12	0	3	0	15	30	1013	10	16	1069	1665
% Approach Total	55.6	11.1	33.3	0.0		0.0	98.8	1.0	0.2		80.0	0.0	20.0	0.0		2.8	94.8	0.9	1.5		
PHF	0.313	0.250	0.375	0.000	0.563	0.000	0.935	0.500	0.250	0.941	0.500	0.000	0.375	0.000	0.625	0.500	0.924	0.625	0.571	0.918	0.935
Entering Leg	5	1	3	0	9	0	565	6	1	572	12	0	3	0	15	30	1013	10	16	1069	1665
Exiting Leg					10					1029					37					589	1665
Total		•	•		19		•	•		1601					52		•		•	1658	3330

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

1:45 PM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsk	oury Stree	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fro	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
1:45 PM	12	0	3	0	15	4	173	1	0	178	12	0	0	0	12	20	220	12	16	268	473
2:00 PM	9	0	2	0	11	3	169	2	0	174	11	0	2	0	13	19	236	7	11	273	471
2:15 PM	12	0	3	0	15	7	187	2	0	196	13	0	0	0	13	22	268	7	16	313	537
2:30 PM	10	0	0	0	10	5	214	1	0	220	10	0	0	0	10	15	245	9	9	278	518
Total Volume	43	0	8	0	51	19	743	6	0	768	46	0	2	0	48	76	969	35	52	1132	1999
% Approach Total	84.3	0.0	15.7	0.0		2.5	96.7	0.8	0.0		95.8	0.0	4.2	0.0		6.7	85.6	3.1	4.6		
PHF	0.896	0.000	0.667	0.000	0.850	0.679	0.868	0.750	0.000	0.873	0.885	0.000	0.250	0.000	0.923	0.864	0.904	0.729	0.813	0.904	0.931
		_	_		1			_		=					ا ا						
Entering Leg	43	0	8	0	51	19	743	6	0	768	46	0	2	0	48	76	969	35	52	1132	
Exiting Leg					54					1023					82					840	1999
Total					105					1791					130					1972	3998

4:30 PM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsb	ury Stre	et Marke	tplace Dr	iveway		Shrew	sbury S	treet		
		fro	m Nor	th			fr	om Eas	t			fro	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	25	0	5	0	30	11	256	0	1	268	9	0	1	1	11	21	232	12	7	272	581
4:45 PM	22	0	2	0	24	13	249	4	0	266	8	0	0	0	8	20	223	13	11	267	565
5:00 PM	17	0	7	0	24	6	245	2	0	253	18	0	1	0	19	19	219	11	16	265	561
5:15 PM	16	0	6	0	22	5	252	2	1	260	10	0	1	0	11	22	230	7	13	272	565
Total Volume	80	0	20	0	100	35	1002	8	2	1047	45	0	3	1	49	82	904	43	47	1076	2272
% Approach Total	80.0	0.0	20.0	0.0		3.3	95.7	0.8	0.2		91.8	0.0	6.1	2.0		7.6	84.0	4.0	4.4		
PHF	0.800	0.000	0.714	0.000	0.833	0.673	0.979	0.500	0.500	0.977	0.625	0.000	0.750	0.250	0.645	0.932	0.974	0.827	0.734	0.989	0.978
Entering Leg	80	0	20	0	100	35	1002	8	2	1047	45	0	3	1	49	82	904	43	47	1076	2272
Exiting Leg					78					971					91					1132	2272
Total					178					2018					140					2208	4544

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Part	Class:				He	avy \	/ehicle	s-Con	nbined	d (Buse	es, Si	ingle-U	nit Tru	ucks, A	rticula	ated	Truck	s)				
Triangle   March   M			Ole	um Stre	et			Shrew	sbury St	reet		Shrewsb	ury Stree	t Marketı	olace Driv	reway		Shrev	vsbury	Street		
713 AM			fro	m Nortl	า			fro	om East				fro	m South	า			fr	om We	st		
7:15 AM																Total					Total	-
7-30 AMM						-										-					7	
Total   Tota																						
Total 0 0 0 0 0 0 0 0 0 0 2 0 0 2 0 0 2 0																						
8.15 AMM		_										_										
8.15 AMM	8:00 AM	1 1	Ō	0	n	1	0	6	0	0	6	<b>I</b> o	0	0	Ō	٥	0	8	0	0	8	15
Self-SAM																						
Total   2	8:30 AM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	13	1	0	14	21
9:00 AM											_											
9:15 AMM	Total	2	0	0	0	2	0	23	0	0	23	0	0	0	0	0	0	37	1	0	38	63
9:93.0 AM																						
9.45 AM																						
Total																1						
1000 AM																1						
10:15 AM	10:00 AM	I o	0	0	0			6	0	0			0	1	0		1	4	1	0		1 11
10:30 AM																						
Total																1						
11:00 AM		_										_				_						
11:15 AM	Total	1	0	0	0	1	0	19	0	0	19	1	0	2	0	3	2	26	1	0	29	52
11:30 AM																						
Total 0 0 0 0 0 0 0 0 7 0 0 0 7 0 0 0 7 0 0 0 0 0 0 5 0 0 5 12  Total 0 0 0 0 0 0 0 0 0 7 0 0 0 7 0 0 0 0 0																						
Total 0 0 0 0 0 0 0 0 0 27 0 0 27 0 0 27 0 0 0 2 0 0 0 0																						
12:00 PM		_										_										
12:15 PM 0 0 0 0 0 0 0 0 0 2 0 0 0 2 1 1 0 0 0 2 2 0 12 2 0 0 12 16  12:30 PM 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12:00 PM	I o	0	0	0	ا م	n	6	0	0	6	I n	0	0	0		0	12	0	0	12	12
12:30 PM																						
Total																						
1:00 PM																						
1:15 PM 1:30 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	16	0	0	16	1	1	0	0	2	0	34	0	0	34	52
1:30 PM 1:30 PM 0 0 0 0 0 0 0 5 0 0 5 0 0 5 0 0 0 0 0 0		2	0	0			1	10	0		11		0	0	0	0			0	0		
1:45 PM																						
Total 2 0 0 0 0 2 1 20 0 0 0 2 1 20 0 0 0 21 0 0 0 21 0 0 0 0																						
2:00 PM																						
2:15 PM		I 1	0	0	0				0				0	0	0		1	7	1	0		
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3:00 PM	2:45 PM	0					0		0							Ŭ						
3:15 PM	Total	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	1	23	1	0	25	45
3:30 PM	3:00 PM	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	8	0	0	8	12
3:45 PM																						
Total 1 0 0 0 1 3 12 0 0 15 0 0 0 0 0 1 32 0 1 34 50  4:00 PM																						
4:00 PM												_										
4:15 PM         0         0         0         0         6         0         0         0         0         0         1         0         0         1         7         4:30 PM         0         <																						
4:30 PM         0         0         0         0         1         0         0         1         0         0         0         0         0         5         0         0         5         6         4:45 PM         0         <																						
Total 0 0 0 0 0 0 0 12 0 0 12 0 0 0 0 0 0 1 15 0 0 16 28  5:00 PM 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																						
5:00 PM         0         0         0         0         3         0         0         3         0 </td <td>4:45 PM</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>3</td> <td>0</td> <td>0</td> <td>3</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>3</td> <td>0</td> <td>0</td> <td>4</td> <td>7</td>	4:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	3	0	0	4	7
5:15 PM         0 </td <td>Total</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>12</td> <td>0</td> <td>0</td> <td>12</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>15</td> <td>0</td> <td>0</td> <td>16</td> <td>28</td>	Total	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	1	15	0	0	16	28
5:30 PM         0         0         0         0         3         0         0         3         0 </td <td>5:00 PM</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>3</td> <td>0</td> <td>0</td> <td>3</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>4</td>	5:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	1	1	4
5:45 PM         0         0         0         0         2         0         0         2         0         0         0         0         0         3         5           Total         0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																						
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6:00 PM																						
6:15 PM 0 0 0 0 0 0 0 3 0 0 3 0 0 0 0 0 0 1 0 0 1 4 6:30 PM 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 4 6:45 PM 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																:						
6:30 PM 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 1 4 6 6:45 PM 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 1 1 1 Total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																						
6:45 PM         0 </td <td></td> <td>1</td> <td></td>																					1	
Total         0         0         0         0         7         0         0         7         0         0         0         0         0         0         0         0         7         14           Grand Total         7         0         0         7         4         202         0         0         206         3         1         2         0         6         7         288         4         5         304         523           Approach%         100.0         0.0         0.0         1.9         98.1         0.0         0.0         50.0         16.7         33.3         0.0         2.3         94.7         1.3         1.6																					1	
Approach% 100.0 0.0 0.0 0.0 1.9 98.1 0.0 0.0 50.0 16.7 33.3 0.0 2.3 94.7 1.3 1.6	Total	0	0	0	0		0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	14
Approach% 100.0 0.0 0.0 0.0 1.9 98.1 0.0 0.0 50.0 16.7 33.3 0.0 2.3 94.7 1.3 1.6	Grand Total	7	0	0	0	7	4	202	0	0	206	3	1	2	0	6	7	288	4	5	304	523
Total % 1.3 0.0 0.0 0.0 1.3 0.8 38.6 0.0 0.0 39.4 0.6 0.2 0.4 0.0 1.1 1.3 55.1 0.8 1.0 58.1																						
	Total %	1.3	0.0	0.0	0.0	1.3	0.8	38.6	0.0	0.0	39.4	0.6	0.2	0.4	0.0	1.1	1.3	55.1	0.8	1.0	58.1	

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: 22114

Class:

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

		Ole	um Str	eet			Shrew	sbury S	Street		Shrewsk	ury Stre	et Marke	tplace D	riveway		Shrew	sbury S	Street		Ì
		fro	om Nor	th			fr	om Eas	st			fr	om Sou	th			fr	om We	st		Ì
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Exiting Leg Total					9					291					7					216	523
Buses	0	0	0	0	0	1	29	0	0	30	0	0	0	0	0	0	31	0	2	33	63
% Buses	0.0	0.0	0.0	0.0	0.0	25.0	14.4	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	0.0	10.8	0.0	40.0	10.9	12.0
Exiting Leg Total					1					31					0					31	63
Single-Unit Trucks	7	0	0	0	7	3	152	0	0	155	3	0	2	0	5	6	216	4	3	229	396
% Single-Unit	100.0	0.0	0.0	0.0	100.0	75.0	75.2	0.0	0.0	75.2	100.0	0.0	100.0	0.0	83.3	85.7	75.0	100.0	60.0	75.3	75.7
Exiting Leg Total					7					219					6					164	396
Articulated Trucks	0	0	0	0	0	0	21	0	0	21	0	1	0	0	1	1	41	0	0	42	64
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	10.2	0.0	100.0	0.0	0.0	16.7	14.3	14.2	0.0	0.0	13.8	12.2
Exiting Leg Total					1					41					1					21	64

AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

7:45 AM		Ole	um Stre	eet			Shrew	sbury S	Street		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrev	vsbury S	Street		
		fro	m Nort	th			fr	om Eas	st			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	10	1	0	11	17
8:00 AM	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	0	8	0	0	8	15
8:15 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	8	0	0	8	13
8:30 AM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	13	1	0	14	21
Total Volume	1	0	0	0	1	0	24	0	0	24	0	0	0	0	0	0	39	2	0	41	66
% Approach Total	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	95.1	4.9	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.857	0.000	0.000	0.857	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.500	0.000	0.732	0.786
Buses	0	0	0	0	0	0	4	0	0	4	<b>І</b> о	0	0	0	ol	0	1	0	0	4	8
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	9.8	12.1
Single-Unit Trucks	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	0	25	2	0	27	47
Single-Unit %	100.0	0.0	0.0	0.0	100.0	0.0	79.2	0.0	0.0	79.2	0.0	0.0	0.0	0.0	0.0	0.0	64.1	100.0	0.0	65.9	71.2
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	10	0	0	10	11
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	25.6	0.0	0.0	24.4	16.7
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
Single-Unit Trucks	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	0	25	2	0	27	47
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	10	0	0	10	11
Total Entering Leg	1	0	0	0	1	0	24	0	0	24	0	0	0	0	0	0	39	2	0	41	66
Buses					0					4					0					4	8
Single-Unit Trucks					2					25					0					20	47
Articulated Trucks					0					10					0					1	11
Total Exiting Leg					2					39					0					25	66

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

11:30 AM		Ole	um Stre	eet			Shrew	sbury S	treet		Shrewsk	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nort	:h			fr	om Eas	t			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:30 AM	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	14
11:45 AM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	5	0	0	5	12
12:00 PM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	12	0	0	12	18
12:15 PM	0	0	0	0	0	0	2	0	0	2	1	1	0	0	2	0	12	0	0	12	16
Total Volume	0	0	0	0	0	0	24	0	0	24	1	1	0	0	2	0	34	0	0	34	60
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.667	0.250	0.250	0.000	0.000	0.250	0.000	0.708	0.000	0.000	0.708	0.833
Buses	0	0	0	0	0	0	5	0	0	5	0	0	0	0	o	0	2	0	0	2	7
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.0	20.8	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	11.7
Single-Unit Trucks	0	0	0	0	0	0	18	0	0	18	1	0	0	0	1	0	29	0	0	29	48
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	75.0	100.0	0.0	0.0	0.0	50.0	0.0	85.3	0.0	0.0	85.3	80.0
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	3	0	0	3	5
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	4.2	0.0	100.0	0.0	0.0	50.0	0.0	8.8	0.0	0.0	8.8	8.3
Buses	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	7
Single-Unit Trucks	0	0	0	0	0	0	18	0	0	18	1	0	0	0	1	0	29	0	0	29	48
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	3	0	0	3	5
Total Entering Leg	0	0	0	0	0	0	24	0	0	24	1	1	0	0	2	0	34	0	0	34	60
Buses	Ī				0					2					0					5	7
Single-Unit Trucks					0					30					0					18	48
Articulated Trucks					1					3					0					1	5
Total Exiting Leg					1					35					0					24	60

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Class:

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

		Ole	um Stre	eet			Shrew	sbury S	treet		Shrewsh	oury Stre	et Marke	tplace Di	riveway		Shrev	sbury S	treet		
		fro	m Nort	th			fr	om Eas	t			fr	om Sou	th			fr	om Wes	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM		Ole	um Stre	eet			Shrew	sbury S	treet		Shrewsk	oury Stre	et Marke	tplace Di	riveway		Shrev	sbury S	treet		
		fro	m Nort	th			fr	om Eas	t			fr	om Sou	th			fr	om Wes	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	8	0	0	8	12
3:15 PM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	1	8	0	0	9	17
3:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	9	0	0	9	11
3:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	7	0	1	8	10
Total Volume	1	0	0	0	1	3	12	0	0	15	0	0	0	0	0	1	32	0	1	34	50
% Approach Total	100.0	0.0	0.0	0.0		20.0	80.0	0.0	0.0		0.0	0.0	0.0	0.0		2.9	94.1	0.0	2.9		
PHF	0.250	0.000	0.000	0.000	0.250	0.750	0.375	0.000	0.000	0.469	0.000	0.000	0.000	0.000	0.000	0.250	0.889	0.000	0.250	0.944	0.735
_	1 -	_	_	_	-1			_		_1	1 -	_	_		-1	_	_	_		_	ı _
Buses Buses %	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	8
Single-Unit Trucks	0.0	0.0	0.0	0.0	0.0	33.3 2	8.3 10	0.0	0.0	13.3 12	0.0	0.0	0.0	0.0	0.0	0.0	18.8 23	0.0	0.0	17.6 25	16.0 38
Single-Unit %	100.0	0.0	0.0	0.0	100.0	66.7	83.3	0.0	0.0	80.0	0.0	0.0	0.0	0.0	0.0	100.0	71.9	0.0	100.0	73.5	76.0
Articulated Trucks	0	0.0	0.0	0.0	0.001	0	1	0.0	0.0	1	0.0	0.0	0.0	0.0	0.0	0	3	0.0	0	3	4
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0	8.8	8.0
Buses	0	0	0	0	o	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	8
Single-Unit Trucks	1	0	0	0	1	2	10	0	0	12	0	0	0	0	0	1	23	0	1	25	38
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
Total Entering Leg	1	0	0	0	1	3	12	0	0	15	0	0	0	0	0	1	32	0	1	34	50
Buses					1					6					0					1	8
Single-Unit Trucks					2					23					1					12	38
Articulated Trucks					0					3					0					1	4
Total Exiting Leg					3					32					1					14	50

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### Buses

End Time:	7:00 PN	1																			
Class:										Bu	ses										
		Ole	um Stre	et			Shrew	sbury S	Street		Shrewsb	urv Stree	et Market	place Dri	/ewav		Shrev	vsbury	Street		
												•			,						
			om Nort					om Eas					om Sout					om We			
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
8:00 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0
8:15 AM	0	0	0	0	0	0	2	0	0	2		0	0	0	0	0	1	0		1	3
8:30 AM	0	0	0	0	0	0	1	0	0	1		0	0	0	0	0	1	0		1	2
8:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0		1	2
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
9:00 AM	0	0	0	0	0	۱ ،	1	0	0	1		0	0	0	0		1	0	0	1	٠,
		0		0		0	1	0	0	1		0		0		0	1	0		1	2
9:15 AM	0	0	0	0	0		1	0	0	1		0	0	0	0		1	0		1	2
9:30 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0		1	1
9:45 AM	0	0	0	0	0		1	0	0	1	0	0	0	0	0	0	2	0		2	3
Total	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	8
10:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	0		1	0		1	1
10:30 AM	0	0	0	0	0	0	1	0	0	1		0	0	0	0	0	0	0		0	
																					1
10:45 AM	0	0	0	0	0	0	2	0	0	2	_	0	0	0	0	0	1	0		1	3
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
11:15 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	1	1	1
11:30 AM	0	0	0	0	0	0	1	0	0	1		0	0	0	0	0	0	0		0	1
11:45 AM	0	0	0	0	0	0	1	0	0	1		0	0	0	0	0	0	0		0	1
Total	0	0	0	0	0		3	0	0	3		0	0	0	0		1	0		2	5
Total	Ü	U	U	O	U	U	3	U	U	,	Ü	U	U	U	U	U	_	U	_		,
12:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
12:30 PM	0	0	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	0	0	0	0	0	0
Total	0	0	0	0	0		3	0	0	3		0	0	0	0		2	0		2	5
											-					•					
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
1:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
	I .	_	_	_			_	_	_			_	_	_	_			_	_		
2:00 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0		1	1
2:15 PM	0	0	0	0	0	0	1	0	0	1		0	0	0	0	0	0	0		0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0		1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
3:00 PM	0	0	0	0	0	۱ ،	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
		0	0	0				0	0			0	0				0				
3:15 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0		1	0		1	1
3:30 PM	0	0	0	0	0	0	1	0	0	1		0	0	0	0		2	0		2	3
3:45 PM	0	0	0	0	0		0	0	0	0		0	0	0	0		3	0		3	3
Total	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	8
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:15 PM	0	0	0	0	0		1	0	0			0	0	0	0		0	0		0	1
4:30 PM		0								1											
	0		0	0	0	0	1	0	0	1		0	0	0	0		1	0		1	2
4:45 PM	0	0	0	0	0		0	0	0	0		0	0	0	0		1	0		1	1
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0		0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0		0	0
5:45 PM	0	0	0	0	0		1	0	0	1		0	0	0	0		0	0		0	1
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
6:15 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0
6:30 PM	0	0	0	0	0		0	0	0	0		0	0	0	0		0	0		0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
						Ī															Ì
Grand Total	0	0	0	0	0	1	29	0	0	30	0	0	0	0	0	0	31	0	2	33	63
	•				l	•					•					•					1

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Buses**

Class:										Bu	ses										_
		Ole	um Str	eet			Shrew	sbury S	Street		Shrews	bury Stre	et Mark	etplace D	riveway		Shrew	sbury s	Street		
		fro	om Nor	th			fr	om Eas	st			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Approach %	0.0	0.0	0.0	0.0		3.3	96.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	93.9	0.0	6.1		
Total %	0.0	0.0	0.0	0.0	0.0	1.6	46.0	0.0	0.0	47.6	0.0	0.0	0.0	0.0	0.0	0.0	49.2	0.0	3.2	52.4	
Exiting Leg Total					1					31					0					31	63

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

7:00 AM		Ole	eum Str	eet			Shrew	sbury S	Street		Shrews	bury Stre	et Mark	etplace D	riveway		Shrev	sbury S	Street		
		fr	om Nor	th			fr	rom Eas	st			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total Volume	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.300	0.000	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.417
Entering Leg	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
Exiting Leg					0					4					0					6	10
Total					0					10					0					10	20

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:15 AM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsh	ury Stre	et Marke	etplace D	riveway		Shrew	sbury S	treet		
		fro	m Nor	th			fr	om Eas	t			fr	om Sou	th			fro	om Wes	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
10:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
10:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.750	0.583
Entering Leg	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
Exiting Leg					0					3					0					4	7
Total					0					7					0					7	14

3:00 PM		Ole	eum Str	eet			Shrew	sbury S	treet		Shrewsl	oury Stre	et Mark	etplace D	riveway		Shrew	sbury S	treet		
		fr	om Nor	th			fr	om Eas	t			fr	om Sou	ith			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
Total Volume	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	8
% Approach Total	0.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.667
Entering Leg	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	8
Exiting Leg					1					6					0					1	8
Total					1					8					0					7	16

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Class:	7:00 PN	VI							Sing	le-Uı	nit Tru	cks									
		Ole	um Stre	eet			Shrew	sbury S		,	ı		et Market	place Dr	iveway		Shrew	sbury S	Street		
		fro	m Nort	th			fr	om Eas	it			fro	om Sout	h			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	11
7:15 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	7	0	0	7	7
7:30 AM 7:45 AM	0	0	0	0	0	0	7 5	0	0	7 5	0	0	0	0	0	0	5 7	0	0	5 8	12
Total	0	0	0	0	0		17	0	0	17		0	0	0	0		25	1	0	26	13 43
8:00 AM 8:15 AM	1 0	0	0	0	1	0	6 3	0	0	6 3		0	0	0	0	0	1 6	0	0	1 6	8 9
8:30 AM	0	0	0	0	0	0	5	0	0	5		0	0	0	0	0	11	1	0	12	17
8:45 AM	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	12
Total	2	0	0	0	2	0	18	0	0	18	0	0	0	0	0	0	25	1	0	26	46
9:00 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	7
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
9:45 AM	0	0	0	0	0	0	0	0	0	0		0	0	0	1	2	7	0	0	9	10
Total	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	2	20	0	0	22	26
10:00 AM	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	1	4	1	0	6	12
10:15 AM	1	0	0	0	1	0	1	0	0	1		0	0	0	0	1	6	0	0	7	9
10:30 AM	0	0	0	0	0	0	2	0	0	2		0	1	0	1	0	7	0	0	7	10
10:45 AM Total	0	0	0	0	1		11	0	0	11	0	0	2	0	0 3	2	5 22	0	0	5 25	9 40
						•															
11:00 AM 11:15 AM	0	0	0	0	0	0	6 3	0	0	6 3		0	0	0	0	0	3 8	0	1	4 8	
11:30 AM	0	0	0	0	0	0	8	0	0	8		0	0	0	0	0	5	0	0	5	13
11:45 AM	0	0	0	0	0	0	5	0	0	5		0	0	0	0	0	5	0	0	5	10
Total	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	0	21	0	1	22	44
12:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	15
12:15 PM	0	0	0	0	0	0	1	0	0	1		0	0	0	1	0	8	0	0	8	
12:30 PM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	2	0	0	2	10
12:45 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	7	0	0	7	7
Total	0	0	0	0	0	0	13	0	0	13	1	0	0	0	1	0	28	0	0	28	42
1:00 PM	2	0	0	0	2	1	10	0	0	11	0	0	0	0	0	0	5	0	0	5	18
1:15 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	4	0	1	5	5
1:30 PM 1:45 PM	0	0	0	0	0		4	0	0	4		0	0	0	0	0	3	0	0	3	7
Total	2	0	0	0	2	0	5 19	0	0	5 20	0	0	0	0	0	0	6 18	0	1	6 19	11 41
2:00 PM 2:15 PM	1 0	0	0	0	1	0	5 5	0	0	5 5	0	0	0	0	0	0	5 8	1	0	6 8	12 13
2:30 PM	0	0	0	0	0	0	4	0	0	4		0	0	0	0	0	3	0	0	3	7
2:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Total	1	0	0	0	1	0	17	0	0	17	0	0	0	0	0	0	18	1	0	19	37
3:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	11
3:15 PM	0	0	0	0	0	0	7	0	0	7		0	0	0	0	1	5	0	0	6	
3:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	7	0	0	7	8
3:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	3	0	1	4	6
Total	1	0	0	0	1	2	10	0	0	12	0	0	0	0	0	1	23	0	1	25	38
4:00 PM	0	0	0	0	0		2	0	0	2		0	0	0	0	0	4	0	0	4	
4:15 PM	0	0	0	0	0		5	0	0	5		0	0	0	0	0	0	0	0	0	
4:30 PM 4:45 PM	0	0	0	0	0		0	0	0	0		0	0	0	0	0	2	0	0	2	2 6
Total	0	0	0	0	0		10	0	0	10		0	0	0	0		8	0		9	
5:00 PM 5:15 PM	0	0	0	0	0		3	0	0	3 0		0	0 0	0	0	0	0 1	0	0	0	
5:30 PM	0	0	0	0	0		3	0	0	3		0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0		0	0	0	0		0	0	0	0	0	3	0	0	3	3
Total	0	0	0	0	0		6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
6:15 PM	0	0	0	0	0	0	3	0	0	3		0	0	0	0	0	1	0	0	1	4
6:30 PM	0	0	0	0	0	0	3	0	0	3		0	0	0	0	0	1	0	0	1	4
6:45 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
6 17.1	١ -	^	^	•	_		152	^	^	155		^	2	^	اے	_	210		_	229	200
Grand Total	7	0	0	0	7	3	152	0	0	155	3	0	2	0	5	6	216	4	3	229	396

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Class:									Sin	gle-Uı	nit Tru	ıcks									
		Ole	um Str	eet			Shrew	sbury S	Street		Shrews	bury Stre	et Mark	etplace D	riveway		Shrew	sbury S	Street		
		fro	om Nor	th			fı	om Eas	st			fr	om Sou	ith			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Approach %	100.0	0.0	0.0	0.0		1.9	98.1	0.0	0.0		60.0	0.0	40.0	0.0		2.6	94.3	1.7	1.3		
Total %	1.8	0.0	0.0	0.0	1.8	0.8	38.4	0.0	0.0	39.1	0.8	0.0	0.5	0.0	1.3	1.5	54.5	1.0	0.8	57.8	
Exiting Leg Total					7					219					6					164	396

AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

7:45 AM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	om Nor	th			fr	om Eas	t			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	7	1	0	8	13
8:00 AM	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	8
8:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	9
8:30 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	11	1	0	12	17
Total Volume	1	0	0	0	1	0	19	0	0	19	0	0	0	0	0	0	25	2	0	27	47
% Approach Total	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	92.6	7.4	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.792	0.000	0.000	0.792	0.000	0.000	0.000	0.000	0.000	0.000	0.568	0.500	0.000	0.563	0.691
Entering Leg Exiting Leg	1	0	0	0	1	0	19	0	0	19 25	0	0	0	0	0	0	25	2	0	27 20	47 47
Total					3					44					0					47	94
						ļ.															

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

	•	,					•															
	11:15 AM		Ole	um Stre	eet			Shrew	sbury S	treet		Shrewsh	ury Stre	et Marke	tplace D	riveway		Shrew	sbury S	treet		
			fro	m Nort	:h			fr	om Eas	t			fro	om Sou	th			fr	om Wes	st		
		Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
	11:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	11
	11:30 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	5	0	0	5	13
	11:45 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	10
	12:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	15
	Total Volume	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	29	0	0	29	49
	% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
	PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.659	0.000	0.000	0.659	0.817
	Entering Leg	lο	0	0	0	o	0	20	0	0	20	0	0	0	0	ام	0	29	0	0	29	49
	Exiting Leg	Ů	Ü	Ü	Ü	0	Ü	20	Ü	Ü	29		Ü	·	Ü	0	· ·	23	Ü	Ü	20	49
-	Total					0					49					0					49	98

3:00 PM		Ole	eum Str	eet			Shrew	sbury S	treet		Shrews	oury Stre	et Mark	etplace D	riveway		Shrew	sbury S	Street		
		fr	om Nor	th			fr	om Eas	t			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
3:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	11
3:15 PM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	1	5	0	0	6	13
3:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	7	0	0	7	8
3:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	3	0	1	4	6
Total Volume	1	0	0	0	1	2	10	0	0	12	0	0	0	0	0	1	23	0	1	25	38
% Approach Total	100.0	0.0	0.0	0.0		16.7	83.3	0.0	0.0		0.0	0.0	0.0	0.0		4.0	92.0	0.0	4.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.500	0.357	0.000	0.000	0.429	0.000	0.000	0.000	0.000	0.000	0.250	0.719	0.000	0.250	0.781	0.731
Entering Leg	1	0	0	0	1	2	10	0	0	12	0	0	0	0	0	1	23	0	1	25	38
Exiting Leg					2					23					1					12	38
Total					3					35					1					37	76

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Class:

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Articulated Trucks**

Class:									AIL	icuiat	eu m	ICKS									
		Ole	eum Str	eet			Shrev	vsbury	Street		Shrews	bury Stre	et Mark	etplace D	riveway		Shre	wsbury	Street		
															,						
		fre	om Nor	th			f	rom Ea	st			fr	om Sou	ıth			f	rom W	est		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	1	0		1	. 0	0	0		0	0					1
7:15 AM	0	0	0	0	0	0	0	0		0		0	0	0	0		C		) 0		0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2 (	) 0	2	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	. (	0	1	1
Total	0	0	0	0	0		1			1	_	0			0		3				
10tai	U	U	U	U	U	ı	1	U		1	·I ·	U	U	U	U	ı	-	, (	, ,	,	-
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7 (	) 0	7	7
8:15 AM	0	0	0	0	0		0	0		0		0	0		0						
																	1				1
8:30 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	1	L (	) 0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
Total	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	g	) (	) 0	9	10
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	L (	0	1	1
9:15 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	C	) (	0	0	1
9:30 AM	0						4			4											7
		0	0	0	0			0				0	0		0		3				
9:45 AM	0	0	0	0	0		4	0				0	0	0	0		C				4
Total	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	4	1 (	) 0	4	13
						- I										- I					
10:00 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	C	) (	) 0	0	1
10:15 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	1	L (	0	1	2
10:30 AM	0	0	0	0	0	0	2	0	0	2	. 0	0	0	0	0	0	1		) 0	1	3
10:45 AM	0	0	0	0	0		0			0		0			0		C		) 0		0
											_										
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	2 (	) 0	2	6
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
11:15 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	1	L (	) 0	1	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
11:45 AM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	C	) (	) 0	0	1
Total	0	0	0	0	0		2			2		0	0		0		1				3
Total	U	U	U	U	U	ı	2	U			·I ·	U	U	U	U	ı	-		, ,		,
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		0	1	1
12:15 PM	0	0	0	0	0		0	0		0		1	0		1	0	2				3
12:30 PM	0	0	0	0	0	0	0	0		0		0	0		0	0	C				0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	L (	) 0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	4	1 (	) 0	4	5
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		0	1	1
1:30 PM	0	0	0	0	0		0	0		0		0	0		0		3				3
1:45 PM	0	0	0	0	0		0	0		0		0	0		0		C		) 0		0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1 (	) 0	4	4
2 22 21 4		_	_	_	_		_	_	_	_		_	_		_					_	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1 (	) 0	2	2
2:15 PM	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	C	) (	) 0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	. (	) 0	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		) 0		1
											_										
Total	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	1	3	3 (	) 0	4	5
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
3:15 PM	0	0	0	0	0		1	0		1		0	0		0		2		) 0		
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	L (	0	1	1
Total	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	3	3 (	) 0	3	4
		,	,	,	,		-	·		-		,		,	,			`			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1 (	0	1	1
4:15 PM	0	0	0	0	0		0	0				0	0		0		1				1
4:30 PM	0	0	0	0	0		0	0		0		0			0		2				
4:45 PM	0	0	0	0	0		0	0		0		0	0	0	0		C			0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1 (	) 0	4	4
						-															
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		C	) (	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2 (	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	C	) (	) 0		
5:45 PM																					
	0	0	0	0	0		1					0			0		C				1
Total	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	0	2	2 (	) 0	2	3
C:00 D14		_	_	_	_			-				_	_	_	_						
6:00 PM	0	0	0	0	0		1			1		0	0		0		1				
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	) 0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	) (	0	0	0
6:45 PM	0	0	0	0	0		0					0			0		1		) 0		1
Total	0	0	0	0	0	0	1	0	0	1	. 0	0	0	0	0	ı <sup>0</sup>	2	2 (	) 0	2	3
Grand Total	0	0	0	0	0	0	21	0	0	21	. 0	1	0	0	1	1	41	L (	) 0	42	64
Granu roldi		0	J	J	U	ı	21	U	·	21	1 "	1	U	J	1	I *	41			72	04

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Articulated Trucks**

Class:									Art	iculat	ed Tru	ıcks									_
		Ole	um Str	eet			Shrew	sbury S	Street		Shrews	bury Stre	et Marke	etplace D	riveway		Shrew	sbury s	Street		
		fro	m Nor	th			fı	om Eas	st			fr	om Sou	ith			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		2.4	97.6	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	32.8	0.0	0.0	32.8	0.0	1.6	0.0	0.0	1.6	1.6	64.1	0.0	0.0	65.6	
Exiting Leg Total					1					41					1					21	64

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

9:30 AM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsl	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	om Nor	th			fr	om Eas	t			fr	om Sou	th			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
9:30 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
9:45 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
10:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	4	0	0	4	14
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.333	0.500
Entering Leg Exiting Leg	0	0	0	0	0	0	10	0	0	10 4	0	0	0	0	0	0	4	0	0	4 10	14 14
Total					0					14					0					14	28

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:00 AM		Ole	um Str	eet			Shrew	sbury S	treet		Shrewsh	oury Stre	et Marke	etplace D	riveway		Shrew	sbury S	Street		
		fro	m Nor	th			fr	om Eas	t			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
10:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
10:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.500
Entering Leg	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6
Exiting Leg					0					2					0					4	6
Total					0					6					0					6	12

2:00 PM		Ole	um Str	eet			Shrew	sbury S	treet		Shrews	oury Stre	et Mark	etplace D	riveway		Shrev	sbury S	treet		
		fro	om Nor	th			fr	om Eas	t			fr	om Sou	ıth			fr	om We	st		
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
2:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	5
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		25.0	75.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.750	0.000	0.000	0.500	0.625
Entering Leg	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	5
Exiting Leg					0					3					1					1	5
Total					0					4					1					5	10

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### Bicycles (on Roadway and Crosswalks)

Class:										Bicy	cles	s (on	Roa	dw	ay ar	nd C	crossw	valk	s)									
			Oleu	m Stre	eet				Sł	rewsb	ury	Street			Shrews	sbury	Street N	/larke	tplace D	rivewa	ау		Shr	ewsbu	ıry S	treet		
			fron	n Nor	th					fron	n Ea:	st					from	Sout	:h					from	Wes	st		1
	Right	Thru				W-WB	Total	Right	Thru				CW-NB	Total	Right	Thru	- 1		w-wb cw-	EB Tot	al Rig	ht Thr	-	eft U-T	-		W-SB Total	Total
7:00 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0		0	0	0	0	0 0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1		0	0	0	0	0 0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0 1	1
Total	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0 1	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0 0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 1	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0 1	2
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0 0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0 1	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0 1	
10:45 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0 0	3
Total	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	2	0	0	0	0 2	6
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
11:15 AM	0	0	0	0	0	2	2	0	0	0	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	0	0	0	0	0	0	0	0	0	0 0	
11:45 AM	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	2
Total	0	0	0	0	1	2	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
12:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0 0	2
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0 0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0 0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	1	0	0	0	0 1	6
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0 0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
3:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0 0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0 0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	0
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0 0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0 0	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 1	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0 0	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 1	1
								ì							ı						ī							ī
Grand Total	0	0	0	0	2	4	6	1	6	0	0	0	0	7	0	1	0	0	3	7	11	0	6	0	0	0	0 6	30

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA
Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM
End Time: 7:00 PM

Class:



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Bicycles (on Roadway and Crosswalks)**

												•																	
			Ole	um St	reet				Sł	rews	bury	Stree	et		Shrev	vsbury	Stree	t Mar	ketplad	e Driv	eway		Sl	nrew	sbury	Stre	et		
			fro	m No	rth					fro	m Ea	ist					fro	m So	uth					fro	m W	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
Approach %	0.0	0.0	0.0	0.0	33.3	66.7		14.3	85.7	0.0	0.0	0.0	0.0		0.0	9.1	0.0	0.0	27.3	63.6		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	6.7	13.3	20.0	3.3	20.0	0.0	0.0	0.0	0.0	23.3	0.0	3.3	0.0	0.0	10.0	23.3	36.7	0.0	20.0	0.0	0.0	0.0	0.0	20.0	<u> </u>
Exiting Leg Total							8							6							10							6	30

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

9:30 AM			Ole	um St	reet				SI	nrews	bury	Stree	et		Shrev	vsbury	Stree	t Marl	cetplac	e Driv	eway		Sl	hrews	bury	Stree	et		
			fro	m No	rth					fro	om Ea	ist					fro	m Soi	uth					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	2	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.500	1.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	2	4
Exiting Leg							0							2							2							0	4
Total							0							2							4							2	8

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:00 AM			Oleu	ım St	reet				Sł	nrews	bury	Stree	et		Shrev	vsbury	Stree	t Mark	etplac	e Driv	eway		Sl	rews	bury	Stree	et		
			fro	m No	rth					fro	m Ea	st					fro	n Sou	ith					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:45 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	2	0	0	0	0	2	6
% Approach Total	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.500
	- I							i							i														
Entering Leg	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	2	0	0	0	0	2	6
Exiting Leg							2							2							2							0	6
Total							4							2							4							2	12

2:00 PM			Oleu	ım Stı	reet				Sł	rews	bury	Stree	et		Shrev	vsbury	Stree	t Mark	etplac	e Driv	eway		Sl	hrews	bury	Stree	et		
			fro	m No	rth					fro	m Ea	st					fro	n Sou	ıth					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	2
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	2
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	1	0	0	0	0	1	6
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	20.0	80.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.625	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.750
	i																											ı	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	1	0	0	0	0	1	6
Exiting Leg							0							1							5							0	6
Total							0							1							10							1	12

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: 22114

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

Class:													Pe	des	trian	ıs													
			Oleui	m Str	eet				Sh	rewsk	oury	Stree	t		Shrew	sbury	Street	Marke	etplace	Drive	way		SI	nrewsk	oury :	Stree	t		
			fron	n Nor	th					froi	n Ea	st					fron	n Sou	th					fron	n We	st			
	Right	Thru	Left	U-Turn	CW-EB (	CW-WB	Total	Right	Thru	Left l	J-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn (	CW-WB	CW-EB	Total	Right	Thru	Left l	J-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	4
Total	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	3	3	6	0	0	0	0	0	0	0	9
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	4
8:15 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
8:30 AM 8:45 AM	0	0	0	0	1 1	0 2	1	0	0	0	0	0	0	0	0	0	0	0	0 2	0 1	0 3	0	0	0	0	0	0	0	1 6
Total	0	0	0	0	2	4	6	0	0	0	0	0	0	0	0	0	0	0	2	6	8	0	0	0	0	0	0	0	14
9:00 AM						•																•							
9:00 AM 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 0	2	3 2	0	0	0	0	0	0	0	3 2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	2	3	0	0	0	0	0	0	0	4
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	1	3	0	0	0	0	0	0	0	5
Total	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	4	7	11	0	0	0	0	0	0	0	14
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	2
10:15 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	4	6	0	0	0	0	0	0	0	8
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	3
Total	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	9	11	0	0	0	0	1	0	1	14
11:00 AM	0	0	0	0	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	8
11:15 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	4
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM Total	0	0	0	0	<u>2</u> 5	6	11	0	0	0	0	0	0	0	0	0	0	0	0	3	0 3	0	0	0	0	1	0	1	3 15
						U							U	U						3	•								
12:00 PM	0	0	0	0	2	4	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
12:15 PM 12:30 PM	0	0	0	0	3 4	3	6 7	0	0	0	0	0	1 0	1 3	0	0	0	0	0 2	1 0	1 2	0	0	0	0	0	0	0	8 12
12:45 PM	0	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	5
Total	0	0	0	0	10	13	23	0	0	0	0	3	2	5	0	0	0	0	3	1	4	0	0	0	0	0	0	0	32
1:00 PM	0	0	0	0	2	1	3	0	0	0	0	1	0	1	0	0	0	0	2	5	7	0	0	0	0	0	0	0	11
1:15 PM	0	0	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	10
1:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	5
1:45 PM	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	6
Total	0	0	0	0	8	7	15	0	0	0	0	1	0	1	0	0	0	0	9	7	16	0	0	0	0	0	0	0	32
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	1	5	6	0	0	0	0	0	0	0	9
2:30 PM	0	0	0	0	9	1	10	0	0	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	0	0	15
2:45 PM Total	0	0	0	0	3 14	2	3 16	0	0	0	0	0	0	0	0	0	0	0	7	11	6 18	0	0	0	0	1	0	1	10 35
						2		!										U		11					U				
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	3	0	3	0	0	0	0	0	0	0	3
3:15 PM 3:30 PM	0	0	0	0	3 1	3 0	6 1	0	0	0	0	0 1	0	0	0	0	0	0	6 3	1 0	7 3	0	0	0	0	0	0	0	13 5
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	3
Total	0	0	0	0	4	3	7		0	0	0	1	0	1	0	0	0	0	13	3	16	0	0	0	0	0	0	0	24
4:00 PM	0	0	0	0		0		0	0	0	0	0	0	0	0	0	0	0			4	0	0	0	0	0		0	6
4:15 PM	0	0	0	0	2	2	2 4	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	7
4:30 PM	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	5	1	6	0	0	0	0	0	0	0	8
Total	0	0	0	0	4	6	10	0	0	0	0	0	1	1	0	0	0	0	12	3	15	0	0	0	0	0	0	0	26
5:00 PM	0	0	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	8
5:15 PM	0	0	0	0	4	2	6	0	0	0	0	1	0	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	9
5:30 PM	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4
5:45 PM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Total	0	0	0	0	8	7	15	0	0	0	0	1	1	2	0	0	0	0	3	4	7	0	0	0	0	0	0	0	24
6:00 PM	0	0	0	0	7	6	13	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	18
6:15 PM	0	0	0	0	6	3	9	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	12
6:30 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	0	0	0	0	7
6:45 PM Total	0	0	0	0	15	12	27	0	0	0	0	0	0	0	0	0	0	0	8	6	1 14	0	0	0	0	0	0	0	41
10001	1 <sup>7</sup>	Ū	J	Ü	-5			ı	Ū	Ü	J	Ū	Ū	J	ı ĭ	J	Ü	J	J		-~  !	Ü	3	J	Ü	Ū	J	۲۱	7.
Grand Total	0	0	0	n	73	62	135	0	0	0	0	7	6	13	0	0	0	0	66	63	120	0	0	0	0	3	0	2	280
Granu rotal	ı	U	U	U	/3	UΖ	133	U	U	U	U	,	0	13	U	U	U	U	00	us	129	U	U	U	U	э	U	3	200

Location: N: Oleum Street S: Shrewsbury Street Marketplace Driveway

Location: E: Shrewsbury Street W: Shrewsbury Street

City, State: Worcester, MA Client: Chappell/ P. Bradley

Site Code: **22114** 

Count Date: Thursday, July 6, 2023

Start Time: 7:00 AM End Time: 7:00 PM



157 Washington Street, Suite 2 Hudson, MA 01749 Office: 508-875-0100 Fax: 508-875-0118

#### **Pedestrians**

Class:													Pe	edes	tria	ns													
			Ole	um St	reet				SI	nrew:	sbury	Stre	et		Shrev	vsbury	/ Stree	t Marl	ketplad	e Driv	eway		SI	hrew	sbury	Stre	et		
			fro	m No	rth					fro	om Ea	ast					fro	m So	uth					fro	om W	est			1
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
Approach %	0	0	0	0	54.1	45.9		0	0	0	0	53.8	46.2		0	0	0	0	51.2	48.8		0	0	0	0	100	0		
Total %	0	0	0	0	26.1	22.1	48.2	0	0	0	0	2.5	2.14	4.64	0	0	0	0	23.6	22.5	46.1	0	0	0	0	1.07	0	1.07	
Exiting Leg Total							135							13							129							3	280

#### AM Peak Hour Analysis from 07:00 AM to 10:00 AM begins at:

9:30 AM			Ole	um St	reet				Sł	rews	bury	Stree	et		Shrev	vsbury	Street	t Mark	etplac	e Driv	eway		Sl	nrews	bury	Stree	et		
			fro	m No	rth					fro	m Ea	st					fror	n Sou	ıth					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	2	3	0	0	0	0	0	0	0	4
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	1	3	0	0	0	0	0	0	0	5
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	2
10:15 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	4	6	0	0	0	0	0	0	0	8
Total Volume	0	0	0	0	2	0	2	0	0	0	0	1	2	3	0	0	0	0	5	8	13	0	0	0	0	1	0	1	19
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	38.5	61.5		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.625	0.500	0.542	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.594
Entering Leg	0	0	0	0	2	0	2	0	0	0	0	1	2	3	0	0	0	0	5	8	13	0	0	0	0	1	0	1	19
Exiting Leg							2							3							13							1	19
Total							4							6							26							2	38

#### MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

12:30 PM			Oleu	ım St	reet				SI	nrews	bury	Stree	et		Shrev	vsbury	Street	t Mark	etplac	e Drive	eway		SI	nrews	bury	Stree	et		
			fro	m No	rth					fro	m Ea	ıst					fror	n Sou	ıth					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
12:30 PM	0	0	0	0	4	3	7	0	0	0	0	3	0	3	0	0	0	0	2	0	2	0	0	0	0	0	0	0	12
12:45 PM	0	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	5
1:00 PM	0	0	0	0	2	1	3	0	0	0	0	1	0	1	0	0	0	0	2	5	7	0	0	0	0	0	0	0	11
1:15 PM	0	0	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	10
Total Volume	0	0	0	0	11	10	21	0	0	0	0	4	0	4	0	0	0	0	8	5	13	0	0	0	0	0	0	0	38
% Approach Total	0.0	0.0	0.0	0.0	52.4	47.6		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	61.5	38.5		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.688	0.833	0.750	0.000	0.000	0.000	0.000	0.333	0.000	0.333	0.000	0.000	0.000	0.000	0.667	0.250	0.464	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.792
Entering Leg	0	0	0	0	11	10	21	0	0	0	0	4	0	4	0	0	0	0	8	5	13	0	0	0	0	0	0	0	38
Exiting Leg							21							4							13							0	38
Total							42							8							26							0	76

2:30 PM			Ole	um St	reet				Sł	nrews	bury	Stree	et		Shrev	vsbury	Stree	t Mark	etplac	e Driv	eway		Sl	hrew	bury	Stree	et		
			fro	m No	rth					fro	om Ea	ast					fro	n Soi	ıth					fro	m We	est			
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:30 PM	0	0	0	0	9	1	10	0	0	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	0	0	15
2:45 PM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	2	4	6	0	0	0	0	1	0	1	10
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	3
3:15 PM	0	0	0	0	3	3	6	0	0	0	0	0	0	0	0	0	0	0	6	1	7	0	0	0	0	0	0	0	13
Total Volume	0	0	0	0	15	4	19	0	0	0	0	0	0	0	0	0	0	0	15	6	21	0	0	0	0	1	0	1	41
% Approach Total	0.0	0.0	0.0	0.0	78.9	21.1		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	71.4	28.6		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.417	0.333	0.475	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.375	0.750	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.683
Entering Leg	0	0	0	0	15	4	19	0	0	0	0	0	0	0	0	0	0	0	15	6	21	0	0	0	0	1	0	1	41
Exiting Leg							19							0							21							1	41
Total							38							0							42							2	82

### Ron Müller & Associates

Traffic Engineering and Consulting Services

File Name: 24022 Worcester Oleum-Shrewsbury St-Site Drwy Sat

Site Code: 24022

E-W Street:Shrewsbury St N-S Street:Oleum Ct/Site Drwy Start Date : 4/6/2024

Page No : 1

**Groups Printed- Cars - Trucks** 

								0.0	ирз і	mileu-	Ours	- II uc	, NO								
		_	eum C				Shrev	/sbury	/ Stree	et	22		ewsb Drive	ury Sti	reet				/ Stree	et	
		Fr	om No	orth			F	rom E	ast				om So	•			Fr	om W	est		
Start Time	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Diaht			to Total
	Leit	•		2	App. Total		160	Right	Peus	App. Total	Leit	0	20		App. Total	3		Right	U-Turns 18	App. Total	Int. Total 428
11:00 AM	_	0	5 2	3	5	0	166	1	-	168	1	-		4	25 15	_	194	20	_		
11:15 AM	0	0		3	-			1	0		0	0	12	3	-	5	193	36	15	249	437
11:30 AM	2	0	3	1	6	1	170	1	0	172	2	0	15	3	20	6	174	29	10	219	417
11:45 AM	0	0	4	3_	7	0	129	0_	0	129	3	0	15	2_	20	6	213	28_	21	268	424
Total	2	0	14	9	25	2	625	3	0	630	6	0	62	12	80	20	774	113	64	971	1706
12:00 PM	1	0	4	3	8	1	149	1	1	152	1	0	14	1	16	4	190	20	31	245	421
12:15 PM	3	0	11	0	14	1	164	0	0	165	1	0	7	1	9	5	208	26	29	268	456
12:30 PM	1	0	2	2	5	2	163	1	0	166	1	0	19	3	23	2	177	27	14	220	414
12:45 PM	2	0	1	4	7	1	155	1	0	157	0	0	10	6	16	5	198	16	15	234	414
Total	7	0	18	9	34	5	631	3	1	640	3	0	50	11	64	16	773	89	89	967	1705
01:00 PM	2	0	5	0	7	1	149	0	0	150	0	0	11	1	12	2	187	23	14	226	395
01:15 PM	1	0	4	2	7	1	165	1	0	167	0	0	19	1	20	5	169	21	18	213	407
01:30 PM	3	0	6	4	13	1	138	1	0	140	0	0	9	7	16	2	221	16	22	261	430
01:45 PM	0	0	4	0	4	0	163	3	0	166	1	0	9	4	14	8	236	13	15	272	456
Total	6	0	19	6	31	3	615	5	0	623	1	0	48	13	62	17	813	73	69	972	1688
<b>Grand Total</b>	15	0	51	24	90	10	1871	11	1	1893	10	0	160	36	206	53	2360	275	222	2910	5099
Apprch %	16.7	0	56.7	26.7		0.5	98.8	0.6	0.1		4.9	0	77.7	17.5		1.8	81.1	9.5	7.6		
Total %	0.3	0	1	0.5	1.8	0.2	36.7	0.2	0	37.1	0.2	0	3.1	0.7	4	1	46.3	5.4	4.4	57.1	
Cars	15	0	51	24	90	10	1862	11	1	1884	10	0	160	36	206	53	2347	274	222	2896	5076
% Cars	100	0	100	100	100	100	99.5	100	100	99.5	100	0	100	100	100	100	99.4	99.6	100	99.5	99.5
Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	13	1	0	14	23
% Trucks	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0	0.6	0.4	0	0.5	0.5

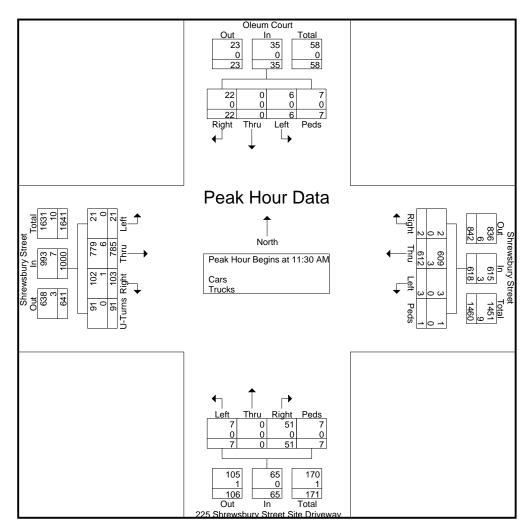
E-W Street:Shrewsbury St

File Name: 24022 Worcester Oleum-Shrewsbury St-Site Drwy Sat

Site Code: 24022 Start Date : 4/6/2024

N-S Street:Oleum Ct/Site Drwy Page No : 2

			eum C om No			;		sbury	y Stree	et	22	Site	ewsbu Drive		eet	;		sbury om W	/ Stree	et	
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour /								1 of '	1												
Peak Hour f	or Ent	ire Inte	ersecti	ion Be	gins at	11:30	AM														
11:30 AM	2	0	3	1	6	1	170	1	0	172	2	0	15	3	20	6	174	29	10	219	417
11:45 AM	0	0	4	3	7	0	129	0	0	129	3	0	15	2	20	6	213	28	21	268	424
12:00 PM	1	0	4	3	8	1	149	1	1	152	1	0	14	1	16	4	190	20	31	245	421
12:15 PM	3	0	11_	0	14	1	164	0	0	165	1	0	7	1_	9	5	208	26	29	268	456
Total Volume	6	0	22	7	35	3	612	2	1	618	7	0	51	7	65	21	785	103	91	1000	1718
% App. Total	17.1	0	62.9	20		0.5	99	0.3	0.2		10.8	0	78.5	10.8		2.1	78.5	10.3	9.1		
PHF	.500	.000	.500	.583	.625	.750	.900	.500	.250	.898	.583	.000	.850	.583	.813	.875	.921	.888	.734	.933	.942
Cars	6	0	22	7	35	3	609	2	1	615	7	0	51	7	65	21	779	102	91	993	1708
% Cars	100	0	100	100	100	100	99.5	100	100	99.5	100	0	100	100	100	100	99.2	99.0	100	99.3	99.4
Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	6	1	0	7	10
% Trucks	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0	0.8	1.0	0	0.7	0.6



File Name: 24022 Worcester Shrewsbury St at Casco St AM

Site Code: 24022

E-W Street:Shrewsbury St N-S Street:Casco St Start Date : 3/27/2024

Page No : 1

**Groups Printed- Cars - Trucks** 

		Shrewsb	ury Stre	et	Groups i		Street		;	Shrewsb	ury Stre	et	
			Éast			From	South				West		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	121	1	127	1	4	0	5	301	0	1	302	434
07:15 AM	9	143	3	155	1	4	0	5	249	3	1	253	413
07:30 AM	9	163	2	174	1	4	3	8	245	5	1	251	433
07:45 AM	12	164	0	176	1	4	0	5	311	1	1	313	494
Total	35	591	6	632	4	16	3	23	1106	9	4	1119	1774
08:00 AM	7	168	1	176	1	2	0	3	310	3	0	313	492
08:15 AM	10	162	0	172	3	7	0	10	280	3	1	284	466
08:30 AM	8	143	0	151	0	3	0	3	280	1	1	282	436
08:45 AM	8	148	3	159	1	5	0	6	266	2	1	269	434
Total	33	621	4	658	5	17	0	22	1136	9	3	1148	1828
Grand Total	68	1212	10	1290	9	33	3	45	2242	18	7	2267	3602
Apprch %	5.3	94	0.8		20	73.3	6.7		98.9	0.8	0.3		
Total %	1.9	33.6	0.3	35.8	0.2	0.9	0.1	1.2	62.2	0.5	0.2	62.9	
Cars	65	1179	10	1254	7	31	3	41	2184	15	7	2206	3501
% Cars	95.6	97.3	100	97.2	77.8	93.9	100	91.1	97.4	83.3	100	97.3	97.2
Trucks	3	33	0	36	2	2	0	4	58	3	0	61	101
% Trucks	4.4	2.7	0	2.8	22.2	6.1	0	8.9	2.6	16.7	0	2.7	2.8

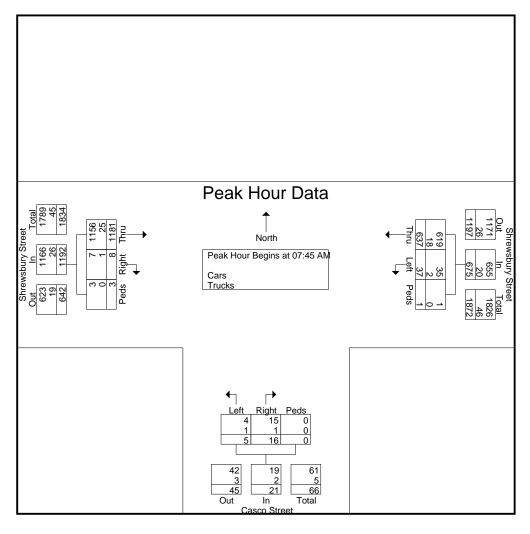
File Name: 24022 Worcester Shrewsbury St at Casco St AM

Site Code: 24022

E-W Street:Shrewsbury St Start Date : 3/27/2024

N-S Street:Casco St Page No : 2

		Shrewsbi From	ury Stre East	et			Street South			Shrewsb From	West		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysi	s From 0	7:00 AM to	o 08:45	AM - Peak	1 of 1	_				_			
Peak Hour for Enti	re Interse	ction Beg	ins at 07	7:45 AM									
07:45 AM	12	164	0	176	1	4	0	5	311	1	1	313	494
08:00 AM	7	168	1	176	1	2	0	3	310	3	0	313	492
08:15 AM	10	162	0	172	3	7	0	10	280	3	1	284	466
08:30 AM	8	143	0	151	0	3	0	3	280	1	1	282	436
Total Volume	37	637	1	675	5	16	0	21	1181	8	3	1192	1888
% App. Total	5.5	94.4	0.1		23.8	76.2	0		99.1	0.7	0.3		
PHF	.771	.948	.250	.959	.417	.571	.000	.525	.949	.667	.750	.952	.955
Cars	35	619	1	655	4	15	0	19	1156	7	3	1166	1840
% Cars	94.6	97.2	100	97.0	80.0	93.8	0	90.5	97.9	87.5	100	97.8	97.5
Trucks	2	18	0	20	1	1	0	2	25	1	0	26	48
% Trucks	5.4	2.8	0	3.0	20.0	6.3	0	9.5	2.1	12.5	0	2.2	2.5



File Name: 24022 Worcester Shrewsbury St at Casco St PM

Site Code: 24022

E-W Street:Shrewsbury St N-S Street:Casco St Start Date : 3/27/2024

Page No : 1

**Groups Printed- Cars - Trucks** 

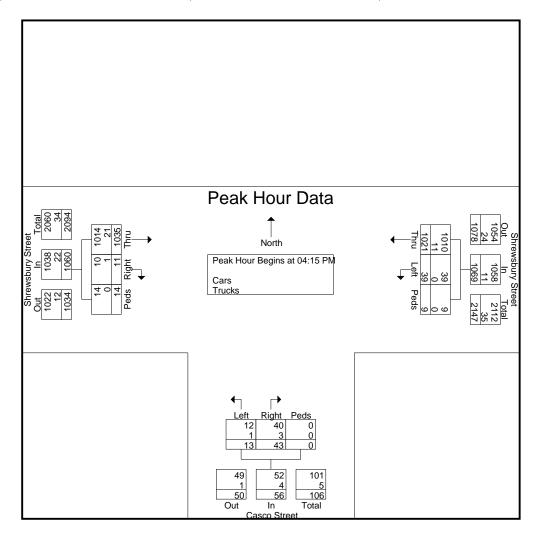
					Groups r	Tilliteu- C	<i>y</i> ai 5 - 11	ucho					
	;	Shrewsb	ury Stre	et		Casco	Street			Shrewsb	ury Stre	et	
		From	East			From	South			From	West		
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	14	250	0	264	0	10	1	11	230	12	2	244	519
04:15 PM	9	251	5	265	2	15	0	17	250	4	0	254	536
04:30 PM	14	263	2	279	5	9	0	14	269	1	4	274	567
04:45 PM	11	258	1	270	2	9	0	11	256	3	5	264	545
Total	48	1022	8	1078	9	43	1	53	1005	20	11	1036	2167
05:00 PM	5	249	1	255	4	10	0	14	260	3	5	268	537
05:15 PM	7	240	0	247	1	7	0	8	231	2	6	239	494
05:30 PM	5	227	4	236	0	12	0	12	252	5	4	261	509
05:45 PM	6	240	3	249	2	8	0	10	217	3	8	228	487
Total	23	956	8	987	7	37	0	44	960	13	23	996	2027
1													
Grand Total	71	1978	16	2065	16	80	1	97	1965	33	34	2032	4194
Apprch %	3.4	95.8	0.8		16.5	82.5	1		96.7	1.6	1.7		
Total %	1.7	47.2	0.4	49.2	0.4	1.9	0	2.3	46.9	0.8	0.8	48.5	
Cars	71	1961	16	2048	14	75	1	90	1931	29	34	1994	4132
% Cars	100	99.1	100	99.2	87.5	93.8	100	92.8	98.3	87.9	100	98.1	98.5
Trucks	0	17	0	17	2	5	0	7	34	4	0	38	62
% Trucks	0	0.9	0	8.0	12.5	6.2	0	7.2	1.7	12.1	0	1.9	1.5
				'									

File Name: 24022 Worcester Shrewsbury St at Casco St PM

Site Code: 24022 Start Date : 3/27/2024

E-W Street:Shrewsbury St N-S Street:Casco St Page No : 2

	,	Shrewsb From	ury Stre	et			Street South		;	Shrewsb From	ury Stre West	et	
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysi	is From 04	1:00 PM to	o 05:45 l	PM - Peak 1	l of 1								
Peak Hour for Enti	re Interse	ction Beg	ins at 04	:15 PM									
04:15 PM	9	251	5	265	2	15	0	17	250	4	0	254	536
04:30 PM	14	263	2	279	5	9	0	14	269	1	4	274	567
04:45 PM	11	258	1	270	2	9	0	11	256	3	5	264	545
05:00 PM	5	249	1_	255	4	10	0	14	260	3	5	268	537
Total Volume	39	1021	9	1069	13	43	0	56	1035	11	14	1060	2185
% App. Total	3.6	95.5	0.8		23.2	76.8	0		97.6	1_	1.3		
PHF	.696	.971	.450	.958	.650	.717	.000	.824	.962	.688	.700	.967	.963
Cars	39	1010	9	1058	12	40	0	52	1014	10	14	1038	2148
% Cars	100	98.9	100	99.0	92.3	93.0	0	92.9	98.0	90.9	100	97.9	98.3
Trucks	0	11	0	11	1	3	0	4	21	1	0	22	37
% Trucks	0	1.1	0	1.0	7.7	7.0	0	7.1	2.0	9.1	0	2.1	1.7



File Name: 24022 Worcester Shrewsbury St at Casco St Sat

Site Code : 24022

E-W Street:Shrewsbury St N-S Street:Casco St Start Date : 4/6/2024

Page No : 1

**Groups Printed- Cars - Trucks** 

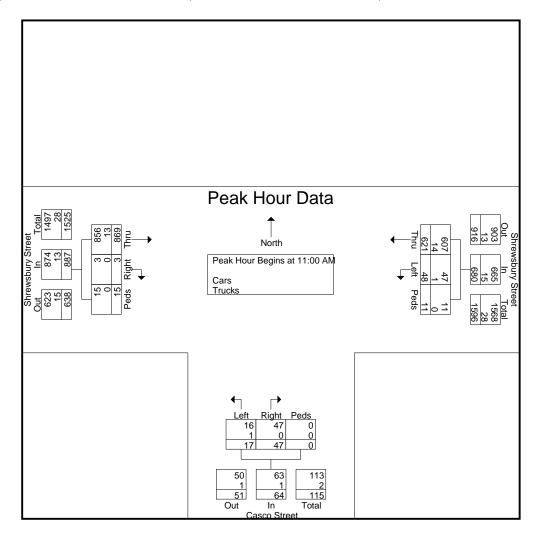
	,	Shrewsb	ury Stre	et		Casco	Street		;				
		From	East			From	South						
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	17	160	4	181	3	10	0	13	217	2	6	225	419
11:15 AM	10	164	3	177	4	15	0	19	200	0	2	202	398
11:30 AM	15	173	4	192	5	8	0	13	199	1	5	205	410
11:45 AM	6	124	0	130	5	14	0	19	253	0	2	255	404
Total	48	621	11	680	17	47	0	64	869	3	15	887	1631
40:00 DM	_	400		444	-	40	0	00	044	0		040	070
12:00 PM	5	138	1	144	7	13	0	20	211	0	1	212	376
12:15 PM	7	175	4	186	2	16	0	18	205	1	3	209	413
12:30 PM	9	167	5	181	2	8	0	10	198	1	0	199	390
12:45 PM	<u>5</u> 26	154	<u>3</u> 13	162	/ 18	12 49	0	19	211	1	6	218	399
Total	26	634	13	673	18	49	U	67	825	3	10	838	1578
01:00 PM	12	144	2	158	5	6	0	11	215	1	0	216	385
01:15 PM	0	170	1	171	3	15	0	18	187	1	2	190	379
01:30 PM	7	144	3	154	4	3	0	7	240	2	7	249	410
01:45 PM	3	169	0	172	0	9	0	9	265	1	3	269	450
Total	22	627	6	655	12	33	0	45	907	5	12	924	1624
Grand Total	96	1882	30	2008	47	129	0	176	2601	11	37	2649	4833
Apprch %	4.8	93.7	1.5	2006	26.7	73.3	0	176	98.2	0.4	1.4	2049	4033
Total %	4.0	38.9	0.6	41.5	20.7	73.3 2.7	0	3.6	53.8	0.4	0.8	54.8	
Cars	95	<u></u>	30	1980	<u>1</u> 46	128	0	174	2573	11	37	2621	4775
% Cars	95 99	98.6	100	98.6	97.9	99.2	0	98.9	98.9	100	100	98.9	98.8
Trucks	99	27	0	28	91.9	<u>99.Z</u> 1	0	2	28	0	0	28	<u>96.8</u> 58
% Trucks	1	1.4	0		2.1	0.8	0		∠o 1.1	0	0		1.2
% Trucks	1	1.4	U	1.4	2.1	0.8	U	1.1	1.1	U	U	1.1	1.2

File Name: 24022 Worcester Shrewsbury St at Casco St Sat

Site Code: 24022 Start Date : 4/6/2024

E-W Street:Shrewsbury St N-S Street:Casco St Page No : 2

	Shrewsbury Street				Casco Street								
		From		From South									
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	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	17	160	4	181	3	10	0	13	217	2	6	225	419
11:15 AM	10	164	3	177	4	15	0	19	200	0	2	202	398
11:30 AM	15	173	4	192	5	8	0	13	199	1	5	205	410
11:45 AM	6	124	0	130	5	14	0	19	253	0	2	255	404
Total Volume	48	621	11	680	17	47	0	64	869	3	15	887	1631
% App. Total	7.1	91.3	1.6		26.6	73.4	0		98	0.3	1.7		
PHF	.706	.897	.688	.885	.850	.783	.000	.842	.859	.375	.625	.870	.973
Cars	47	607	11	665	16	47	0	63	856	3	15	874	1602
% Cars	97.9	97.7	100	97.8	94.1	100	0	98.4	98.5	100	100	98.5	98.2
Trucks	1	14	0	15	1	0	0	1	13	0	0	13	29
% Trucks	2.1	2.3	0	2.2	5.9	0	0	1.6	1.5	0	0	1.5	1.8



File Name: 24022 Worcester Casco at Site Drwy AM

Site Code: 24022 Start Date : 3/28/2024

E-W Street:Site Drwy N-S Street:Casco St Page No : 1

					Groups F	rintea- (	ars - 11	UCKS					
			Street North		•		Street South		225 \$		ury Stree eway West	et Site	
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
07:00 AM	3	2	0	5	0	1	0	1	2	0	0	2	8
07:15 AM	5	0	0	5	0	3	0	3	5	0	0	5	13
07:30 AM	4	1	0	5	0	2	0	2	3	1	0	4	11
07:45 AM	6	3	0	9	0	1	0	1	3	2	0	5	15
Total	18	6	0	24	0	7	0	7	13	3	0	16	47
08:00 AM	8	2	0	10	0	5	0	5	1	4	0	5	20
08:15 AM	7	2	0	9	0	2	0	2	4	0	0	4	15
08:30 AM	10	2	0	12	0	5	0	5	3	1	0	4	21
08:45 AM	9	1	0	10	0	3	0	3	4	2	0	6	19
Total	34	7	0	41	0	15	0	15	12	7	0	19	75
									1				
Grand Total	52	13	0	65	0	22	0	22	25	10	0	35	122
Apprch %	80	20	0		0	100	0		71.4	28.6	0		
Total %	42.6	10.7	0	53.3	0	18	0	18	20.5	8.2	0	28.7	
Cars	51	13	0	64	0	17	0	17	25	10	0	35	116
% Cars	98.1	100	0	98.5	0	77.3	0	77.3	100	100	0	100	95.1
Trucks	1	0	0	1	0	5	0	5	0	0	0	0	6
% Trucks	1.9	0	0	1.5	0	22.7	0	22.7	0	0	0	0	4.9

### Ron Müller & Associates

Traffic Engineering and Consulting Services

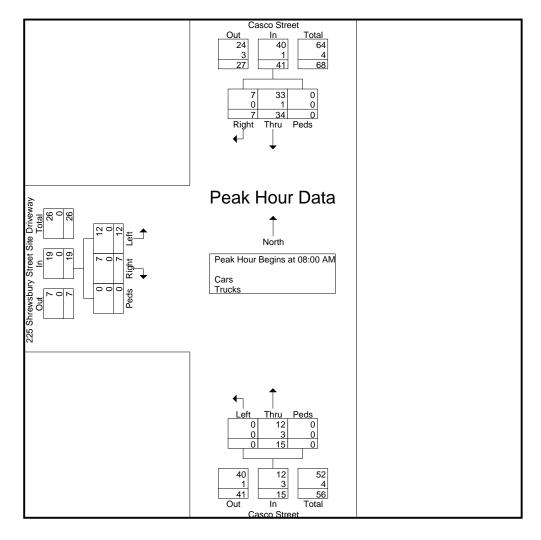
E-W Street:Site Drwy

File Name: 24022 Worcester Casco at Site Drwy AM

Site Code : 24022 Start Date : 3/28/2024

N-S Street:Casco St Page No : 2

			Street North				Street South		225		ury Stre eway ı West	et Site	
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysi	is From 07	7:00 AM t	o 08:45	AM - Peak	1 of 1					_			
Peak Hour for Enti	re Interse	ction Beg	ins at 08	3:00 AM									
08:00 AM	8	2	0	10	0	5	0	5	1	4	0	5	20
08:15 AM	7	2	0	9	0	2	0	2	4	0	0	4	15
08:30 AM	10	2	0	12	0	5	0	5	3	1	0	4	21
08:45 AM	9	1	0	10	0	3	0	3	4	2	0	6	19
Total Volume	34	7	0	41	0	15	0	15	12	7	0	19	75
% App. Total	82.9	17.1	0		0	100	0		63.2	36.8	0		
PHF	.850	.875	.000	.854	.000	.750	.000	.750	.750	.438	.000	.792	.893
Cars	33	7	0	40	0	12	0	12	12	7	0	19	71
% Cars	97.1	100	0	97.6	0	80.0	0	80.0	100	100	0	100	94.7
Trucks	1	0	0	1	0	3	0	3	0	0	0	0	4
% Trucks	2.9	0	0	2.4	0	20.0	0	20.0	0	0	0	0	5.3



File Name: 24022 Worcester Casco at Site Drwy PM

Site Code: 24022

E-W Street:Site Drwy N-S Street:Casco St Start Date : 3/28/2024 Page No : 1

					Groups r	Tilliteu- (	Jais - II	ucks					
			Street North		•		Street South		225 \$		ury Stree eway West	et Site	
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	10	0	0	10	0	5	0	5	3	4	0	7	22
04:15 PM	12	3	0	15	0	6	0	6	11	4	0	15	36
04:30 PM	8	1	0	9	0	3	0	3	6	2	0	8	20
04:45 PM	12	2	0	14	1_	3	0	4	9	8	0	17	35_
Total	42	6	0	48	1	17	0	18	29	18	0	47	113
05:00 PM	13	0	0	13	0	5	0	5	7	3	0	10	28
05:15 PM	12	1	0	13	0	4	0	4	6	5	0	11	28
05:30 PM	8	1	0	9	0	3	0	3	8	2	0	10	22
05:45 PM	6	0	0	6	0	5	0	5	9	2	1_	12	23
Total	39	2	0	41	0	17	0	17	30	12	1	43	101
									1				
Grand Total	81	8	0	89	1	34	0	35	59	30	1	90	214
Apprch %	91	9	0		2.9	97.1	0		65.6	33.3	1.1		
Total %	37.9	3.7	0	41.6	0.5	15.9	0	16.4	27.6	14	0.5	42.1	
Cars	81	7	0	88	1	34	0	35	59	30	1	90	213
% Cars	100	87.5	0	98.9	100	100	0	100	100	100	100	100	99.5
Trucks	0	1	0	1	0	0	0	0	0	0	0	0	1
% Trucks	0	12.5	0	1.1	0	0	0	0	0	0	0	0	0.5

### Ron Müller & Associates

Traffic Engineering and Consulting Services

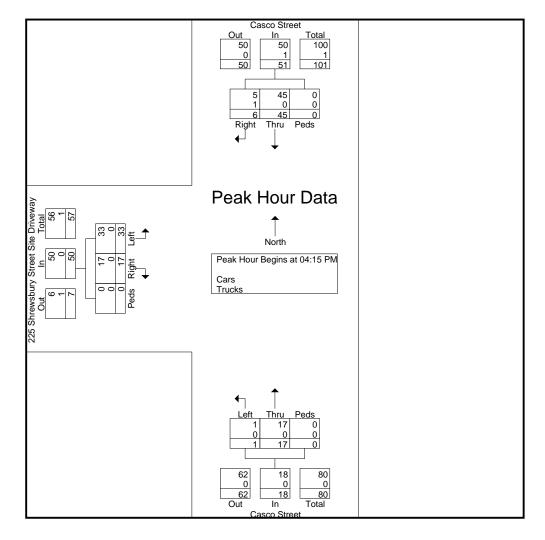
E-W Street:Site Drwy

File Name: 24022 Worcester Casco at Site Drwy PM

Site Code : 24022 Start Date : 3/28/2024

N-S Street:Casco St Page No : 2

			Street North				Street South		225 \$		ury Stre eway ı West		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysi	is From 04	1:00 PM t	o 05:45	PM - Peak '	1 of 1					_			
Peak Hour for Enti	re Interse	ction Beg	ins at 04	:15 PM									
04:15 PM	12	3	0	15	0	6	0	6	11	4	0	15	36
04:30 PM	8	1	0	9	0	3	0	3	6	2	0	8	20
04:45 PM	12	2	0	14	1	3	0	4	9	8	0	17	35
05:00 PM	13	0	0	13	0	5	0	5	7	3	0	10	28
Total Volume	45	6	0	51	1	17	0	18	33	17	0	50	119
% App. Total	88.2	11.8	0		5.6	94.4	0		66	34	0		
PHF	.865	.500	.000	.850	.250	.708	.000	.750	.750	.531	.000	.735	.826
Cars	45	5	0	50	1	17	0	18	33	17	0	50	118
% Cars	100	83.3	0	98.0	100	100	0	100	100	100	0	100	99.2
Trucks	0	1	0	1	0	0	0	0	0	0	0	0	1
% Trucks	0	16.7	0	2.0	0	0	0	0	0	0	0	0	0.8



File Name: 24022 Worcester Casco at Site Drwy Sat

Site Code: 24022 Start Date : 4/6/2024

E-W Street:Site drwy N-S Street:Casco st Page No : 1

					Groups F	?rinted- (	Cars - Tr	ucks					
		Casco From			•		Street South		225 \$		ury Stree eway West		
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:00 AM	13	0	0	13	0	3	0	3	9	7	0	16	32
11:15 AM	8	1	0	9	0	3	0	3	17	1	1	19	31
11:30 AM	10	2	0	12	0	6	0	6	11	4	1	16	34
11:45 AM	3	0	0	3	0	8	0	8	11	2	0	13	24
Total	34	3	0	37	0	20	0	20	48	14	2	64	121
	_	_	_	_ 1	_	_		- 1			_		
12:00 PM	5 7	0	0	5	0	5	1	6	10	1	0	11	22
12:15 PM	•	1	0	8	0	5	0	5	9	8	0	17	30
12:30 PM	2	0	0	2	0	2	0	2	12	4	0	16	20
12:45 PM	13	0	0	13	0	3	0	3	12	4	0	16	32
Total	27	1	0	28	0	15	1	16	43	17	0	60	104
01:00 PM	2	0	0	2	0	6	0	6	11	4	0	15	23
01:15 PM	4	0	0	4	0	3	0	3	4	3	0	7	14
01:30 PM	5	0	0	5	0	3	0	3	10	1	0	11	19
01:45 PM	3	1	0	4	0	0	0	0	8	5	0	13	17
Total	14	1	0	15	0	12	0	12	33	13	0	46	73
		_	_	1	_						_		
Grand Total	75	5	0	80	0	47	1	48	124	44	2	170	298
Apprch %	93.8	6.2	0		0	97.9	2.1		72.9	25.9	1.2		
Total %	25.2	1.7	0	26.8	0	15.8	0.3	16.1	41.6	14.8	0.7	57	
Cars	75	5	0	80	0	47	1	48	124	44	2	170	298
% Cars	100	100	0	100	0	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

### Ron Müller & Associates

Traffic Engineering and Consulting Services

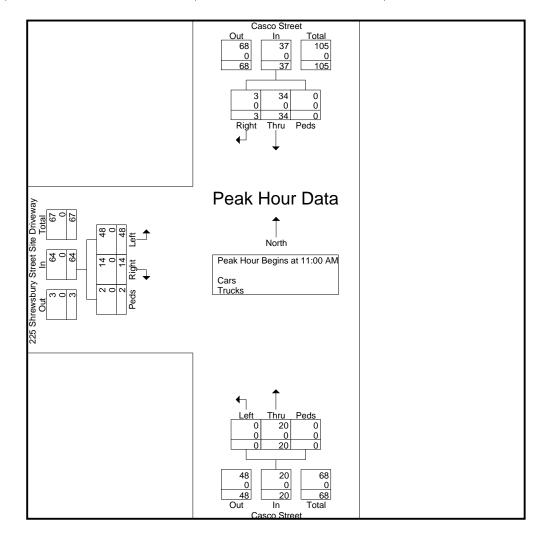
File Name: 24022 Worcester Casco at Site Drwy Sat

Site Code : 24022 Start Date : 4/6/2024

Page No : 2

E-W Street:Site drwy N-S Street:Casco st

			Street North				Street South		225 \$		ury Stree eway n West	et Site	
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysi	is From 11	:00 AM t	o 01:45 l	PM - Peak	1 of 1					_			
Peak Hour for Enti	ire Interse	ction Beg	ins at 11	:00 AM									
11:00 AM	13	0	0	13	0	3	0	3	9	7	0	16	32
11:15 AM	8	1	0	9	0	3	0	3	17	1	1	19	31
11:30 AM	10	2	0	12	0	6	0	6	11	4	1	16	34
11:45 AM	3	0	0	3	0	8	0	8	11	2	0	13	24
Total Volume	34	3	0	37	0	20	0	20	48	14	2	64	121
% App. Total	91.9	8.1	0		0	100	0		75	21.9	3.1		
PHF	.654	.375	.000	.712	.000	.625	.000	.625	.706	.500	.500	.842	.890
Cars	34	3	0	37	0	20	0	20	48	14	2	64	121
% Cars	100	100	0	100	0	100	0	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



File Name: 24022 Worcester Albany at Site Drwy AM

Site Code: 24022

E-W Street: Albany St Start Date : 3/27/2024

N-S Street:Site Drwy Page No : 1

					Groups i	-mneu- c	<i>J</i> ai 3 - 11	ucks					
	225 Shr	ewsbury	Street \$	Site Drwy		Albany	/ Street			Albany	/ Street		
		From	North			From	East			From	West		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	12	1	0	13	2	9	0	11	24
07:15 AM	0	2	0	2	13	2	0	15	2	4	0	6	23
07:30 AM	0	3	0	3	12	1	0	13	1	8	0	9	25
07:45 AM	1	2	0	3	13	7	0	20	2	13	0	15	38
Total	1	7	0	8	50	11	0	61	7	34	0	41	110
08:00 AM	0	2	0	2	21	5	0	26	1	9	0	10	38
08:15 AM	0	3	0	3	11	4	0	15	5	5	0	10	28
08:30 AM	1	4	0	5	22	3	0	25	6	8	0	14	44
08:45 AM	0	4	0	4	16	8	0	24	4	4	0	8	36
Total	1	13	0	14	70	20	0	90	16	26	0	42	146
Grand Total	2	20	0	22	120	31	0	151	23	60	0	83	256
Apprch %	9.1	90.9	0		79.5	20.5	0		27.7	72.3	0		
Total %	0.8	7.8	0	8.6	46.9	12.1	0	59	9	23.4	0	32.4	
Cars	2	20	0	22	117	31	0	148	23	54	0	77	247
% Cars	100	100	0	100	97.5	100	0	98	100	90	0	92.8	96.5
Trucks	0	0	0	0	3	0	0	3	0	6	0	6	9
% Trucks	0	0	0	0	2.5	0	0	2	0	10	0	7.2	3.5

### Ron Müller & Associates

Traffic Engineering and Consulting Services

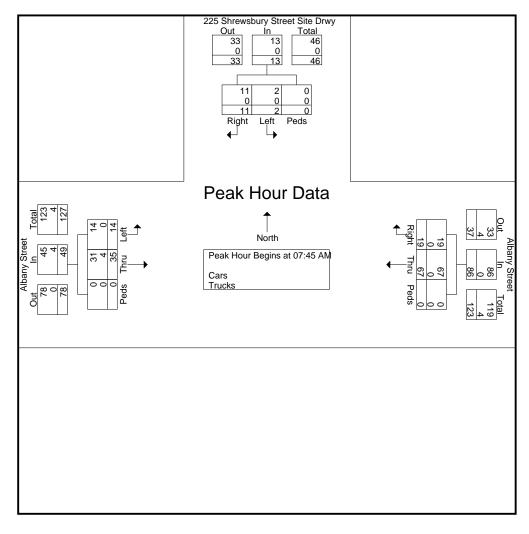
File Name: 24022 Worcester Albany at Site Drwy AM

Site Code : 24022

E-W Street:Albany St Start Date : 3/27/2024

N-S Street:Site Drwy Page No : 2

	225 Shr	•	Street :	Site Drwy			/ Street East			•	/ Street West		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysi	is From 0	7:00 AM t	o 08:45	AM - Peak	1 of 1	_							
Peak Hour for Enti	re Interse	ction Beg	ins at 07	7:45 AM									
07:45 AM	1	2	0	3	13	7	0	20	2	13	0	15	38
08:00 AM	0	2	0	2	21	5	0	26	1	9	0	10	38
08:15 AM	0	3	0	3	11	4	0	15	5	5	0	10	28
08:30 AM	1	4	0	5	22	3	0	25	6	8	0	14	44
Total Volume	2	11	0	13	67	19	0	86	14	35	0	49	148
% App. Total	15.4	84.6	0		77.9	22.1	0		28.6	71.4	0		
PHF	.500	.688	.000	.650	.761	.679	.000	.827	.583	.673	.000	.817	.841
Cars	2	11	0	13	67	19	0	86	14	31	0	45	144
% Cars	100	100	0	100	100	100	0	100	100	88.6	0	91.8	97.3
Trucks	0	0	0	0	0	0	0	0	0	4	0	4	4
% Trucks	0	0	0	0	0	0	0	0	0	11.4	0	8.2	2.7



File Name: 24022 Worcester Albany at Site Drwy PM

Site Code : 24022

E-W Street:Albany St N-S Street:Site Drwy Start Date : 3/27/2024

Page No : 1

					Groups F	rintea- c	<i>i</i> ars - 11	ucks					
	225 S	Shrewsbu Drive From	eway	et Site			Street East				/ Street West		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
04:00 PM	0	7	0	7	16	8	0	24	1	8	0	9	40
04:15 PM	0	13	0	13	21	6	0	27	6	18	0	24	64
04:30 PM	1	9	0	10	28	5	0	33	5	10	0	15	58
04:45 PM	2	4	0	6	21	8	0	29	6	8	0	14	49
Total	3	33	0	36	86	27	0	113	18	44	0	62	211
05:00 PM 05:15 PM 05:30 PM	0 0 1	6 4 10	0 0 0	6 4 11	15 12 14	0 2 8	0 0 0	15 14 22	3 6 3	9 4 6	0 0 0	12 10 9	33 28 42
05:45 PM	0	2	0	2	14	4	0	18	2	6	0	8	28
Total	1	22	0	23	55	14	0	69	14	25	0	39	131
Grand Total Apprch % Total %	4 6.8 1.2	55 93.2 16.1	0 0 0	59 17.3	141 77.5 41.2	41 22.5 12	0 0 0	182 53.2	32 31.7 9.4	69 68.3 20.2	0	101 29.5	342
Cars	3	55	0	58	139	41	0	180	32	68	0	100	338
% Cars	75	100	Ö	98.3	98.6	100	0	98.9	100	98.6	Ő	99	98.8
Trucks	1	0	0	1	2	0	0	2	0	1	0	1	4
% Trucks	25	0	0	1.7	1.4	0	0	1.1	0	1.4	0	1	1.2

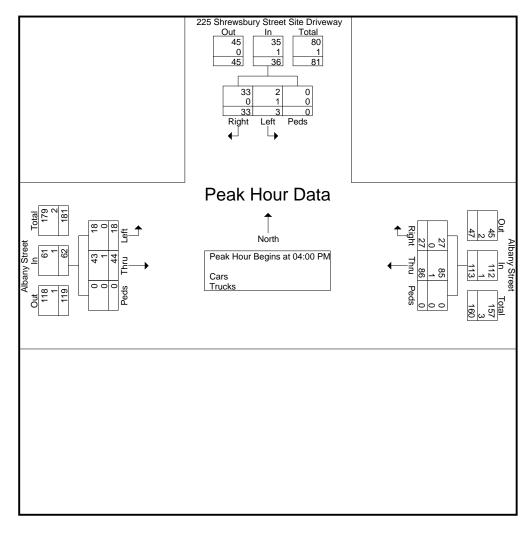
File Name: 24022 Worcester Albany at Site Drwy PM

Site Code: 24022

E-W Street: Albany St Start Date : 3/27/2024

N-S Street:Site Drwy Page No : 2

	225		ury Stre eway North	et Site			y Street n East				y Street n West		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysi	s From 04	4:00 PM t	o 05:45	PM - Peak	1 of 1								
Peak Hour for Enti	re Interse	ction Beg	ins at 04	1:00 PM									
04:00 PM	0	7	0	7	16	8	0	24	1	8	0	9	40
04:15 PM	0	13	0	13	21	6	0	27	6	18	0	24	64
04:30 PM	1	9	0	10	28	5	0	33	5	10	0	15	58
04:45 PM	2	4	0	6	21	8	0	29	6	8	0	14	49
Total Volume	3	33	0	36	86	27	0	113	18	44	0	62	211
% App. Total	8.3	91.7	0		76.1	23.9	0		29	71	0		
PHF	.375	.635	.000	.692	.768	.844	.000	.856	.750	.611	.000	.646	.824
Cars	2	33	0	35	85	27	0	112	18	43	0	61	208
% Cars	66.7	100	0	97.2	98.8	100	0	99.1	100	97.7	0	98.4	98.6
Trucks	1	0	0	1	1	0	0	1	0	1	0	1	3
% Trucks	33.3	0	0	2.8	1.2	0	0	0.9	0	2.3	0	1.6	1.4



File Name: 24022 Worcester Albany at Site Drwy Sat

Site Code: 24022 Start Date : 4/6/2024

E-W Street:Albany St N-S Street:Site Drwy Page No : 1

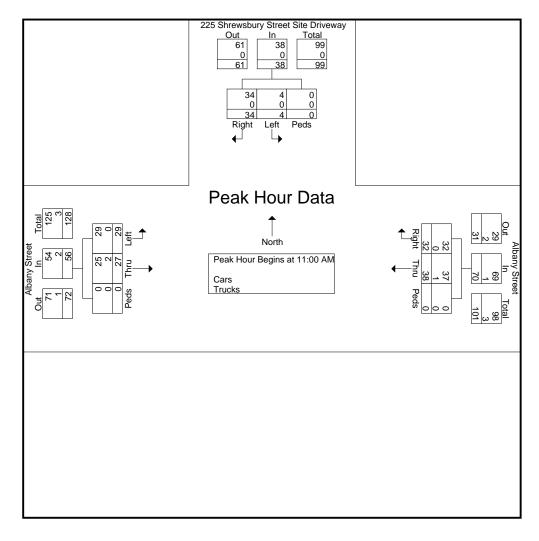
						Groups	Printed- (	ars - II	ucks					
		225 \$		ury Stre eway North	et Site			/ Street n East				y Street West		
Start	Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
11:0	0 AM	1	6	0	7	14	11	0	25	10	9	0	19	51
11:1	5 AM	2	10	0	12	7	8	0	15	6	4	0	10	37
11:3	0 AM	0	7	0	7	9	11	0	20	8	8	0	16	43
11:4	5 AM	1_	11	0	12	8	2	0	10	5	6	0	11	33
	Total	4	34	0	38	38	32	0	70	29	27	0	56	164
										1				
	0 PM	2	7	0	9	7	5	0	12	4	6	0	10	31
	5 PM	3	12	0	15	12	8	0	20	5	3	0	8	43
	0 PM	2	10	0	12	14	4	0	18	8	6	0	14	44
	5 PM	1	8	0	9	4	7	0	11	4	4	0	8	28
	Total	8	37	0	45	37	24	0	61	21	19	0	40	146
	1				1					1				
	0 PM	2	10	0	12	7	13	0	20	3	6	0	9	41
	5 PM	1	7	0	8	8	3	0	11	2	2	0	4	23
	0 PM	0	10	0	10	3	4	0	7	4	3	0	7	24
	5 PM	0	4	0	4	9	4	0	13	1	3	0	4	21
	Total	3	31	0	34	27	24	0	51	10	14	0	24	109
	1									1				
Grand		15	102	0	117	102	80	0	182	60	60	0	120	419
	ch %	12.8	87.2	0		56	44	0		50	50	0		
	tal %	3.6	24.3	0	27.9	24.3	19.1	0	43.4	14.3	14.3	0	28.6	
	Cars	14	102	0	116	100	80	0	180	60	57	0	117	413
	Cars	93.3	100	0	99.1	98	100	0	98.9	100	95	0	97.5	98.6
	rucks	1	0	0	1	2	0	0	2	0	3	0	3	6
% T	rucks	6.7	0	0	0.9	2	0	0	1.1	0	5	0	2.5	1.4

File Name: 24022 Worcester Albany at Site Drwy Sat

Site Code: 24022 Start Date : 4/6/2024

E-W Street: Albany St N-S Street:Site Drwy Page No : 2

	225		ury Stre eway North	et Site		-	/ Street East				y Street West		
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysi	s From 1	1:00 AM t	o 01:45	PM - Peak	1 of 1	_							
Peak Hour for Enti	re Interse	ction Beg	ins at 11	:00 AM									
11:00 AM	1	6	0	7	14	11	0	25	10	9	0	19	51
11:15 AM	2	10	0	12	7	8	0	15	6	4	0	10	37
11:30 AM	0	7	0	7	9	11	0	20	8	8	0	16	43
11:45 AM	1_	11	0	12	8	2	0	10	5	6	0	11	33
Total Volume	4	34	0	38	38	32	0	70	29	27	0	56	164
% App. Total	10.5	89.5	0		54.3	45.7	0		51.8	48.2	0		
PHF	.500	.773	.000	.792	.679	.727	.000	.700	.725	.750	.000	.737	.804
Cars	4	34	0	38	37	32	0	69	29	25	0	54	161
% Cars	100	100	0	100	97.4	100	0	98.6	100	92.6	0	96.4	98.2
Trucks	0	0	0	0	1	0	0	1	0	2	0	2	3
% Trucks	0	0	0	0	2.6	0	0	1.4	0	7.4	0	3.6	1.8



Civil • Structural • Transportation • Surveying	Proposed Retail/Bank Expansion, Worcester, Massachusett
Seasonal/Historical Adjustmen	t Data and Bus Schedule

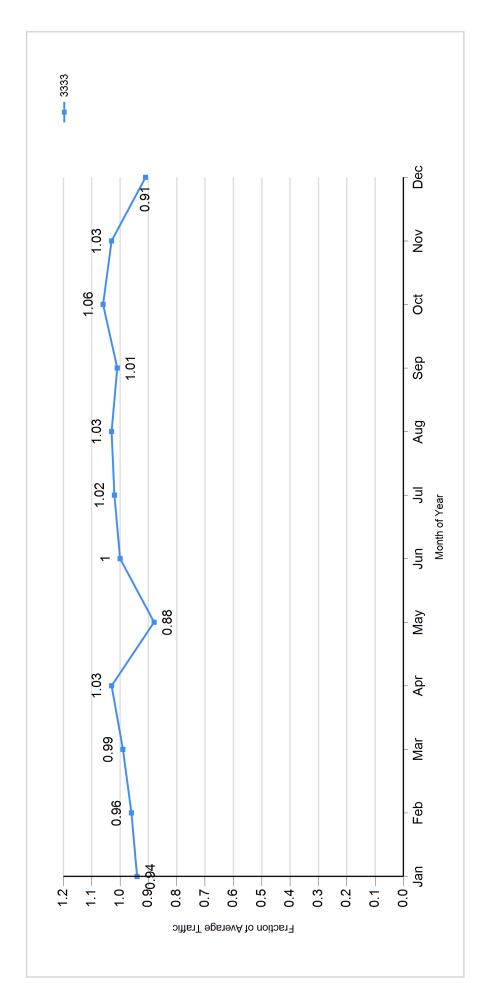
## MassDOT Transportation Data Management System

STATION 3979 - Shrewsbury Street west of Daniels Street

	Year 5-6	Year 5-7	Year 5-8	Year 5-9	Year 5-10																		
Su	Year 4-5	Year 4-6	Year 4-7	Year 4-8	Year 4-9	Year 4-10					Year 9-10												
Traffic Growth Calculations	Year 3-4	Year 3-5	Year 3-6	Year 3-7	Year 3-8	Year 3-9	Year 3-10				Year 8-9	Year 8-10				0.79%							
ī				2.26%				0.34%								<b>Growth Rate:</b>							
	Year 2-3	Year 2-4	Year 2-5	Year 2-6	Year 2-7	Year 2-8	Year 2-9	Year 2-10 (			Year 7-8	Year 7-9	Year 7-10			verage Traffic							
	1.10%				2.05%				0.43%					-1.45%		2009-2018 Annual Average Traffic Growth Rate:							
		Year 1-3	Year 1-4	Year 1-5	Year 1-6	Year 1-7	Year 1-8	Year 1-9			Year 6-7	Year 6-8	Year 6-9	Year 6-10		2009-2							
AADT	20,221	20,443				22,291				21,002		2014-2018 Annual Growth:				-1.45%							-1.45%
YEAR	5005	2010	2011	2012	2013	2014	2015	2016	2017	2018		14-2018 Anr	Year 6-7	Year 6-8	Year 6-9	Year 6-10	Year 7-8	Year 7-9	Year 7-10	Year 8-9	Year 8-10	Year 9-10	Avg. Growth:
YEAR#	1	2	æ	4	7	9	7	∞	6	10		20											A

mass DOT

Traffic Pattern by Month for 1/1/2019 - 12/31/2019 Criteria: Location ID = 3333, From 1/1/1900 To 12/31/2049 12:00:00 AM



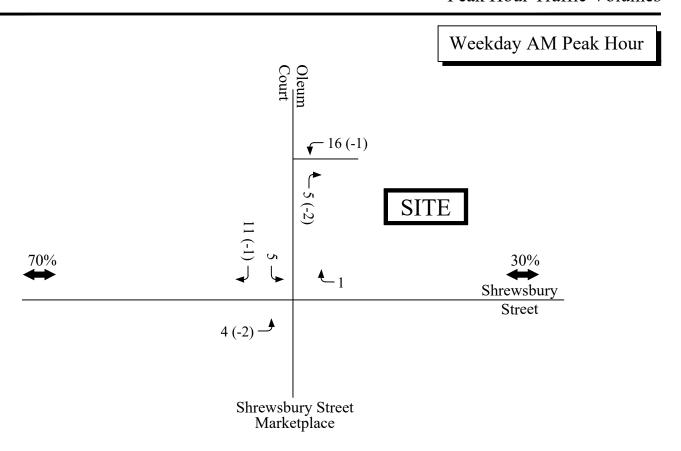
### Massachusetts Highway Department

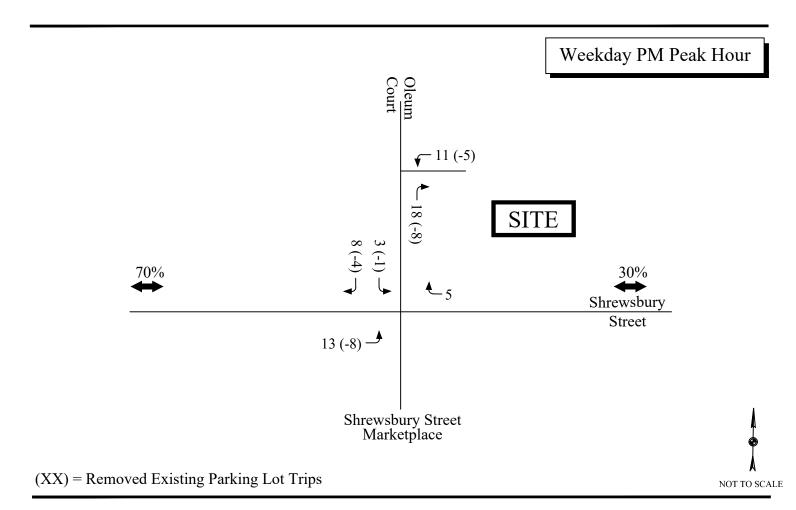
mass DOT

# AADT Summary By Year for 1/1/2008 - 12/31/2019 Criteria: Location ID = 3979. From 1/1/1900 To 12/31/2049 12:00:00 AM

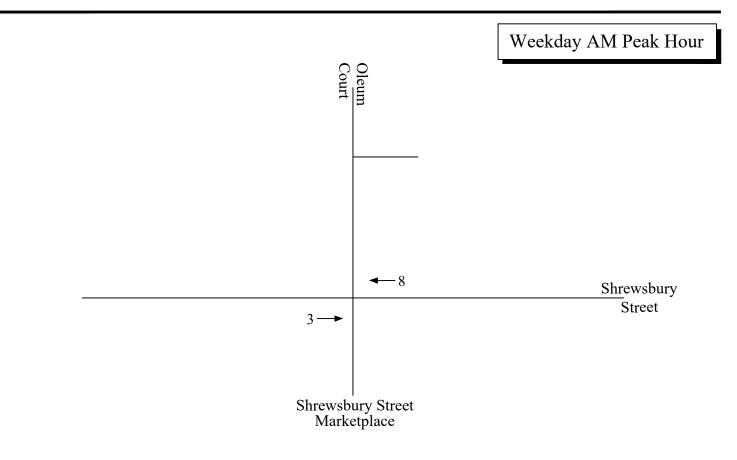
			Criteria: Location ID = 39/9. From 1/1/1900 10 12/31/2049 12:00:00 AM	From 1/1	01 0061	12/15/1/20	49 12:00.	UD AM				
Community	Station		Station Information	2008	2009	2010	2014	2015	2016	2017	2018	2019
Worcester	3979	Location	Location SHREWSBURY STREET	20300	20221	20443	22291	22536	22829	23080	21002	21086
		Description		~	_	_	_	က	က	8	_	ဇ
		FC	.3	Actual	Actual	Actual	Actual	Actual Grown Grown	Grown	Grown		Actual Grown

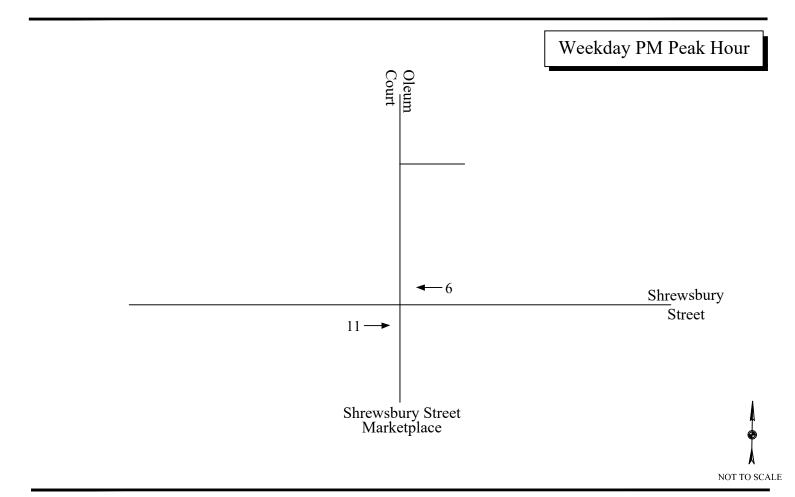
Civil, Structural & Transportation Services





TG - 393-397 Shrewsbury Street Peak Hour Traffic Volumes





## Welcome aboard the WRTA!

mportant information. Additional information be can obtained This route timetable shows the times of departure at major stops along the route and contains route maps and other

or visit our website at www.TheRTA.com. by calling the WRTA Information Line at (508) 791-WRTA (9782),

### WRTA FARE INFORMATION Effective July 1, 2017

Full Cash Fare (Adults age 14 and up)\$1.75 Senior/Disabled Cash Fare\$0.85 Children 5-13 years of age accompanied by an adult\$0.85 Children 9 years of age not accompanied by an adult**\$1.75
Children under 5 accompanied by an adult
Senior/Disabled*/Child One Day 8 Ride Pass\$2.25 31 Day Pass
Senior/Disabled*31 Day Pass\$28.50

Valid ID Required for Senior/Disabled Fare

Please have exact fare ready when boarding the bus. The farebox does not accept pennies or half dollars.

pass or add stored value (cash). The stored value gives you discounted fare with the WRTA. They can be used on the WRTA, MBTA and other participating RTA's in Massachusetts. You can obtain a Charlie Card at the Customer Service Center The Charlie Card is available to either purchase a monthly located at 60 Foster Street, Worcester, MA Route schedules and the purchase of passes are available at the Customer Service Center at 60 Foster Street, Worcester.

and feature bicycle racks for two bicycles. For TTY service call Massachusetts Relay TTY (800) 439-2370. For information, ACCESSIBILITY: All WRTA buses are wheelchair accessible accommodations and or to provide feedback call 508-791-9782 PROPER IDENTIFICATION: One of the following valid identification cards must be shown to the driver each time you board

MCB ID and PCA-ride free **DISABLED...** Statewide Access Pass / WRTA ADA Photo I.D.

HOLIDAY SERVICE: Saturday\* Service is provided on Martin Luther King, Jr. Day, Presidents' Day, Patriots' Day, Columbus Day, .... Medicare card with Photo I.D.

and the day after Thanksgiving.

Routes 29, 33, 42 and community shuttles operate on a weekday schedule on these holidays. Routes 19 and 30 operate on a modified Saturday Weekday Service is provided on Veterans' Day. schedule on these holidays.

**NO SERVICE ON:** New Years Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day

## Please...NO Smoking, Eating, Drinking or Music

board a bus who appears, in the operator's opinion, to be Eight (8) years compliance with this age limit, operators may question a child seeking to operator may call for assistance from a WRTA supervisor and/or public \*\*The Federal Transit Administration permits transit systems to set a minimum age limit for children riding without a parent or guardian. The old or younger. If an operator is not satisfied with a child's answer, the WRTA has set this age limit at Nine (9) years old. In order to ensure safety personnel. This policy applies to Paratransit Service as well.

OUTBOUND

See the map for matching timepoint locations

4	BUS	Ends	Julio Dr.	Siirewspury	616a	716a	816a	916a	1021a	1131a	1241p	151p	301p		521p	631p	736p	836p
ო	BUS	Leaves	Marketplace	onrewspury	608a	708a	808a	908a	1010a	1120a	1230p	140p	250p	411p*	510p	620p	728p	828p
2	BUS	Leaves	UMass	Medical Center	600a	700a	800a	900a	1000a	1110a	1220p	130p	240p	350p	200p	610p	720p	820p
-	BUS	STARTS	Union Station	ПШ	550a	650a	750a	850a	950a	1100a	1210a	120p	230p	*340p	450p	600b	710p	810p

\*\*Lakeway Commons is By Request Only on outbound trips \*These trips end/start at Fairlawn Plaza

### SATURDAYS

4	BUS Ends	Julio Dr. Shrewsbury	1016a	1116a	1216p	116p	216p	316p	416p	516p	
ო	BUS Leaves	Marketplace Shrewsbury	1007a	1107a	1207p	107p	207p	307p	407p	507p	
2	BUS Leaves	UMass Medical Center	959a	1059a	1159a	1259p	159p	259p	359p	459p	
-	BUS STARTS	Union Station Hub	950a	1050a	1150a	1250p	150p	250p	350p	450p	

\*\*Lakeway Commons is By Request Only on outbound trips \*These trips end/start at Marketplace Shrewsbury

### **NO SUNDAY SERVICE**

**NO SUNDAY SERVICE** 

### 

### WEEKDAYS

See the map for matching timepoint locations

BUS ENDS Union Station Hub	650a 750a	850a 950a	1100a <b>1210a</b>	120p 230p	340p 450p	600p 710p	810p 910p
BUS Leaves UMass Medical Center	638a 738a	838a 938a	1045a 1155a	105p 215p	325p 425p	545p 655p	758p 858p
BUS Leaves Marketplace Shrewsbury	629a 729a	829a 929a	1035a 1145a	1255p 205p	315p *415p	535p 645p	749p 849p
BUS STARTS Julio Dr. Shrewsbury	620a 720a	820a 920a	1025a 1135a	1245p 155p	305p	525p 635p	740p 840p

### SATURDAYS

BUS ENDS Union Station	1050a	1150a	1250p	150p 250p	350p	450p	250p
BUS BUS Leaves UMass	- 1	1138a	1238p	138p 238p	338p	438p	538p
BUS BUS Leaves Marketplace	JO29a	1129a	1229p	129p 229p	329p	429p	529p
BUS STARTS Julio Dr.	olifewsbury 1020a	1120a	1220p	120p 220p	320p	420p	520p

SHREWSBURY ST. & ROUTE **SHREWSBURY CENTER via UNION STATION HUB-Route 15** 

**Revised: June 24, 2023** 

## **Worcester Regional Transit Authority**



Serving:

Christoforo Columbo Park Shrewsbury Senior Center **East View Apartments** JMass Medical Center Shrewsbury Town Hall **Lakeway Commons** White City Plaza

Marketplace Shrewsbury **Shrewsbury Center Union Station** 

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Polish: Jeśli ta informacja jest potrzebna w innym języku, proszę odwiedzić www.therta.com i korzystać z Google Translate funkcji.

**Vietnamese**: Nếu thông tin này là cần thiết trọng một ngôn ngữ khác, vui lòng truy cập www.therta.com và sử dụng các tính năng của Google Translate.

Chinese (Traditional): 如果此信息需要以另一種語言,請訪問www.therta.com並使用 谷歌翻譯功能。

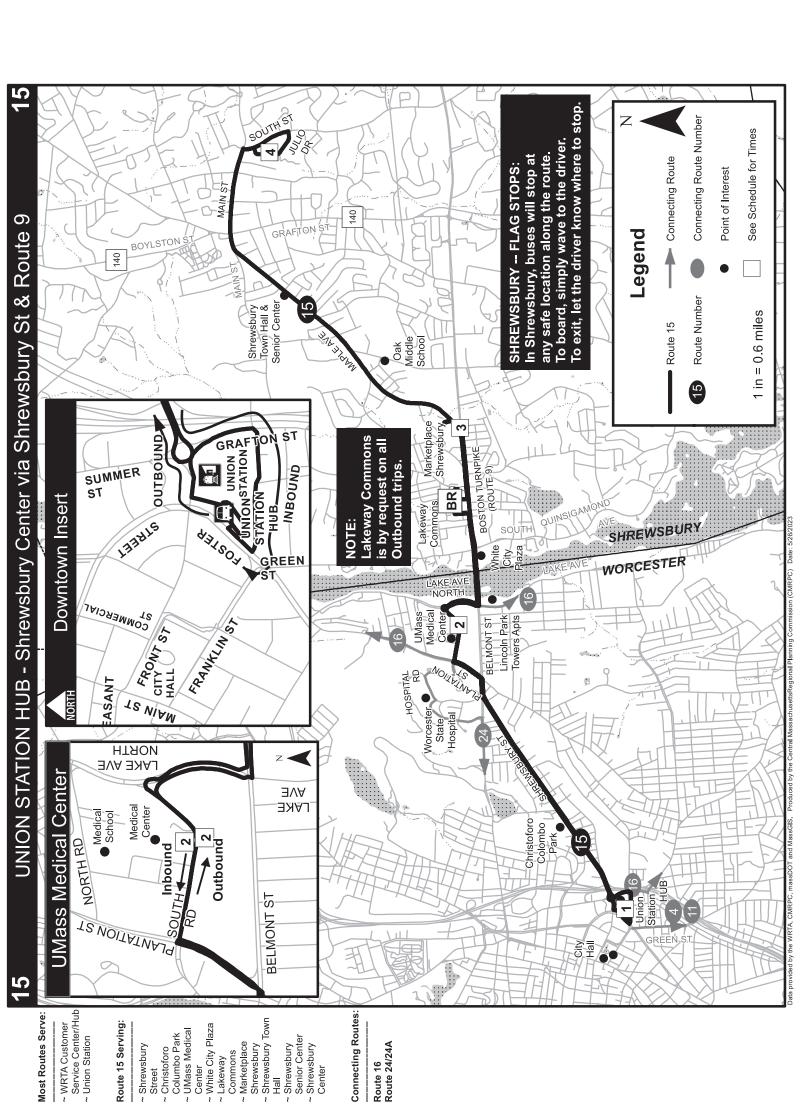
**Swahili:** Kama unahitaji habari hii katika nyingine lugha, unaweza kubonyeza mahali panaandikwa "Google Translate" hapa juu.

Note: French, Spanish, Polish and Portuguese translations were created by human translation from the English version. Vietnamese, Chinese and Swahili translations were recreed from the English version using Google Translate. There are likely grammatical errors in these translations, however time constraints required use of Google Translate for bus schedule printing within necessary timeframe (June 2017)

For Transit Information Call 508-791-9782 or visit



### Tram = sub prubir rot not shubil



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Chach Date	e and Trin G	eneration '	Worksheets	
Crash Kate	c and Trip G			
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Crasii Kate	and Trip G			
Crasii Kate	and Trip G			
Crasii Kate	and Trip G			
Crasii Kate	and Trip G			
Crasii Kate				
Crasii Kate	and Trip G			

### Institute of Transportation Engineers (ITE); 11th Edition Land Use Code (LUC) 822 - Strip Retail Plaza (less than 40,000 sf)

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Leasable Area

Independent Variable (X): 20.712 ksf

### AVERAGE WEEKDAY DAILY

T = 42.20 \* (X) + 229.68

T = 1,103.726T = 1,104 vehicle trips

with 50% ( 552 vpd) entering and 50% (

### WEEKDAY DAILY - Average Rate

T = 54.45 \* (X)

T = 1127.77

T = 1,128 vehicle trips

with 564 vph entering and 564 vph exiting.

### WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.66 Ln (X) + 1.84

Ln T = 3.840

T = 46.53

T = 47 vehicle trips

with 60% ( 28 vph) entering and 40% ( 19 vph) exiting.

### WEEKDAY AM PEAK HOUR - Average Rate

T = 2.36 \* (X)

T = 48.88

552 vpd) exiting.

T = 49 vehicle trips

with 29 vph entering and 20 vph exiting.

### WEEKDAY PM PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.71 Ln (X) + 2.72

Ln T = 4.872

T = 130.58

T = 131 vehicle trips

with 50% (66 vph) entering and 50% (65 vph) exiting.

### WEEKDAY PM PEAK HOUR - Average Rate

T = 6.59 \* (X)

T = 136.49

T = 136 vehicle trips

with 68 vph entering and 68 vph exiting.

### SATURDAY DAILY

 ITE LUC 821 Saturday Daily Trip Rate
 ITE LUC 821 Sat. Peak Hour Trip Rate
 ITE LUC 822 Saturday Daily Trip Rate
 Rate

 ITE LUC 822 Sat. Peak Hour Trip Rate
 ITE LUC 822 Sat. Peak Hour Trip Rate

$$\frac{81.07}{6.22} = \frac{\text{(Y)}}{6.57} \quad \text{Y} = 85.632$$

T = 85.632 \* (X)

T = 1773.61

T = 1770 vehicle trips

with 50% ( 885 vpd) entering and 50% ( 885 vpd) exiting.

### SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 6.57 \* (X)

T = 136.08

T = 136 vehicle trips

with 51% ( 69 vph) entering and 49% ( 67 vph) exiting.

### Institute of Transportation Engineers (ITE); 11th Edition Land Use Code (LUC) 822 - Strip Retail Plaza (less than 40,000 sf)

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Leasable Area

Independent Variable (X): 35.872 ksf

### AVERAGE WEEKDAY DAILY

T = 42.20 \* (X) + 229.68

T = 1.743.478

T = 1,743 vehicle trips

with 50% (872 vpd) entering and 50% (871 vpd) exiting.

### 1 31.13

T = 54.45 \* (X)

T = 1953.23

T = 1,953 vehicle trips

**WEEKDAY DAILY - Average Rate** 

with 977 vph entering and 976 vph exiting.

### WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.66 Ln (X) + 1.84

Ln T = 4.203

T = 66.89

T = 67 vehicle trips

with 60% ( 40 vph) entering and 40% ( 27 vph) exiting.

### WEEKDAY AM PEAK HOUR - Average Rate

T = 2.36 \* (X)

T = 84.66

T = 85 vehicle trips

with 51 vph entering and 34 vph exiting.

### WEEKDAY PM PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.71 Ln (X) + 2.72

Ln T = 5.262

T = 192.87

with 50% ( 97 vph) entering and 50% ( 96 vph) exiting.

### T = 193 vehicle trips

### WEEKDAY PM PEAK HOUR - Average Rate

T = 6.59 \* (X)

T = 236.40

T = 236 vehicle trips

with 118 vph entering and 118 vph exiting.

### SATURDAY DAILY

 ITE LUC 821 Saturday Daily Trip Rate
 ITE LUC 821 Sat. Peak Hour Trip Rate
 ITE LUC 822 Saturday Daily Trip Rate
 Rate

 ITE LUC 822 Sat. Peak Hour Trip Rate
 ITE LUC 822 Sat. Peak Hour Trip Rate

$$\frac{81.07}{6.22} = \frac{(Y)}{6.57} \qquad Y = 85.632$$

T = 85.632 \* (X)

T = 3071.7911

T = 3070 vehicle trips

with 50% ( 1535 vpd) entering and 50% ( 1535 vpd) exiting.

### SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 6.57 \* (X)

T = 235.68

T = 236 vehicle trips

with 51% ( 120 vph) entering and 49% ( 116 vph) exiting.

### Institute of Transportation Engineers (ITE); 11th Edition Land Use Code (LUC) 912 - Drive-In Bank

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area Independent Variable (X): 5.100 ksf

### AVERAGE WEEKDAY DAILY

```
T = 100.35 * (X)

T = 511.79

T = 510 vehicle trips

with 50% ( 255 vpd) entering and 50% ( 255 vpd) exiting.
```

### WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC

```
T = 9.95 * (X)

T = 50.75

T = 51 vehicle trips

with 58% ( 30 vph) entering and 42% ( 21 vph) exiting.
```

### WEEKDAY PM PEAK HOUR OF ADJACENT STREET TRAFFIC

```
T = 21.01 * (X)

T = 107.15

T = 107 vehicle trips

with 50% ( 54 vph) entering and 50% ( 53 vph) exiting.
```

### SATURDAY DAILY

```
T = 86.48 * (X)

T = 441.05

T = 440 vehicle trips

with 50% ( 220 vpd) entering and 50% ( 220 vpd) exiting.
```

### SATURDAY PEAK HOUR OF GENERATOR

```
T = 26.35 * (X)

T = 134.39

T = 134 vehicle trips

with 51% ( 68 vph) entering and 49% ( 66 vph) exiting.
```

### Institute of Transportation Engineers (ITE); 11th Edition Land Use Code (LUC) 912 - Drive-In Bank

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area Independent Variable (X): 5.700 ksf

### AVERAGE WEEKDAY DAILY

```
T = 100.35 * (X)

T = 572.00

T = 570 vehicle trips

with 50% ( 285 vpd) entering and 50% ( 285 vpd) exiting.
```

### WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC

```
T = 9.95 * (X)

T = 56.72

T = 57 vehicle trips

with 58% ( 33 vph) entering and 42% ( 24 vph) exiting.
```

### WEEKDAY PM PEAK HOUR OF ADJACENT STREET TRAFFIC

```
T = 21.01 * (X)

T = 119.76

T = 120 vehicle trips

with 50% ( 60 vph) entering and 50% ( 60 vph) exiting.
```

### SATURDAY DAILY

```
T = 86.48 * (X)

T = 492.94

T = 490 vehicle trips

with 50% ( 245 vpd) entering and 50% ( 245 vpd) exiting.
```

### SATURDAY PEAK HOUR OF GENERATOR

```
T = 26.35 * (X)
T = 150.20
T = 150 \qquad \text{vehicle trips}
\text{with } 51\% \, ( \qquad 77 \quad \text{vph) entering and } 49\% \, ( \qquad 73 \quad \text{vph) exiting.}
```



### INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN:	Vorcester				COUNT DA	ATE :	Mar-24	
DISTRICT:	3	UNSIGNA	ALIZED :	Х	SIGNA	LIZED :		
			~ IN	TERSECTI	ON DATA	~		
MAJOR STREET :		Shrewsbury S	Street					
MINOR STREET(S):		Casco Street						
INTERSECTION DIAGRAM (Label Approaches)		North				Shrewsbu	ry Street	
					Casco Stre	eet		
	1.	4			VOLUMES		Total	
APPROACI DIRECTION		SB	<b>2</b> WB	3 NB	<b>4</b> EB	5	Peak Hourly	
PEAK HOURLY V (PM):	OLUMES		1,091	56	1,046		2,193	
"K" FACTO	OR:	0.077	ļ	APPROACH	H VOLUME	:	28,481	
TOTAL # OF CRA	ASHES :	16	# OF YEARS :	5		GE#OF ESPER ( <b>A</b> ):	3.20	
CRASH RATE CALCULATION :		0.31	RATE =	<u>( A * 1.0</u> ( V *	00.000 ) 365 )			

Comments: MassDOT Crash Portal 2015-2019

Project Title & Date: Retail and Bank Development 05-01-2024



### INTERSECTION CRASH RATE WORKSHEET

CITY/TOV Worcester				COUNT DA	ATE :	Mar-24	
DISTRICT 3	UNSIGNALI	ZED :	Х	SIGNAL	LIZED :		
		~ INTI	ERSECTIO	N DATA ~			
MAJOR STREET :	Shrewsbury Stree	t					
MINOR STREET(S):	Site Driveway						
INTERSECTION DIAGRAM	North			Oleum Cou	ırt Shrewsbur	y Street	
(Label Approaches)	Onect						
	Site Driveway						
•		PEA	K HOUR V	OLUMES			
APPROACH:	1	2	3	4	5	Total	
DIRECTION:	SB	WB	NB	EB		Peak Hourly	
PEAK HOURLY VOLUMES (PM) :	101	1,064	48	1,153		2,366	
"K" FACTOR:	0.077		APPROACH	I VOLUME	:	30,727	
TOTAL # OF CRASHES :	22	# OF YEARS :	5	AVERAC CRASHI YEAR	ES PER ( <b>A</b> ):	4.40	
CRASH RATE CALCULATION: 0.39 RATE = $\frac{(A*1.000.000)}{(V*365)}$							

mments: MassDOT Crash Portal 2015-2019

Project Title & Date: Retail and Bank Development 05-01-2024

Drive Through Queue Anal	ysi	S
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File Name: 24022 DCU DriveThru Lanes Fri

Site Code: 24022 Start Date : 5/17/2024

Page No : 1

**Summary Information:** 

Summary information.		
11:55:00 AM - 2:01:00 PM	Lane 1: Teller	Lane 2: ATM
Total Vehicle Count:	24	35
Delayed Vehicle Count:	24	35
Through Vehicle Count:	0	0
Average Stopped Time:	592.75	197.000
Maximum Stopped Time:	1455	438
Min. Secs. for Delay:	0	0
Average Queue:	1.94	0.964
Queue Density:	2.15	1.808
Maximum Queue:	5	4
Delay in Vehicle Hour:	1.94	0.96
Total Delay:	14226	6895

File Name: 24022 DCU DriveThru Lanes Sat

Site Code: 24022 Start Date : 5/18/2024

Page No : 1

**Summary Information:** 

Summary information.		
12:52:00 PM - 3:00:00 PM	Lane 1:Teller	Lane 2: ATM
Total Vehicle Count:	21	44
Delayed Vehicle Count:	21	44
Through Vehicle Count:	0	0
Average Stopped Time:	377.67	323.636
Maximum Stopped Time:	749	537
Min. Secs. for Delay:	0	0
Average Queue:	1.06	1.902
Queue Density:	1.54	2.191
Maximum Queue:	4	5
Delay in Vehicle Hour:	1.06	1.90
Total Delay:	7931	14240

# **Bank Drive-Through Queue and Parking Summary**

Bank	Location	<u>Time Period</u>	Max. Queue in <u>Teller Lane</u>	Max. Queue in Max. Queue in <u>Teller Lane</u> ATM Lane	Peak Parking <u>Demand</u>		
Institution for Savings	Rowley, MA	Friday 3 PM - 6 PM	2	2	18	3,100 sf	2 teller lanes, 1 ATM lane
Institution for Savings	Rowley, MA	Saturday 9 AM - 12 PM	2	4	6	3,100 sf	2 teller lanes, 1 ATM lane
Institution for Savings	Salisbury, MA	Friday 3 PM - 6 PM	1	1	6	3,620 sf	1 teller lane, 1 ATM lane
Institution for Savings	Salisbury, MA	Saturday 9 AM - 12 PM	4	ю	14	3,620 sf	1 teller lane, 1 ATM lane
Institution for Savings	Topsfield, MA	Friday 3 PM - 6 PM	1	2	10	3,000 sf	1 teller lane, 1 ATM lane
Institution for Savings	Topsfield, MA	Saturday 9 AM - 12 PM	1	2	∞	3,000 sf	1 teller lane, 1 ATM lane
Institution for Savings	Ipswich MA	Friday 3 PM - 6 PM	1	2	13	4,400 sf	1 teller lane, 1 ATM lane
Institution for Savings	lpswich MA	Saturday 9 AM - 12 PM	1	П	15	4,400 sf	1 teller lane, 1 ATM lane
St. Mary's Credit Union	Hudson, MA	Friday 4 PM - 6 PM	8	2	NA	N A	2 teller lanes, 1 ATM lane
St. Mary's Credit Union	Hudson, MA	Saturday 9:30 AM to 12:30 PM	4	2	NA	A A	2 teller lanes, 1 ATM lane
St. Mary's Credit Union	Marlborough, MA	Friday 3 PM - 6 PM	8	8	NA	ΑN	2 teller lanes, 1 ATM lane
St. Mary's Credit Union	Marlborough, MA	Saturday 9:30 AM to 12:30 PM	က	2	NA	A A	2 teller lanes, 1 ATM lane
St. Mary's Credit Union	Northborough, MA	Friday 3 PM - 6 PM	2	2	NA	N A	1 teller lane, 1 ATM lane
St. Mary's Credit Union	Northborough, MA	Saturday 9:30 AM to 12:30 PM	4	æ	NA	A A	1 teller lane, 1 ATM lane
Sovereign Bank	Norwell, MA	Friday 11 AM - 2 PM	4	2	NA	3,000 sf	1 teller lane, 1 ATM lane
		Maximum:	4	ហ	18		

12

Average Max.:

Civil • Structural • Transportation • Surveying	Proposed Retail/Bank Expansion, Worcester, Massachusett
Capacity Analysis Methodology	y and Worksheets

### **General**

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM); Transportation Research Board; Washington, D.C.; 2010. The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level of service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- LOS A describes conditions with little to no delay to motorists.
- LOS B represents a desirable level with relatively low delay to motorists.
- LOS C describes conditions with average delays to motorists.
- LOS D describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- LOS E represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- LOS F is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

#### **Unsignalized Intersections**

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized intersections is a function of average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

Page 1 of 2

### **Signalized Intersections**

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometries on average *control* delay. Control delay includes queue move-up time and stopped delay. Table A-l summarizes the relationship between level of service and average control delay.

Table A-1 Level-of-Service Criteria for Intersections

Level of Service	Unsignalized Criteria Average Control Delay In Seconds Per Vehicle	Signalized Criteria Average Control Delay In Seconds Per Vehicle
A	≤ 10	≤ 10
В	10.1 to 15.0	10.1 to 20.0
C	15.1 to 25.0	20.1 to 35.0
D	25.1 to 35.0	35.1 to 55.0
E	35.1 to 50.0	55.1 to 80.0
F	>50	>80

For signalized intersections, this delay criterion may be applied in assigning level of service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level of service designations to individual lane groups or to individual intersection approaches.

Int Delay, s/veh	Intersection													
Lane Configurations	Int Delay, s/veh	0.4												
Traffic Vol, veh/h	Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Traffic Vol, veh/h	Lane Configurations			7		4			ă	<b>∱</b> ∱			<b>∱</b> β	
Conflicting Peds, #/hr   Stop   Sto	Traffic Vol, veh/h	0	0	12	3		6	16			30	0		0
Sign Control         Stop         Stop None         Free None         <	Future Vol, veh/h	0	0	12	3	1	6	16	11	1173	30	0	636	0
RT Channelized         -         -         None         -         -         None         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         0         0         0         0         0         0         0         0         0         4         0         0         0         4         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	Conflicting Peds, #/hr	0	0	0	0	0	0	0	0		0	0	0	0
Storage Length	Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
Veh in Median Storage, #         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         0         0         0         17         0         9         3         0         0         4         0           Mejor/Minor         Minor1         Minor2         Major1         Major2         Major2         Major3         0         669         0         0         -         -         0         0         4         0         0         -         -         0         0         0         -         -         0         0         -         -         0         0         0         0         -         0         0	RT Channelized	-	-	None	-	-	None	-		-	None	-	-	None
Grade, %         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         4         0           Meavy Vehicles, %         0         0         0         0         0         17         0         9         3         0         0         4         0           Mwrth Flow         0         0         19         5         2         10         18         12         1289         33         0         669         0           Major/Minor         Minor         Minor         Major		-	-	0	-	-	-	-	80	-	-	-	-	-
Peak Hour Factor         63         63         63         63         63         63         91         91         91         91         95         95         95           Heavy Vehicles, %         0         0         0         0         17         0         9         3         0         0         4         0           Mwmt Flow         0         0         19         5         2         10         18         12         1289         33         0         669         0           Major/Minor         Minor1         Minor2         Major1         Major2         Major2         Major1         Major2         Major2         Major3         0         669         0         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         0         -         -         0         0         -         -         -         -         -         -         -         -         -         - </td <td>Veh in Median Storage,</td> <td># -</td> <td>0</td> <td>-</td> <td>-</td> <td>0</td> <td>-</td> <td>-</td> <td>-</td> <td>0</td> <td>-</td> <td>-</td> <td></td> <td>-</td>	Veh in Median Storage,	# -	0	-	-	0	-	-	-	0	-	-		-
Heavy Vehicles, %														
Mymt Flow         0         0         19         5         2         10         18         12         1289         33         0         669         0           Major/Minor         Minor1         Minor2         Major1         Major2         Major2           Conflicting Flow All         -         -         661         1374         2051         335         669         669         0         0         -         -         0           Stage 1         -         -         669         669         -				63	63	63								
Major/Minor         Minor1         Minor2         Major1         Major2           Conflicting Flow All         -         -         661         1374         2051         335         669         669         0         0         -         -         0           Stage 1         -         -         -         669         669         -			0		-	-						0		
Conflicting Flow All 661 1374 2051 335 669 669 0 0 0  Stage 1 669 669	Mvmt Flow	0	0	19	5	2	10	18	12	1289	33	0	669	0
Conflicting Flow All 661 1374 2051 335 669 669 0 0 0  Stage 1 669 669														
Stage 1       -       -       669       669       - <td>Major/Minor M</td> <td>linor1</td> <td></td> <td>N</td> <td>Minor2</td> <td></td> <td>N</td> <td>Major1</td> <td></td> <td></td> <td>ľ</td> <td>Major2</td> <td></td> <td></td>	Major/Minor M	linor1		N	Minor2		N	Major1			ľ	Major2		
Stage 2       -       -       -       705       1382       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       - <th< td=""><td>Conflicting Flow All</td><td>-</td><td>-</td><td>661</td><td>1374</td><td>2051</td><td>335</td><td>669</td><td>669</td><td>0</td><td>0</td><td>-</td><td>-</td><td>0</td></th<>	Conflicting Flow All	-	-	661	1374	2051	335	669	669	0	0	-	-	0
Critical Hdwy       -       -       6.9       7.5       6.5       7.24       6.4       4.28       -	Stage 1	-	-	-	669	669	_	-	-	-	-	-	-	-
Critical Hdwy Stg 1       -       -       6.5       5.5       - <td>Stage 2</td> <td>-</td> <td>-</td> <td>-</td> <td>705</td> <td>1382</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	Stage 2	-	-	-	705	1382	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2       -       -       6.5       5.5       - <td>Critical Hdwy</td> <td>-</td> <td>-</td> <td>6.9</td> <td>7.5</td> <td>6.5</td> <td>7.24</td> <td>6.4</td> <td>4.28</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	Critical Hdwy	-	-	6.9	7.5	6.5	7.24	6.4	4.28	-	-	-	-	-
Follow-up Hdwy 3.3 3.5 4 3.47 2.5 2.29	Critical Hdwy Stg 1	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Pot Cap-1 Maneuver         0         0         410         106         56         619         548         871         -         -         0         -	Critical Hdwy Stg 2	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Stage 1       0       0       -       418       459       -       -       -       0       -       -       Stage 2       0       0       -       398       213       -       -       -       0       -       -       -       -       0       -       -       -       -       -       0       -	Follow-up Hdwy	-	-	3.3	3.5	4	3.47	2.5	2.29	-	-	-	-	-
Stage 2       0       0       -       398       213       -       -       -       0       - <td>Pot Cap-1 Maneuver</td> <td>0</td> <td>0</td> <td>410</td> <td>106</td> <td>56</td> <td>619</td> <td>548</td> <td>871</td> <td>-</td> <td>-</td> <td>0</td> <td>-</td> <td>-</td>	Pot Cap-1 Maneuver	0	0	410	106	56	619	548	871	-	-	0	-	-
Platoon blocked, %  Mov Cap-1 Maneuver 410 97 53 619 641 641	Stage 1	0	0	-	418	459	-	-	-	-	-	0	-	-
Mov Cap-1 Maneuver       -       -       410       97       53       619       641       641       -       -       -       -       -         Mov Cap-2 Maneuver       -       -       -       217       148       -	Stage 2	0	0	-	398	213	_	-	-	-	-	0	-	-
Mov Cap-2 Maneuver       -       -       217       148       - <td>Platoon blocked, %</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td> <td>-</td> <td>-</td>	Platoon blocked, %									-	-		-	-
Stage 1       -       -       -       398       459       - <th< td=""><td>•</td><td>-</td><td>-</td><td>410</td><td></td><td></td><td>619</td><td>641</td><td>641</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></th<>	•	-	-	410			619	641	641	-	-	-	-	-
Stage 2         - </td <td>•</td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	•	-	-	-			-	-	-	-	-	-	-	-
Approach         NB         SB         NE         SW           HCM Control Delay, s         14.2         16.5         0.2         0		-	-	-			-	-	-	-	-	-	-	-
HCM Control Delay, s 14.2 16.5 0.2 0	Stage 2	-	-	-	362	203	-	-	-	-	-	-	-	-
HCM Control Delay, s 14.2 16.5 0.2 0														
	Approach	NB			SB			NE				SW		
HCM LOS B C	HCM Control Delay, s	14.2			16.5			0.2				0		
	HCM LOS	В			С									
Minor Lane/Major Mvmt NEL NET NER NBLn1 SBLn1 SWT SWR	Minor Lane/Major Mvmt		NEL	NET	NERI	NBL <sub>n1</sub>	SBL <sub>n1</sub>	SWT	SWR					
Capacity (veh/h) 641 410 330	Capacity (veh/h)		641	_	-	410	330	-						
HCM Lane V/C Ratio 0.046 0.046 0.048				-	-			-	-					
HCM Control Delay (s) 10.9 14.2 16.5				-				-	-					
HCM Lane LOS B B C				-	-			-	-					
HCM 95th %tile Q(veh) 0.1 0.1 0.2	HCM 95th %tile Q(veh)		0.1	-	-	0.1	0.2	-	-					

Intersection						
Int Delay, s/veh	0.7					
		NDD	NICT	NED	CVVII	CMT
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥	40	<b>†</b>	^	<b>\</b>	<b>^</b>
Traffic Vol, veh/h	6	19	1181	8	37	637
Future Vol, veh/h	6	19	1181	8	37	637
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage,		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	95	95	96	96
Heavy Vehicles, %	20	6	2	13	5	3
Mvmt Flow	11	36	1243	8	39	664
Major/Minor N	/linor1	N	Major1	N	Major2	
Conflicting Flow All	1657	626	0	0	1251	0
Stage 1	1247	-	_	-	-	-
Stage 2	410	_	_	_	_	_
Critical Hdwy	7.2	7.02	_	_	4.2	_
Critical Hdwy Stg 1	6.2	02	_	_		_
Critical Hdwy Stg 2	6.2	_	_	_	_	_
Follow-up Hdwy	3.7	3.36	_	_	2.25	_
Pot Cap-1 Maneuver	74	417	_	-	536	_
Stage 1	202	-	_	_	-	_
Stage 2	588	_	_	_	_	_
Platoon blocked, %	000		_	_		_
Mov Cap-1 Maneuver	69	417	-	-	536	-
Mov Cap-1 Maneuver	158	417	_	_	550	_
Stage 1	202	-	_	<u>-</u>	-	<u>-</u>
•	545	-	_	-	_	-
Stage 2	545	-	-	-	-	-
Approach	NB		NE		SW	
HCM Control Delay, s	19.3		0		0.7	
HCM LOS	С					
Minor Lane/Major Mym	+	NET	NEDI	VIRI n1	CIVI	CIVIT
Minor Lane/Major Mvm	t	NET		VBLn1	SWL	SWT
Capacity (veh/h)	t	-	-	299	536	-
Capacity (veh/h) HCM Lane V/C Ratio	t	-	-	299 0.158	536 0.072	-
Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	t	- - -	- - -	299 0.158 19.3	536 0.072 12.2	- - -
Capacity (veh/h) HCM Lane V/C Ratio		-	-	299 0.158	536 0.072	-

La Carra d'Arra							
Intersection	0.4						
Int Delay, s/veh	2.4						
Movement	NBL	NBT	SBT	SBR	NEL	NER	
Lane Configurations		र्स	f)			7	
Traffic Vol, veh/h	0	15	38	0	12	7	
Future Vol, veh/h	0	15	38	0	12	7	
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	0	
Veh in Median Storage,	# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	75	75	85	85	79	79	
Heavy Vehicles, %	0	3	0	20	0	0	
Mymt Flow	0	20	45	0	15	9	
IVIVIIIL I IOW	U	20	70	U	10	3	
Major/Minor N	1ajor1		Major2	١	/linor2		
Conflicting Flow All	45	0	-	0	65	45	
Stage 1	-	-	-	-	45	-	
Stage 2	-	-	-	-	20	-	
Critical Hdwy	4.1	-	-	-	6.4	6.2	
Critical Hdwy Stg 1	_	-	-	-	5.4	-	
Critical Hdwy Stg 2	-	_	-	-	5.4	-	
Follow-up Hdwy	2.2	-	-	-	3.5	3.3	
Pot Cap-1 Maneuver	1576	_	_	_	946	1031	
Stage 1	-	_	_	_	983	-	
Stage 2	_	_	_	_	1008	_	
Platoon blocked, %		_	_	_	1000		
Mov Cap-1 Maneuver	1576	_	-	-	946	1031	
•		_	-	-	946	1031	
Mov Cap-2 Maneuver	-	-	-				
Stage 1	-	-	-	-	983	-	
Stage 2	-	-	-	-	1008	-	
Approach	NB		SB		NE		
HCM Control Delay, s	0		0		8.8		
HCM LOS					Α		
		41		NIDI	NET	007	
Minor Lane/Major Mvmt		NELn11		NBL	NBT	SBT	
Capacity (veh/h)			1031	1576	-	-	
HCM Lane V/C Ratio		0.016		-	-	-	
HCM Control Delay (s)		8.9	8.5	0	-	-	
HCM Lane LOS		Α	Α	Α	-	-	
HCM 95th %tile Q(veh)		0	0	0	-	-	

Intersection						
Int Delay, s/veh	1.7					
		CED	NICI	NET	CVA/T	CIMD
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	¥			<u>ન</u>	<b>}</b>	40
Traffic Vol, veh/h	11	2	14	35	67	19
Future Vol, veh/h	11	2	14	35	67	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage,	# 0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	65	82	82	83	83
Heavy Vehicles, %	0	0	0	11	0	0
Mvmt Flow	17	3	17	43	81	23
N.A. ' (N.A'						
	linor2		/lajor1		Major2	
Conflicting Flow All	170	93	104	0	-	0
Stage 1	93	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	825	970	1500	-	-	-
Stage 1	936	-	-	-	-	_
Stage 2	951	_	_	-	-	-
Platoon blocked, %				_	_	_
Mov Cap-1 Maneuver	815	970	1500	_	_	_
Mov Cap-1 Maneuver	815	310	1000	_	_	
Stage 1	925	_	_	-	-	_
	925	•	-	-	•	•
Stage 2	301	-	_	-	-	-
Approach	SE		NE		SW	
HCM Control Delay, s	9.4		2.1		0	
HCM LOS	A					
	, ,					
Minor Lane/Major Mvmt		NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)		1500	-	836	-	-
HCM Lane V/C Ratio		0.011	-	0.024	-	-
HCM Control Delay (s)		7.4	0	9.4	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0	_	0.1	_	_

Intersection													
Int Delay, s/veh	2.4												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations			1		4			ă	ħβ			ΦÞ	
Traffic Vol, veh/h	0	0	45	20	0	81	48	43	978	83	0	1019	35
Future Vol, veh/h	0	0	45	20	0	81	48	43	978	83	0	1019	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	_	_	0	_	_	-	_	80	_	-	_	_	-
Veh in Median Storage,	# -	0	_	_	0	_	_	-	0	_	_	0	_
Grade, %	" <u>-</u>	0	_	_	0	_	_	_	0	_	_	0	_
Peak Hour Factor	65	65	65	83	83	83	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	2	0	1	1	0	1	0
Mvmt Flow	0	0	69	24	0	98	49	44	998	85	0	1040	36
WWW.CT IOW			00			00	10	• • •	000	00		1010	00
Major/Minor M	linor1		ı	Minor2		ı	Major1			N	Major2		
Conflicting Flow All	-	_	542	1743	2327	538	1076	1076	0	0	- viajoiz		0
Stage 1	_	_	J42 -	1058	1058	-	-	1070	-	-	_	_	-
Stage 2	_	_	_	685	1269	_		_	_	_	_	_	_
Critical Hdwy	_	_	6.9	7.5	6.5	6.9	6.44	4.1	_			_	_
Critical Hdwy Stg 1	_	_	- 0.5	6.5	5.5	- 0.5	U. <del>-</del>	7.1	_	_	_	_	_
Critical Hdwy Stg 2	_	_	_	6.5	5.5	_		_	-	_	_	_	-
Follow-up Hdwy	_	_	3.3	3.5	4	3.3	2.52	2.2	_	_	_	_	_
Pot Cap-1 Maneuver	0	0	490	57	38	493	297	656	_	_	0	_	-
Stage 1	0	0	430	244	304	433	231	-	_	_	0	_	_
Stage 2	0	0	-	409	242	-	-	-	<u>-</u>	_	0		-
Platoon blocked, %	U	U	_	<del>1</del> 03	242	_	_	_	_	_	U	_	_
Mov Cap-1 Maneuver	_	_	490	39	28	493	351	351	-	_	_	_	-
Mov Cap-1 Maneuver	_	_	490	114	114	493	-	-	_	_	_	_	_
Stage 1	_	-		179	304	-	_	-	<u>-</u>	-	<u>-</u>	_	-
Stage 2	_			258	178						_	_	
Olugo 2				200	170								
Approach	NB			SB			NE				SW		
HCM Control Delay, s	13.6			25.3			1.5				0		
HCM LOS	13.0 B			23.3 D			1.0				U		
TIOWI LOO	U			U									
Minor Lane/Major Mvmt		NEL	NET	NER	NBLn1	SBLn1	SWT	SWR					
Capacity (veh/h)		351	-	-	490	297	-	-					
HCM Lane V/C Ratio		0.265	-	_	0.141	0.41	-	-					
HCM Control Delay (s)		18.9	-	-	13.6	25.3	-	-					
HCM Lane LOS		С	-	-	В	D	-	-					
HCM 95th %tile Q(veh)		1	-	-	0.5	1.9	-	-					

Intersection						
Int Delay, s/veh	0.7					
		NDD	NIET	NED	OVA	OVACE
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥	10	<b>∱</b> }		ች	<b>^</b>
Traffic Vol, veh/h	13	43	1035	11	40	1051
Future Vol, veh/h	13	43	1035	11	40	1051
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage	e, # 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	97	97	96	96
Heavy Vehicles, %	8	7	2	9	0	1
Mvmt Flow	16	52	1067	11	42	1095
NA -:/NA:	N 4: 4		1-11		4-:0	
	Minor1		Major1		Major2	
Conflicting Flow All	1705	539	0	0	1078	0
Stage 1	1073	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.96	7.04	-	-	4.1	-
Critical Hdwy Stg 1	5.96	-	-	-	-	-
Critical Hdwy Stg 2	5.96	-	-	-	-	-
Follow-up Hdwy	3.58	3.37	-	-	2.2	-
Pot Cap-1 Maneuver	77	474	-	-	655	-
Stage 1	277	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	72	474	-	_	655	-
Mov Cap-2 Maneuver	187	-	_	_	-	_
Stage 1	277	_	_	_	_	_
Stage 2	446	_	_	_	_	_
Olage 2	770					
Approach	NB		NE		SW	
прргосоп			0		0.4	
HCM Control Delay, s	17.8		U			
	17.8 C		U			
HCM Control Delay, s			U			
HCM Control Delay, s HCM LOS	С	NFT		NRI n1	SWI	SWT
HCM Control Delay, s HCM LOS Minor Lane/Major Mvn	С	NET		VBLn1	SWL	SWT
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvn Capacity (veh/h)	С	-	NER1	349	655	-
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio	C nt	-	NER I	349 0.196	655 0.064	-
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	C nt	- -	NER 1 - - -	349 0.196 17.8	655 0.064 10.9	- - -
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio	C nt	-	NER I	349 0.196	655 0.064	-

Intersection						
Int Delay, s/veh	4					
Movement	NBL	NBT	SBT	SBR	NEL	NER
	INDL			SDK		
Lane Configurations	٥	4	<b>}</b>	٥	<u>ነ</u>	<b>17</b>
Traffic Vol, veh/h	0	23	45	0	33	17
Future Vol, veh/h	0	23	45	0	33	17
Conflicting Peds, #/hr	0		0		0	0
3	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	<u>-</u> ш	-	-	-	0	0
Veh in Median Storage,		0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	85	85	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	31	53	0	45	23
Major/Minor M	ajor1		Major2	N	/linor2	
Conflicting Flow All	53	0		0	84	53
Stage 1	-	_	_	-	53	-
Stage 2	_	_	_	_	31	_
Critical Hdwy	4.1	_	_	_	6.4	6.2
Critical Hdwy Stg 1	···	_	_	_	5.4	-
Critical Hdwy Stg 2	_	_	_	_	5.4	_
Follow-up Hdwy	2.2	<u>_</u>	_	-	3.5	3.3
	1566	_		_	923	1020
Stage 1	-	<u>-</u>	_	_	975	-
Stage 2	_	_		_	997	_
Platoon blocked, %	-	_	_	_	331	_
	1566		-		923	1020
		-	-	-	923	
Mov Cap-2 Maneuver	-	-	-	-		-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	997	-
Approach	NB		SB		NE	
HCM Control Delay, s	0		0		8.9	
HCM LOS					A	
Minor Lane/Major Mvmt	1	NELn11		NBL	NBT	SBT
Capacity (veh/h)			1020	1566	-	-
HCM Lane V/C Ratio		0.048		-	-	-
HCM Control Delay (s)		9.1	8.6	0	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0.2	0.1	0	-	-

Intersection						
Int Delay, s/veh	2.5					
		CED	NITI	NET	CMT	CIVID
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	À	20	40		<b>\$</b>	07
Traffic Vol, veh/h	3	33	18	44	86	27
Future Vol, veh/h	3	33	18	44	86	27
Conflicting Peds, #/hr	0	0	_ 0	_ 0	_ 0	_ 0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	65	65	86	86
Heavy Vehicles, %	33	0	0	2	1	0
Mvmt Flow	4	48	28	68	100	31
Major/Minor I	Minor2	N	/lajor1	N	Major2	
		116	131			^
Conflicting Flow All	240			0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	124	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	685	942	1467	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	671	942	1467	-	-	-
Mov Cap-2 Maneuver	671	-	-	-	-	-
Stage 1	820	_	-	-	-	-
Stage 2	830	-	-	-	-	-
Annroach	SE		NE		SW	
Approach						
HCM Control Delay, s	9.2		2.2		0	
HCM LOS	Α					
Minor Lane/Major Mvm	nt	NEL	NET:	SELn1	SWT	SWR
Capacity (veh/h)		1467			_	_
HCM Lane V/C Ratio		0.019		0.057	_	_
HCM Control Delay (s)		7.5	0	9.2	_	_
HCM Lane LOS		A	A	A	_	_
HCM 95th %tile Q(veh	)	0.1	-	0.2	_	_
TION JOHN JOHN WING WING	,	J. 1		0.2		

Intersection													
Int Delay, s/veh	1.6												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations			7		4			ă	ħβ			ħβ	
Traffic Vol, veh/h	0	0	51	6	0	22	91	21	815	103	0	633	2
Future Vol, veh/h	0	0	51	6	0	22	91	21	815	103	0	633	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	80	-	_	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	_	-	0	-
Peak Hour Factor	81	81	81	63	63	63	93	93	93	93	99	99	99
Heavy Vehicles, %	0	0	0	0	0	0	0	1	1	0	0	1	0
Mvmt Flow	0	0	63	10	0	35	98	23	876	111	0	639	2
Major/Minor M	linor1		N	Minor2		ľ	Major1			N	Major2		
Conflicting Flow All	-	-	494	1320	1869	321	641	641	0	0	-	-	0
Stage 1	-	-	-	640	640	-	-	_	-	_	-	-	-
Stage 2	-	-	-	680	1229	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	7.5	6.5	6.9	6.4	4.12	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	2.5	2.21	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	526	117	73	681	571	946	-	-	0	-	-
Stage 1	0	0	-	435	473	-	-	-	-	-	0	-	-
Stage 2	0	0	-	412	252	-	-	-	-	_	0	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	526	87	58	681	600	600	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	184	151	-	-	-	-	-	-	-	-
Stage 1	-	-	-	348	473	-	-	-	-	-	-	-	-
Stage 2	-	-	-	290	202	-	-	-	-	-	-	-	-
Approach	NB			SB			NE				SW		
HCM Control Delay, s	12.8			14.3			1.4				0		
HCM LOS	В			В									
Minor Lane/Major Mvmt		NEL	NET	NERN	IBLn1	SBLn1	SWT	SWR					
Capacity (veh/h)		600	-	-	526	431	-	_					
HCM Lane V/C Ratio		0.201	-	-		0.103	-	_					
HCM Control Delay (s)		12.5	-	-	12.8	14.3	-						
HCM Lane LOS		В	-	-	В	В	-	-					
HCM 95th %tile Q(veh)		0.7	-	-	0.4	0.3	-	-					

Intersection						
Int Delay, s/veh	1.1					
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥	HEIL	<b>↑</b> ↑	11211	ሻ	<b>^</b>
Traffic Vol, veh/h	17	51	869	3	48	621
Future Vol, veh/h	17	51	869	3	48	621
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	_	-	100	-
Veh in Median Storage,		_	0	_	-	0
Grade, %	0	_	0	_	_	0
Peak Hour Factor	84	84	87	87	89	89
Heavy Vehicles, %	6	0	2	0	2	2
Mymt Flow	20	61	999	3	54	698
WWIIICT IOW	20	01	000	U	UT	000
	/linor1		Major1		Major2	
Conflicting Flow All	1458	501	0	0	1002	0
Stage 1	1001	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.92	6.9	-	-	4.14	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.3	-	-	2.22	-
Pot Cap-1 Maneuver	116	521	-	-	687	-
Stage 1	307	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	107	521	-	-	687	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	307	-	_	_	_	_
Stage 2	546	_	_	_	_	_
J. W. J. Z.	3 10					
					6	
Approach	NB		NE		SW	
HCM Control Delay, s	16.6		0		0.8	
HCM LOS	С					
Minor Lane/Major Mvm	t	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)		IVLI	-	391	687	-
HCM Lane V/C Ratio		-		0.207		-
HCM Control Delay (s)		-	-		10.7	
HCM Lane LOS		-	-	10.0 C	10.7 B	-
HCM 95th %tile Q(veh)		-	-	0.8	0.3	

Intersection						
Int Delay, s/veh	3.9					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations	NOL	4	<u>361</u>	אופט	NLL Š	INLIX
Traffic Vol, veh/h	0	20	48	0	48	14
Future Vol, veh/h	0	20	48	0	48	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	Stop -	None
	-	NONE -	-	None -	0	0
Storage Length Veh in Median Storage,	+	0	-			
	# -		0	-	0	-
Grade, %	-	0	0	- 74	0	- 0.4
Peak Hour Factor	63	63	71	71	84	84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	32	68	0	57	17
Major/Minor M	lajor1		Major2	N	/linor2	
Conflicting Flow All	68	0	-	0	100	68
Stage 1	-	_	_	_	68	-
Stage 2	_	_	_	_	32	_
Critical Hdwy	4.1	_	_	_	6.4	6.2
Critical Hdwy Stg 1	-	_	_	_	5.4	- 0.2
Critical Hdwy Stg 2	_	_	_	_	5.4	_
Follow-up Hdwy	2.2	<u>-</u>	<u>-</u>	<u>-</u>	3.5	3.3
	1546		_	_	904	1001
Stage 1	-	_	_	_	960	-
Stage 2	-		-	_	996	_
Platoon blocked, %	_				990	-
	1516	-	-	-	004	1001
	1546	-	-	-	904	
Mov Cap-2 Maneuver	-	-	-	-	904	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	996	-
Approach	NB		SB		NE	
HCM Control Delay, s	0		0		9.2	
HCM LOS					A	
					, ,	
Minor Lane/Major Mvmt		NELn1 I	NEL 52	NDI	NDT	CPT
				NBL	NBT	SBT
Capacity (veh/h)		904		1546	-	-
HCM Lane V/C Ratio		0.063		-	-	-
HCM Control Delay (s)		9.3	8.7	0	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0.2	0.1	0	-	-

Intersection						
Int Delay, s/veh	3.2					
		CED	NEL	NET	CMT	CMD
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y	24	00	<u>ન</u>	<b>\$</b>	20
Traffic Vol, veh/h	4	34	29	27	38	32
Future Vol, veh/h	4	34	29	27	38	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	-	-	-	
Veh in Median Storage,		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	74	74	70	70
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	5	43	39	36	54	46
Major/Minor M	linor2	N	Major1	N	Major2	
Conflicting Flow All	191	77	100	0	-	0
Stage 1	77		-	-	_	-
Stage 2	114	<u>-</u>	_	_	_	_
Critical Hdwy	6.4	6.2	4.1	_	_	_
Critical Hdwy Stg 1	5.4	- 0.2	7.1	_	_	_
Critical Hdwy Stg 1	5.4	_	_		_	_
Follow-up Hdwy	3.5	3.3	2.2	_	_	_
Pot Cap-1 Maneuver	803	990	1505	_	_	
Stage 1	951	990	1303	_	_	_
	916		-	-		
Stage 2	910	-	-	-	-	-
Platoon blocked, %	700	000	1505	-	-	-
Mov Cap-1 Maneuver	782	990	1505	-	-	-
Mov Cap-2 Maneuver	782	-	-	-	-	
Stage 1	926	_	-	-	-	-
Stage 2	916	-	-	-	-	-
Approach	SE		NE		SW	
HCM Control Delay, s	8.9		3.9		0	
HCM LOS	A		0.0		U	
TIOM LOO	,,					
Minor Lane/Major Mvmt		NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)		1505	-	963	-	-
HCM Lane V/C Ratio		0.026	-	0.05	-	-
HOMO ( ID I ()		7.5	0	8.9	-	-
HCM Control Delay (s)						
HCM Control Delay (s) HCM Lane LOS		Α	Α	Α	-	-
		A 0.1	A -	A 0.2	-	-

Intersection													
Int Delay, s/veh	0.5												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations			7		4			ă	ħβ			<b>↑</b> }	
Traffic Vol, veh/h	0	0	13	3	1	16	17	14	1262	33	0	695	1
Future Vol, veh/h	0	0	13	3	1	16	17	14	1262	33	0	695	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	80	-	-	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	91	91	91	91	95	95	95
Heavy Vehicles, %	0	0	0	0	0	17	0	9	3	0	0	4	0
Mvmt Flow	0	0	21	5	2	25	19	15	1387	36	0	732	1
Major/Minor M	linor1		N	Minor2		1	Major1			ľ	Major2		
Conflicting Flow All	-	-	712	1495	2224	367	733	733	0	0	-	-	0
Stage 1	-	-	-	733	733	-	-	-	-	-	-	-	-
Stage 2	-	-	-	762	1491	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	7.5	6.5	7.24	6.4	4.28	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.47	2.5	2.29	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	379	87	44	589	499	823	-	-	0	-	-
Stage 1	0	0	-	383	429	-	-	-	-	-	0	-	-
Stage 2	0	0	-	368	189	-	-	-	-	-	0	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	379	79	41	589	595	595	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	193	130	-	-	-	-	-	-	-	-
Stage 1	-	-	-	361	429	-	-	-	-	-	-	-	-
Stage 2	-	-	-	328	178	-	-	-	-	-	-	-	-
Approach	NB			SB			NE				SW		
HCM Control Delay, s	15			14.9			0.3				0		
HCM LOS	С			В									
N.P. 1 (22.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.		<b>.</b>	NET	NED.	IDI. 4	0DL 4	014/7	014/5					
Minor Lane/Major Mvmt		NEL	NET	NERI	NBLn1		SWT	SWR					
Capacity (veh/h)		595	-	-	379	397	-	-					
HCM Lane V/C Ratio		0.057	-		0.054	0.08	-	-					
HCM Control Delay (s)		11.4	-	-	15	14.9	-	-					
HCM Lane LOS		В	-	-	С	В	-	-					
HCM 95th %tile Q(veh)		0.2	-	-	0.2	0.3	-	-					

Intersection						
Int Delay, s/veh	1.1					
		NIDD	NET	NED	0)4#	OVE
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	, A		<b>∱</b> }			<b>^</b>
Traffic Vol, veh/h	11	23	1269	9	50	685
Future Vol, veh/h	11	23	1269	9	50	685
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage,	, # 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	95	95	96	96
Heavy Vehicles, %	20	6	2	13	5	3
Mvmt Flow	21	43	1336	9	52	714
Mainu/Minau	A:1		1-11		4-:0	
	/linor1		Major1		Major2	
Conflicting Flow All	1802	673	0	0	1345	0
Stage 1	1341	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	7.2	7.02	-	-	4.2	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.7	3.36	-	-	2.25	-
Pot Cap-1 Maneuver	58	388	-	-	493	-
Stage 1	178	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	52	388	-	-	493	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	178	_	-	_	-	-
Stage 2	494	_	_	_	_	_
otago 2						
Approach	NB		NE		SW	
HCM Control Delay, s	24.9		0		0.9	
HCM LOS	С					
Minor Lane/Major Mvm	t	NET	NERI	NBLn1	SWL	SWT
		IVLI	INLIXI		493	OVVI
Capacity (veh/h) HCM Lane V/C Ratio		-	-	244 0.263		
		-	-			-
HCM Control Delay (s)		-	-	24.9	13.2	-
LICMILATALOO						
HCM Lane LOS HCM 95th %tile Q(veh)		-	-	C 1	0.4	-

Intersection							
Int Delay, s/veh	1.8						
Movement	NBL	NBT	SBT	SBR	NEL	NER	
Lane Configurations	HUL	4	- 3B1 - <b>3</b> }	OBIN	NLL T	TVLIX	
Traffic Vol, veh/h	0	<b>원</b> 21	59	0	13	<b>r</b> 7	
Future Vol, veh/h	0	21	59	0	13	7	
Conflicting Peds, #/hr	0	0	0	0	0	0	
	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-		-		Slop -	None	
Storage Length	_	-	_	-	0	0	
Veh in Median Storage, #	- # -	0	0	_	0	-	
Grade, %	+ -	0	0	-	0	_	
Peak Hour Factor	75		85				
		75		85	79	79	
Heavy Vehicles, %	0	3	0	20	0	0	
Mvmt Flow	0	28	69	0	16	9	
Major/Minor Ma	ajor1		Major2	N	Minor2		
Conflicting Flow All	69	0	_	0	97	69	
Stage 1	_	-	-	-	69	-	
Stage 2	_	_	_	_	28	_	
Critical Hdwy	4.1	_	_	_	6.4	6.2	
Critical Hdwy Stg 1		_	_	_	5.4	-	
Critical Hdwy Stg 2	_	_	_	_	5.4	_	
Follow-up Hdwy	2.2	_	_	_	3.5	3.3	
	1545	_	_	_	907	1000	
Stage 1	-	_	_	_	959	-	
Stage 2	_	_	_	_	1000	_	
Platoon blocked, %	_	_		_	1000	_	
	1545			-	907	1000	
Mov Cap-2 Maneuver	-	-	-	-	907	-	
Stage 1	-	-	-	-	959	-	
Stage 2	-	-	-	-	1000	-	
Approach	NB		SB		NE		
HCM Control Delay, s	0		0		8.9		
HCM LOS					Α		
Minor Lane/Major Mvmt	ı	NELn11	NFI n2	NBL	NBT	SBT	
					NDT	ופט	
Capacity (veh/h)			1000	1545	-	-	
HCM Cartral Palace (a)		0.018		-	-	-	
HCM Control Delay (s)		9	8.6	0	-	-	
HCM Lane LOS		Α	Α	Α	-	-	
HCM 95th %tile Q(veh)		0.1	0	0	_		

Int Delay, s/veh	ntersection							
Movement		1.	1.8					
Lane Configurations				CED	NEI	NET	CMT	CIVID
Traffic Vol, veh/h  Future Vol, veh/h  Future Vol, veh/h  15  3  14  38  72  38  Future Vol, veh/h  15  3  14  38  72  38  72  38  Conflicting Peds, #/hr  0  0  0  0  0  0  0  0  Sign Control  Stop  RT Channelized  None  None  Storage Length  0  -  Veh in Median Storage, #  0  -  None  -  None				SEK	INEL			SWK
Future Vol, veh/h  Conflicting Peds, #/hr  Conflicting Peds, #/hr  Stop  Stop  Stop  Free  O  O  O  O  D  About  A				2	4.4			25
Conflicting Peds, #/hr								
Sign Control         Stop         Stop         Free         None           Storage Length         0         -         -         0								
RT Channelized								_ 0
Storage Length         0         -         -         -         -         -         -         -         O         O         Grade, %         0         -         -         0         0         O		Sto						
Veh in Median Storage, #         0         -         -         0         0           Grade, %         0         -         -         0         0           Peak Hour Factor         65         65         82         82         83         83           Heavy Vehicles, %         0         0         0         11         0         0           Mymt Flow         23         5         17         46         87         42           Major/Minor         Minor2         Major1         Major2           Conflicting Flow All         188         108         129         0         -         0           Stage 1         108         - </td <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>None</td> <td>-</td> <td>None</td>					-	None	-	None
Grade, %         0         -         -         0         0           Peak Hour Factor         65         65         82         82         83         83           Heavy Vehicles, %         0         0         0         11         0         0           Mymt Flow         23         5         17         46         87         42           Major/Minor         Minor         2         Major1         Major2           Conflicting Flow All         188         108         129         0         -         0           Stage 1         108         -				-	-	-		-
Peak Hour Factor         65         65         82         82         83         83           Heavy Vehicles, %         0         0         0         11         0         0           Momor Flow         23         5         17         46         87         42           Major/Minor         Minor2         Major1         Major2           Conflicting Flow All         188         108         129         0         -         0           Stage 1         108         -		_		-	-			-
Heavy Vehicles, %								-
Mount Flow         23         5         17         46         87         42           Major/Minor         Minor2         Major1         Major2           Conflicting Flow All         188         108         129         0         -         0           Stage 1         108         -			65	65	82		83	83
Major/Minor         Minor2         Major1         Major2           Conflicting Flow All         188         108         129         0         -         0           Stage 1         108         -	leavy Vehicles, %	%	0	0	0	11	0	0
Conflicting Flow All       188       108       129       0       -       0         Stage 1       108       -       -       -       -       -       -         Stage 2       80       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       <	∕lvmt Flow	2	23	5	17	46	87	42
Conflicting Flow All       188       108       129       0       -       0         Stage 1       108       -								
Conflicting Flow All       188       108       129       0       -       0         Stage 1       108       -	1-:/N1: NA	N diam and	0		1-11		4-10	
Stage 1       108       -       -       -       -         Stage 2       80       -       -       -       -         Critical Hdwy       6.4       6.2       4.1       -       -         Critical Hdwy Stg 1       5.4       -       -       -       -         Critical Hdwy Stg 2       5.4       -       -       -       -         Follow-up Hdwy       3.5       3.3       2.2       -       -         Follow-up Hdwy       3.5       3.3       2.2       -       -         Pot Cap-1 Maneuver       806       951       1469       -								
Stage 2       80       -       -       -       -         Critical Hdwy       6.4       6.2       4.1       -       -         Critical Hdwy Stg 1       5.4       -       -       -       -         Critical Hdwy Stg 2       5.4       -       -       -       -         Follow-up Hdwy       3.5       3.3       2.2       -       -         Follow-up Hdwy       3.5       3.3       2.2       -       -         Pot Cap-1 Maneuver       806       951       1469       -       -       -         Stage 1       921       -						0		0
Critical Hdwy         6.4         6.2         4.1         -         -           Critical Hdwy Stg 1         5.4         -         -         -         -           Critical Hdwy Stg 2         5.4         -         -         -         -           Follow-up Hdwy         3.5         3.3         2.2         -         -           Pot Cap-1 Maneuver         806         951         1469         -         -           Stage 1         921         -         -         -         -           Stage 2         948         -         -         -         -           Platoon blocked, %         -         -         -         -         -         -         -           Mov Cap-1 Maneuver         796         951         1469         - </td <td><u> </u></td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	<u> </u>			-	-	-	-	-
Critical Hdwy Stg 1         5.4         -						-	-	-
Critical Hdwy Stg 2         5.4         -				6.2	4.1	-	-	-
Follow-up Hdwy 3.5 3.3 2.2  Pot Cap-1 Maneuver 806 951 1469  Stage 1 921  Stage 2 948  Platoon blocked, %  Mov Cap-1 Maneuver 796 951 1469  Stage 1 910  Stage 1 910  Stage 2 948  Maneuver 796  Stage 1 910  Stage 2 948  Minor Lane/Major Mvmt NEL NET SELn1 SWT SWF  Capacity (veh/h) 1469 - 818 -  HCM Lane V/C Ratio 0.012 - 0.034 -				-	-	-	-	-
Pot Cap-1 Maneuver         806         951         1469         -         -           Stage 1         921         -         -         -         -           Stage 2         948         -         -         -         -           Platoon blocked, %         -         -         -         -         -         -           Mov Cap-1 Maneuver         796         951         1469         - <td>Critical Hdwy Stg 2</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td>	Critical Hdwy Stg 2					-	-	-
Stage 1       921       -       -       -       -         Stage 2       948       -       -       -       -         Platoon blocked, %       -       -       -       -       -         Mov Cap-1 Maneuver       796       -       -       -       -         Mov Cap-2 Maneuver       796       -       -       -       -         Stage 1       910       -       -       -       -         Stage 2       948       -       -       -       -         Approach       SE       NE       SW         HCM Control Delay, s       9.6       2       0         HCM LOS       A     Minor Lane/Major Mvmt  NEL NET SELn1 SWT SWF  Capacity (veh/h)  1469  - 818  - HCM Lane V/C Ratio  0.012  - 0.034  - NET SELn1 SWT SWF  NET SELn2 SWF  NET SEL						-	-	-
Stage 2       948       -       -       -       -         Platoon blocked, %       -       -       -       -         Mov Cap-1 Maneuver       796       951       1469       -       -         Mov Cap-2 Maneuver       796       -       -       -       -         Stage 1       910       -       -       -       -         Stage 2       948       -       -       -       -         Approach       SE       NE       SW         HCM Control Delay, s       9.6       2       0         HCM LOS       A            Minor Lane/Major Mvmt       NEL       NET SELn1       SWT       SWF         Capacity (veh/h)       1469       -       818       -         HCM Lane V/C Ratio       0.012       -       0.034       -	ot Cap-1 Maneuver	uver 80	306	951	1469	-	-	-
Platoon blocked, %         -	Stage 1	92	921	-	-	-	-	-
Mov Cap-1 Maneuver         796         951         1469         -         -           Mov Cap-2 Maneuver         796         -         -         -         -           Stage 1         910         -         -         -         -           Stage 2         948         -         -         -         -           Approach         SE         NE         SW           HCM Control Delay, s         9.6         2         0           HCM LOS         A             Minor Lane/Major Mvmt         NEL         NET SELn1         SWT         SWF           Capacity (veh/h)         1469         -         818         -           HCM Lane V/C Ratio         0.012         -         0.034         -	Stage 2	94	948	-	-	-	-	-
Mov Cap-2 Maneuver         796         -	Platoon blocked, %	%				-	-	-
Mov Cap-2 Maneuver         796         -			796	951	1469	-	-	-
Stage 1         910         -						_	_	-
Stage 2         948         -	•			_	_			_
Approach         SE         NE         SW           HCM Control Delay, s         9.6         2         0           HCM LOS         A           Minor Lane/Major Mvmt         NEL         NET SELn1         SWT         SWF           Capacity (veh/h)         1469         -         818         -           HCM Lane V/C Ratio         0.012         -         0.034         -	•			_				_
HCM Control Delay, s   9.6   2   0	Olugo Z	J-1	, 40					
HCM Control Delay, s   9.6   2   0								
Minor Lane/Major Mvmt         NEL         NET SELn1         SWT         SWF           Capacity (veh/h)         1469         -         818         -           HCM Lane V/C Ratio         0.012         -         0.034         -	Approach						SW	
Minor Lane/Major Mvmt NEL NET SELn1 SWT SWF Capacity (veh/h) 1469 - 818 - HCM Lane V/C Ratio 0.012 - 0.034 -	ICM Control Delay, s	ay, s 9.	9.6		2		0	
Capacity (veh/h) 1469 - 818 - HCM Lane V/C Ratio 0.012 - 0.034 -	1CM LOS		Α					
Capacity (veh/h) 1469 - 818 - HCM Lane V/C Ratio 0.012 - 0.034 -								
Capacity (veh/h) 1469 - 818 - HCM Lane V/C Ratio 0.012 - 0.034 -	Minor Lane/Major Mymt	r Mymt		NEI	NET	QEI n1	CIVIT	CIMD
HCM Lane V/C Ratio 0.012 - 0.034 -	•	IVIVIIIL			INEI		SVVI	OWK
		) . C .			-		-	-
HCM Control Delay (s) 7.5 0 9.6 -								-
1011		ay (s)						-
					Α		-	-
HCM 95th %tile Q(veh) 0 - 0.1 -	1CM 95th %tile O(veh)	્ર(veh)		0	-	0.1	-	-

Intersection													
nt Delay, s/veh	3.1												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
ane Configurations			7		4			,	ħβ			ħβ	
raffic Vol, veh/h	0	0	50	23	0	91	51	51	1065	90	0	1106	43
uture Vol, veh/h	0	0	50	23	0	91	51	51	1065	90	0	1106	43
onflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
ign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
T Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
orage Length	-	-	0	-	-	-	-	80	-	-	-	-	-
eh in Median Storage,	,# -	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
eak Hour Factor	65	65	65	83	83	83	98	98	98	98	98	98	98
eavy Vehicles, %	0	0	0	0	0	0	2	0	1	1	0	1	0
vmt Flow	0	0	77	28	0	110	52	52	1087	92	0	1129	44
ajor/Minor N	/linor1			Minor2		N	Major1				Major2		
	-	_	590	1903	2538	587	1172	1173	0	0	viajuiz -		0
Conflicting Flow All Stage 1			590	1151	2538			11/3	-			-	U
Stage 2	-	-	-	752	1387	-	-	-	_	-	-	-	-
ritical Hdwy	-	_	6.9	7.5	6.5	6.9	6.44	4.1	-			-	<del>-</del>
ritical Hdwy Stg 1	-	_	0.9	6.5	5.5	0.9	0.44	4.1	_	_	_	_	-
ritical Hdwy Stg 2	-	-		6.5	5.5		-			-	-	-	-
ollow-up Hdwy	_	-	3.3	3.5	4	3.3	2.52	2.2	_	_	_	-	-
of Cap-1 Maneuver	0	0	456	43	28	458	257	603	_		0	_	_
Stage 1	0	0	430	214	275	430	231	003	-	_	0	_	_
Stage 2	0	0		373	212	_		-	_	-	0	_	_
atoon blocked, %	U	U	_	313	212	_	-	_	_	_	U	_	_
lov Cap-1 Maneuver	_	_	456	~ 26	19	458	307	307	_	-	_	_	
Nov Cap-1 Maneuver	<u> </u>	_	-	88	92	-	-	- 301	_	_	_	_	
Stage 1	_	_		141	275	_	-	_	_	-	_	_	
Stage 2	_	_	_	205	140	_	_		_	_	_		_
Olage 2				200	170								
oproach	NB			SB			NE				SW		
ICM Control Delay, s	14.5			36.2			1.8				0		
CM LOS	В			E									
linor Lane/Major Mvm	t	NEL	NET	NERI	NBLn1	SBLn1	SWT	SWR					
capacity (veh/h)		307			456	248	_	-					
CM Lane V/C Ratio		0.339	-	_	0.169		<u>-</u>	_					
CM Control Delay (s)		22.6	_	_	14.5	36.2	_	_					
CM Lane LOS		C	<u>-</u>	<u>-</u>	В	50.2 E	<u>-</u>	_					
CM 95th %tile Q(veh)		1.5	-	-	0.6	3.1	-	-					
Votes													
Volume exceeds cap	acity	\$: De	elay exc	eeds 3	00s	+: Com	putation	Not De	efined	*: All	major v	olume/	in platoo

Intersection						
Int Delay, s/veh	1.1					
		NDD	NICT	NED	OVA	OVACE
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	Y	- 4	<b>†</b>	40	<u></u>	<b>^</b>
Traffic Vol, veh/h	21	51	1126	12	60	1128
Future Vol, veh/h	21	51	1126	12	60	1128
Conflicting Peds, #/hr	0	0	_ 0	_ 0	_ 0	_ 0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	97	97	96	96
Heavy Vehicles, %	8	7	2	9	0	1
Mvmt Flow	26	62	1161	12	63	1175
Major/Minor I	Minor1	N	Major1	N	Major2	
Conflicting Flow All	1881	587	0	0	1173	0
Stage 1	1167	-	-	-	-	-
Stage 2	714	<u>-</u>	_	_	_	_
Critical Hdwy	6.96	7.04		_	4.1	_
Critical Hdwy Stg 1	5.96	7.04	_	_	7.1	_
Critical Hdwy Stg 2	5.96		-	-	_	-
Follow-up Hdwy	3.58	3.37	_	-	2.2	_
Pot Cap-1 Maneuver	5.50	441	_		603	-
•	246	441	_	-	003	
Stage 1			-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %		444	-	-	000	-
Mov Cap-1 Maneuver	53	441	-	-	603	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	246	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Approach	NB		NE		SW	
HCM Control Delay, s	22.5		0		0.6	
HCM LOS	C		U		0.0	
TIOW LOO	U					
Minor Lane/Major Mvm	nt	NET	NERI	NBLn1	SWL	SWT
Capacity (veh/h)		-	-	202	603	-
HCM Lane V/C Ratio		-	-	0.301	0.104	-
HCM Control Delay (s)		-	-		11.7	-
HCM Lane LOS		-	-	С	В	-
HCM 95th %tile Q(veh	)	-	-	1.2	0.3	-

Intersection						
Int Delay, s/veh	3.3					
Movement	NBL	NBT	SBT	SBR	NEL	NER
	INDL			אמט		
Lane Configurations	0	<b>€</b> 1	<b>1→</b> 72	0	<b>7</b>	<b>1</b> 7
Traffic Vol, veh/h Future Vol, veh/h	0	35 35	72	0	37 37	17
	0	35 0	0	0		
Conflicting Peds, #/hr	Free	Free		Free	O Ctop	O Ctop
Sign Control RT Channelized			Free	None	Stop	Stop
	-		-		-	None
Storage Length		-	-	-	0	0
Veh in Median Storage,	# -	0	0	-	0	-
Grade, %	-	0	0	-	0	- 74
Peak Hour Factor	75	75	85	85	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	47	85	0	50	23
Major/Minor M	lajor1	ľ	Major2	١	/linor2	
Conflicting Flow All	85	0	-	0	132	85
Stage 1	-	-	_	-	85	-
Stage 2	<u>-</u>	_	_	_	47	<u>-</u>
Critical Hdwy	4.1	_	_	_	6.4	6.2
Critical Hdwy Stg 1	4.1	_	_	_	5.4	0.2
Critical Hdwy Stg 2	_	_	-	_	5.4	-
Follow-up Hdwy	2.2	_	_	-	3.5	3.3
Pot Cap-1 Maneuver	1524	_	-	_	867	980
•	1024	_		_	943	900
Stage 1			-			
Stage 2	-	-	-	-	981	-
Platoon blocked, %	4504	-	-	-	007	000
Mov Cap-1 Maneuver	1524	-	-	-	867	980
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	981	-
Approach	NB		SB		NE	
HCM Control Delay, s	0		0		9.2	
HCM LOS			Ū		A	
110.111 200					, ,	
NA' I /NA - ' NA (			UEL O	NDI	NDT	ODT
Minor Lane/Major Mvmt	. [	NELn11		NBL	NBT	SBT
Capacity (veh/h)		867	980	1524	-	-
HCM Lane V/C Ratio		0.058		-	-	-
HCM Control Delay (s)		9.4	8.8	0	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0.2	0.1	0	-	-

Intersection						
Int Delay, s/veh	2.6					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	¥			4	<b>1</b>	
Traffic Vol, veh/h	9	37	20	47	92	48
Future Vol, veh/h	9	37	20	47	92	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	_	-	_	-
Veh in Median Storage		_	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	69	69	65	65	86	86
Heavy Vehicles, %	33	0	0	2	1	0
Mymt Flow	13	54	31	72	107	56
IVIVIIIL I IUW	13	JH	JI	12	107	50
Major/Minor I	Minor2	N	Major1	<u> </u>	Major2	
Conflicting Flow All	269	135	163	0	-	0
Stage 1	135	-	-	-	-	-
Stage 2	134	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.2	_	_	_
Pot Cap-1 Maneuver	659	919	1428	_	-	_
Stage 1	821		-	_	_	_
Stage 2	821	-	_	_	_	_
Platoon blocked, %	J_ 1			_	_	_
Mov Cap-1 Maneuver	644	919	1428		_	
Mov Cap-1 Maneuver	644	919	1720	_	_	_
Stage 1	802		_	<u>-</u>	_	_
•	821			-		-
Stage 2	021	-	-	-	-	-
Approach	SE		NE		SW	
HCM Control Delay, s	9.6		2.3		0	
HCM LOS	Α					
	,,					
		N 177	NET	051 4	0117	0).675
Minor Lane/Major Mvm	ıt	NEL		SELn1	SWT	SWR
Capacity (veh/h)		1428	-	848	-	-
HCM Lane V/C Ratio		0.022		0.079	-	-
HCM Control Delay (s)		7.6	0	9.6	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0.1	-	0.3	-	-

Intersection													
Int Delay, s/veh	1.7												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	NDL	NOT	7	ODL		ODIT	IVLO	ă	<b>†</b>	IVEIX	OVVL	<b>†</b>	OWIC
Traffic Vol, veh/h	0	0	58	6	<b>4</b>	24	98	23	878	116	0	693	2
Future Vol, veh/h	0	0	58			24	98	23	878	116		693	2
				6	0	0					0		
Conflicting Peds, #/hr	0	0	0		0		0	0	0	0		0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	80	-	-	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	63	63	63	93	93	93	93	99	99	99
Heavy Vehicles, %	0	0	0	0	0	0	0	1	1	0	0	1	0
Mvmt Flow	0	0	72	10	0	38	105	25	944	125	0	700	2
Major/Minor M	linor1		N	/linor2		N	Major1			N	Major2		
Conflicting Flow All	_	_	535	1433	2030	351	702	702	0	0		-	0
Stage 1	_	_	-	701	701	-		-	_	_	_	_	_
Stage 2	_	_	_	732	1329	_	_	_	_	_	_	_	<u>-</u>
Critical Hdwy	_	_	6.9	7.5	6.5	6.9	6.4	4.12	_	_	_	_	_
Critical Hdwy Stg 1	_	_	0.5	6.5	5.5	0.5	U. <del>T</del>	7.12	_	_	_	_	_
Critical Hdwy Stg 2	_		_	6.5	5.5	_	_	_	_				
Follow-up Hdwy	_	_	3.3	3.5	4	3.3	2.5	2.21	_	_	_	_	_
Pot Cap-1 Maneuver	0	0	495	96	58	651	522	898	-	-	0		_
· · · · · · · · · · · · · · · · · · ·	0	0	495	400	444	- 001	522	090	_	_	0	_	_
Stage 1	0		-			-	-	-	-	-	0		-
Stage 2	U	0	-	383	226	-	-	-	-	-	U	-	-
Platoon blocked, %			405	<b>67</b>	4.4	GE4	E 40	E 40	-	-		-	-
Mov Cap-1 Maneuver	-	-	495	67	44	651	549	549	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	156	129	-	-	-	-	-	-	-	-
Stage 1	-	-	-	305	444	-	-	-	-	-	-	-	-
Stage 2	-	-	-	250	172	-	-	-	-	-	-	-	-
Approach	NB			SB			NE				SW		
HCM Control Delay, s	13.5			15.3			1.5				0		
HCM LOS	В			С									
Minor Lane/Major Mvmt		NEL	NET	NER	NBLn1	SRI n1	SW/T	SWR					
			INLI				OVVI	OVVIX					
Capacity (veh/h)		549	-	-		398	-	-					
HCM Cardral Dalay (a)		0.237	-		0.145	0.12	-	-					
HCM Control Delay (s)		13.6	-	-		15.3	-	-					
HCM Lane LOS		В	-	-	В	C	-	-					
HCM 95th %tile Q(veh)		0.9	-	-	0.5	0.4	-	-					

Intersection						
Int Delay, s/veh	1.6					
		NDD	NET	NED	CIAII	CVA/T
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	**	<b>50</b>	<b>†</b>	^	<u>ነ</u>	<b>^</b>
Traffic Vol, veh/h	32	58	939	3	65	663
Future Vol, veh/h	32	58	939	3	65	663
Conflicting Peds, #/hr	0	0	0	_ 0	_ 0	_ 0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	87	87	89	89
Heavy Vehicles, %	6	0	2	0	2	2
Mvmt Flow	38	69	1079	3	73	745
Major/Minor N	/linor1	N	Major1	N	Major2	
Conflicting Flow All	1600	541	0	0	1082	0
Stage 1	1081	J <del>T</del> 1	-	-	1002	-
Stage 2	519	_	_			_
Critical Hdwy	6.92	6.9	-		4.14	-
Critical Hdwy Stg 1	5.92	0.9	_	_	7.14	_
Critical Hdwy Stg 2	5.92	-	-	<u>-</u>		
Follow-up Hdwy	3.56	3.3	-	-	2.22	-
	93	3.3 491			640	
Pot Cap-1 Maneuver	278		-	-	040	-
Stage 1		-	-	<del>-</del>	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %	00	104	-	-	C40	-
Mov Cap-1 Maneuver	82	491	-	-	640	-
Mov Cap-2 Maneuver	196	-	-	-	-	-
Stage 1	278	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Approach	NB		NE		SW	
HCM Control Delay, s	21.8		0		1	
HCM LOS	C		U		Į.	
1.0M E00						
Minor Lane/Major Mvm	t	NET	NERI	NBLn1	SWL	SWT
Capacity (veh/h)		-	-	020	640	-
HCM Lane V/C Ratio		-	-	0.335		-
HCM Control Delay (s)		-	-		11.3	-
HCM Lane LOS		-	-	С	В	-
HCM 95th %tile Q(veh)		-	-	1.4	0.4	-

Intersection						
Int Delay, s/veh	3.2					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		4	<b>1</b>		ኘ	7
Traffic Vol, veh/h	0	37	68	0	53	14
Future Vol, veh/h	0	37	68	0	53	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage,	# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	63	63	71	71	84	84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	59	96	0	63	17
	•			•		
NA ' /NA'						
	lajor1		Major2		/linor2	
Conflicting Flow All	96	0	-	0	155	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1510	-	-	-	841	966
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1510	-	-	-	841	966
Mov Cap-2 Maneuver	-	-	-	-	841	-
Stage 1	-	-	-	-	933	-
Stage 2	_	_	-	-	969	-
Approach	NB		SB		NE	
HCM Control Delay, s	0		0		9.4	
HCM LOS					Α	
Minor Lane/Major Mvmt	1	NELn1	NELn2	NBL	NBT	SBT
Capacity (veh/h)		841	966	1510		
HCM Lane V/C Ratio		0.075		1310	_	_
HCM Control Delay (s)		9.6	8.8	0	_	
HCM Lane LOS		9.0 A	Α	A	_	_
HCM 95th %tile Q(veh)		0.2	0.1	0	_	
How John Johne Q(ven)		U.Z	0.1	U	_	

Intersection						
Int Delay, s/veh	3.5					
Movement	SEL	SER	NIEL	NET	SWT	SWR
		SER	NEL			SWR
Lane Configurations	16	40	20	4	<b>þ</b>	40
Traffic Vol, veh/h	16	40	30	29	41	49
Future Vol, veh/h	16	40	30	29	41	49
Conflicting Peds, #/hr	0	0	0	0	0	0
	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage,		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	74	74	70	70
Heavy Vehicles, %	0	0	0	7	3	0
Mvmt Flow	20	51	41	39	59	70
Major/Minor M	inor2	N	/lajor1	N	Major2	
Conflicting Flow All	215	94	129	0	-	0
	94	94				
Stage 1	121	-	-	-	-	-
Stage 2			-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	_
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	778	968	1469	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	755	968	1469	-	-	-
Mov Cap-2 Maneuver	755	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	909	-	-	-	-	-
, and the second						
	0=				0147	
Approach	SE		NE		SW	
HCM Control Delay, s	9.4		3.8		0	
HCM LOS	Α					
Minor Lane/Major Mvmt		NEL	NFT:	SELn1	SWT	SWR
Capacity (veh/h)		1469			-	OWIX
HCM Lane V/C Ratio		0.028		0.079	_	_
HCM Control Delay (s)		7.5	0	9.4		<u>-</u>
HCM Lane LOS						
		A	Α	A	-	-
HCM 95th %tile Q(veh)		0.1	-	0.3	-	-

Intersection   Int Delay, s/veh   0.6   NBL   NBR   NBR   SBL   SBT   SBR   NEU   NEL   NET   NER   SWL   SWT   SWR   SWR														
Lane Configurations	Int Delay, s/veh	0.6												
Traffic Vol, veh/h	Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Traffic Vol, veh/h	Lane Configurations			7		€\$			ă	Αħ			٨ß	
Future Vol, veh/h		0	0		3		16	17			38	0		1
Conflicting Peds, #/hr		0	-		-	1						0		1
Sign Control   Stop   Stop	<u> </u>											-		
RT Channelized         -         None         -         O         -         -         O         -         -         O         -         -         O         -         O         -         O         -         O         O         -         O         O         -         O         O         PS         95							Stop							
Storage Length		•				•								
Veh in Median Storage, #         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         -         -         0         0         0         0         0         17         0         9         3         0         0         4         0           Major/Minor         Minor1         Minor2         Major1         Major2         Major2         Major2         Major2         Major2         Major3         42         0         734         1           Major/Minor         Minor1         Minor2         Major1         Major2         Major3         Major3         Major3         Major3         Major3         Major3         Ma		_	_						80			_		-
Grade, %         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         -         -         0         0         4         0           Meavy Vehicles, %         0         0         0         0         17         0         9         3         0         0         4         0           Mwint Flow         0         0         22         5         2         25         19         15         1387         42         0         734         1           MajorI         Minor         Minor         Minor         Major		# _	0							0	_		n	_
Peak Hour Factor         63         63         63         63         63         63         91         91         91         91         95         95         95           Heavy Vehicles, %         0         0         0         0         17         0         9         3         0         0         4         0           Mwmt Flow         0         0         22         5         2         25         19         15         1387         42         0         734         1           Major/Minor         Minor1         Minor2         Major1         Major2         Major2           Conflicting Flow All         -         715         1497         2232         368         735         735         0         0         -         0           Stage 1         -         -         735         735         -         -         -         0         0           Stage 2         -         -         6.9         7.5         6.5         7.24         6.4         4.28         -         -         -         -         -         -         -         -         -         -         -         -         -<			-											
Heavy Vehicles, %			-											
Mymit Flow         0         0         22         5         2         25         19         15         1387         42         0         734         1           Major/Minor         Minor1         Minor2         Major1         Major2           Conflicting Flow All         -         -         715         1497         2232         368         735         735         0         0         -         0           Stage 1         -         -         762         1497         -														
Major/Minor         Minor1         Minor2         Major1         Major2           Conflicting Flow All         -         -         715         1497         2232         368         735         735         0         0         -         0           Stage 1         -         -         735         735         -				-										
Conflicting Flow All         -         -         715         1497         2232         368         735         735         0         0         -         0           Stage 1         -         -         735         735         - <td>INIVITIL FIOW</td> <td>U</td> <td>U</td> <td>22</td> <td>5</td> <td></td> <td>20</td> <td>19</td> <td>10</td> <td>1307</td> <td>42</td> <td>U</td> <td>134</td> <td>ı</td>	INIVITIL FIOW	U	U	22	5		20	19	10	1307	42	U	134	ı
Conflicting Flow All         -         -         715         1497         2232         368         735         735         0         0         -         0           Stage 1         -         -         735         735         - <td>Maior/Minor N</td> <td>1inor1</td> <td></td> <td>N</td> <td>Minor2</td> <td></td> <td>N</td> <td>Maior1</td> <td></td> <td></td> <td>ı</td> <td>Maior2</td> <td></td> <td></td>	Maior/Minor N	1inor1		N	Minor2		N	Maior1			ı	Maior2		
Stage 1       -       -       -       735       735       - <td></td> <td></td> <td>_</td> <td></td> <td></td> <td>2232</td> <td></td> <td></td> <td>735</td> <td>0</td> <td></td> <td></td> <td>_</td> <td>0</td>			_			2232			735	0			_	0
Stage 2       -       -       -       762       1497       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       -       -       -       -       -        -       -       -       -       -       -       -       -       -       -       - <th< td=""><td></td><td>_</td><td>_</td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td>_</td><td>_</td><td>_</td><td>_</td></th<>		_	_						-		_	_	_	_
Critical Hdwy       -       -       6.9       7.5       6.5       7.24       6.4       4.28       -	•		_						_		_	_		_
Critical Hdwy Stg 1       -       -       -       6.5       5.5       - <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4 28</td> <td>_</td> <td>_</td> <td>_</td> <td></td> <td>_</td>			_						4 28	_	_	_		_
Critical Hdwy Stg 2       -       -       6.5       5.5       - <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.7</td> <td>7.20</td> <td>_</td> <td>_</td> <td></td> <td></td> <td>_</td>	•							0.7	7.20	_	_			_
Follow-up Hdwy 3.3 3.5 4 3.47 2.5 2.29								_		_		<del>-</del>		
Pot Cap-1 Maneuver         0         0         378         86         43         588         498         821         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         0         -         -         -         -         -         0         -	, ,		_						2 20	_	_	_		_
Stage 1       0       0       -       382       428       -       -       -       0       - <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>_</td><td>_</td><td></td><td></td></th<>										-	_	_		
Stage 2       0       0       -       368       188       -       -       -       0       - <td< td=""><td>•</td><td></td><td></td><td></td><td></td><td></td><td></td><td>490</td><td>021</td><td>-</td><td>_</td><td></td><td></td><td>_</td></td<>	•							490	021	-	_			_
Platoon blocked, %  Mov Cap-1 Maneuver 378 77 41 588 594 594								-	-	-	-			-
Mov Cap-1 Maneuver       -       -       378       77       41       588       594       594       - <td< td=""><td></td><td>U</td><td>U</td><td><del>-</del></td><td>300</td><td>100</td><td>-</td><td>=</td><td></td><td>_</td><td>-</td><td>U</td><td></td><td>-</td></td<>		U	U	<del>-</del>	300	100	-	=		_	-	U		-
Mov Cap-2 Maneuver       -       -       191       129       - <td></td> <td></td> <td></td> <td>270</td> <td>77</td> <td>11</td> <td>E00</td> <td>E04</td> <td>EO.4</td> <td>-</td> <td>-</td> <td></td> <td></td> <td>-</td>				270	77	11	E00	E04	EO.4	-	-			-
Stage 1         -         -         360         428         - <th< td=""><td>•</td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>594</td><td>594</td><td>-</td><td>-</td><td>-</td><td></td><td>-</td></th<>	•		-					594	594	-	-	-		-
Stage 2         -         -         -         327         177         - <th< td=""><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></th<>			-					-	-	-	-	-	-	-
Approach NB SB NE SW HCM Control Delay, s 15.1 14.9 0.3 0 HCM LOS C B		-	-	-			-	-	-	-	-	-	-	-
HCM Control Delay, s 15.1 14.9 0.3 0 HCM LOS C B	Stage 2	-	-	-	327	1//	-	-	-	-	-	-	-	-
HCM Control Delay, s 15.1 14.9 0.3 0 HCM LOS C B	Annroach	NR			SB			NF				SW		
HCM LOS C B														
	<b>3</b> *							0.0				U		
Minor Lane/Major Mvmt NEL NET NER NBLn1 SBLn1 SWT SWR					D									
	HCM LOS							OME	CM/D					
Capacity (veh/h) 594 378 395		t	NEL	NET	NER I	NBLn1	SBLn1	SWI	SWK					
	Minor Lane/Major Mvmt	t						SWI -	- SWK					
	Minor Lane/Major Mvmt Capacity (veh/h)	1	594	-	-	378	395	-	-					
	Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	1	594 0.057	-	-	378 0.059	395 0.08	-	-					
HCM 95th %tile Q(veh) 0.2 0.2 0.3	Minor Lane/Major Mvmt Capacity (veh/h)	1	594	- - -	- - -	378 0.059	395	- - -	- - -					

Intersection						
Int Delay, s/veh	1.2					
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥		<b>↑</b> ↑		ሻ	<b>^</b>
Traffic Vol, veh/h	13	25	1270	9	53	685
Future Vol, veh/h	13	25	1270	9	53	685
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage	, # 0	-	0	-	_	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	53	53	95	95	96	96
Heavy Vehicles, %	20	6	2	13	5	3
Mvmt Flow	25	47	1337	9	55	714
NA=:==/NA:===	\ <b>1</b> : <b>1</b>		1-11		M-:0	
	Minor1		Major1		Major2	
Conflicting Flow All	1809	673	0	0	1346	0
Stage 1	1342	-	-	-	-	-
Stage 2	467	-	-	-		-
Critical Hdwy	7.2	7.02	-	-	4.2	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.7	3.36	-	-	2.25	-
Pot Cap-1 Maneuver	58	388	-	-	492	-
Stage 1	178	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	52	388	-	-	492	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	178	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Approach	NB		NE		SW	
HCM Control Delay, s	26.4		0		1	
HCM LOS	20.4 D		U		ļ	
I IOIVI LOO	U					
Minor Lane/Major Mvm	nt	NET	NER I	NBLn1	SWL	SWT
Capacity (veh/h)		-	-	239	492	-
HCM Lane V/C Ratio		-	-	0.3	0.112	-
HCM Control Delay (s)		-	-	26.4	13.2	-
HCM Lane LOS		-	-	D	В	-
HCM 95th %tile Q(veh)	)	-	-	1.2	0.4	-
., ,						

Intersection							
Int Delay, s/veh	2						
		NDT	CDT	CDD	NITI	NED	
	NBL	NBT	SBT	SBR	NEL	NER	
Lane Configurations	0	4	<b>}</b>	0	<u>ነ</u>		
Traffic Vol, veh/h	0	22	62	0	16	7	
Future Vol, veh/h	0	22	62	0	16	7	
Conflicting Peds, #/hr	_ 0	0	0	0	0	0	
•	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage,	# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	75	75	85	85	79	79	
Heavy Vehicles, %	0	3	0	20	0	0	
Mvmt Flow	0	29	73	0	20	9	
Major/Minor Major/Minor	ajor1		Major2	N	/linor2		
	73	0		0		73	j
Conflicting Flow All			-		102 73		
Stage 1	-	-	-	-		-	
Stage 2	-	-	-	-	29	-	
Critical Hdwy	4.1	-	-	-	6.4	6.2	
Critical Hdwy Stg 1	-	-	-	-	5.4	-	
Critical Hdwy Stg 2	-	-	-	-	5.4	-	
Follow-up Hdwy	2.2	-	-	-	3.5	3.3	
	1540	-	-	-	901	995	
Stage 1	-	-	-	-	955	-	
Stage 2	-	-	-	-	999	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1540	-	-	-	901	995	
Mov Cap-2 Maneuver	-	-	-	-	901	-	
Stage 1	-	-	-	-	955	-	
Stage 2	-	-	-	-	999	-	
Approach	NB		SB		NE		
HCM Control Delay, s	0		0		9		
HCM LOS					Α		
Minor Lane/Major Mvmt		NELn11	NELn2	NBL	NBT	SBT	
Capacity (veh/h)		901	995	1540	_	_	
HCM Lane V/C Ratio			0.009	-	_	_	
HCM Control Delay (s)		9.1	8.7	0	_	_	
HCM Lane LOS		Α	Α	A	_	_	
HCM 95th %tile Q(veh)		0.1	0	0		_	
HOW JOHN JOHN (VOII)		0.1	U	U		_	

Intersection						
Int Delay, s/veh	1.9					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	¥			4	<b>1</b>	
Traffic Vol, veh/h	16	5	15	38	72	38
Future Vol, veh/h	16	5	15	38	72	38
Conflicting Peds, #/hr	0	0	0	0	0	0
	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	_	-	_	-
Veh in Median Storage,		_	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	65	65	82	82	83	83
Heavy Vehicles, %	0	0	0	11	0	0
Mymt Flow	25	8	18	46	87	46
IVIVIIILIIIOW	20	U	10	40	01	+0
Major/Minor Mi	inor2	N	Major1	ľ	Major2	
Conflicting Flow All	192	110	133	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	82	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	801	949	1464	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	946	-	-	-	_	-
Platoon blocked, %				_	_	_
Mov Cap-1 Maneuver	791	949	1464	_	_	-
Mov Cap-2 Maneuver	791	<del>-</del>		_	_	_
Stage 1	908	_	_	_	_	_
Stage 2	946	_	_	_	_	_
Glage Z	J-10	<u>-</u>	_	<u>-</u>	_	-
Approach	SE		NE		SW	
HCM Control Delay, s	9.5		2.1		0	
HCM LOS	Α					
Minor Long/Major Mysset		NEL	NET	SELn1	SWT	SWR
Minor Lane/Major Mvmt					SWI	SVVK
Capacity (veh/h)		1464 0.012	-	824	-	-
HOM Lana MO Dat		ロロコン	-	0.039	-	-
HCM Cartral Dalay (2)				0.5		
HCM Control Delay (s)		7.5	0	9.5	-	-
				9.5 A 0.1	-	-

Intersection													
Int Delay, s/veh	3.3												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations			7		4			ă	ħβ			ħβ	
Traffic Vol, veh/h	0	0	53	23	0	91	51	51	1065	101	0	1116	43
Future Vol, veh/h	0	0	53	23	0	91	51	51	1065	101	0	1116	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	<u> </u>	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	80	-	-	-	-	-
Veh in Median Storage,	# -	0	_	-	0	-	-	-	0	-	-	0	-
Grade, %	_	0	-	-	0	_	-	-	0	_	-	0	-
Peak Hour Factor	65	65	65	83	83	83	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	2	0	1	1	0	1	0
Mvmt Flow	0	0	82	28	0	110	52	52	1087	103	0	1139	44
	•	J	02		•	110	02	02	1001	100		1100	
Major/Minor M	linor1		N	Minor2		N	//ajor1			ľ	Major2		
Conflicting Flow All	-	_	595	1913	2559	592	1183	1183	0	0	- viajoiz	_	0
Stage 1	_	_	-	1161	1161	-	-	-	-	-		_	-
Stage 2	-	_	_	752	1398	_	-	_	_	-	-	_	-
Critical Hdwy			6.9	7.5	6.5	6.9	6.44	4.1	_		-	_	-
Critical Hdwy Stg 1	_	_	0.9	6.5	5.5	0.9	0.44	4.1	_	-	-	_	-
, ,				6.5	5.5			_		_	_		-
Critical Hdwy Stg 2	-	-	3.3	3.5		3.3	2.52	2.2	-	-	-	-	-
Follow-up Hdwy	-		452	42	4 27	3.3 454	2.52	597		-			-
Pot Cap-1 Maneuver	0	0		211	272	454		597	-	-	0	-	-
Stage 1	0	0	-			-	-	-	-	-	0	-	-
Stage 2	0	0	-	373	209	-	-	-	-	-	0	-	-
Platoon blocked, %			450	٥٢	40	454	200	200	-	-		-	-
Mov Cap-1 Maneuver	-	-	452	~ 25	18	454	302	302	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	85	90	-	-	-	-	-	-	-	-
Stage 1	-	-	-	138	272	-	-	-	-	-	-	-	-
Stage 2	-	-	-	200	137	-	-	-	-	-	-	-	-
Ammunah	NID			CD			NIE				CVA		
Approach	NB			SB			NE				SW		
HCM Control Delay, s	14.7			37.8			1.9				0		
HCM LOS	В			E									
Minor Lane/Major Mvmt		NEL	NET	NER I	NBLn1		SWT	SWR					
Capacity (veh/h)		302	-	-	452	242	-	-					
HCM Lane V/C Ratio		0.345	-	-	0.18	0.568	-	-					
HCM Control Delay (s)		23.1	-	-	14.7	37.8	-	-					
HCM Lane LOS		С	-	-	В	Е	-	-					
HCM 95th %tile Q(veh)		1.5	-	-	0.7	3.2	-	-					
Notes													
	ooit.	¢. Da	lay aya	oodo 20	nnc	T. Com	outotion	Not D	ofined	*. AII	majory	/olumo	in plates
~: Volume exceeds capa	acity	φ: De	lay exc	eeus 30	JUS	+: Com	putation	I NOT DE	ennea	: All	major \	volume	in platoc

Intersection						
Int Delay, s/veh	1.5					
		NDE		NEE	0)4//	014/
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥		Λ₽			<b>^</b>
Traffic Vol, veh/h	31	56	1129	12	70	1128
Future Vol, veh/h	31	56	1129	12	70	1128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage	,#0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	97	97	96	96
Heavy Vehicles, %	8	7	2	9	0	1
Mvmt Flow	38	68	1164	12	73	1175
Maio#/Mino#	Aire and		1-:1		10:0 m2	
	Minor1		Major1		Major2	
Conflicting Flow All	1904	588	0	0	1176	0
Stage 1	1170	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.96	7.04	-	-	4.1	-
Critical Hdwy Stg 1	5.96	-	-	-	-	-
Critical Hdwy Stg 2	5.96	-	-	-	-	-
Follow-up Hdwy	3.58	3.37	-	-	2.2	-
Pot Cap-1 Maneuver	56	440	-	-	601	-
Stage 1	245	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	49	440	-	-	601	-
Mov Cap-2 Maneuver	156	-	-	-	-	-
Stage 1	245	-	-	-	-	-
Stage 2	369	_	_	_	_	_
5 g 5 _						
	NB				0147	
Approach	NB		NE		SW	
HCM Control Delay, s	27.1		0		0.7	
HCM LOS	D					
Minor Lane/Major Mvm	t	NET	NFRI	NBLn1	SWL	SWT
			112111	267	601	
Capacity (veh/h) HCM Lane V/C Ratio		-	-	0.397		-
HCM Control Delay (s)		-	-	27.1	11.8	-
HCM Lane LOS		=	-			-
		-	-	D	В	-
HCM 95th %tile Q(veh)		-	-	1.8	0.4	-

Intersection						
Int Delay, s/veh	3.4					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations	NDL	IND I	<u>361</u>	אמט	NEL	NEK **
Traffic Vol, veh/h	0	40	82	0	47	17
Future Vol, veh/h	0	40	82	0	47	17
Conflicting Peds, #/hr	0	0	02	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	_	-	_	-	0	0
Veh in Median Storage,	# -	0	0	-	0	-
Grade, %	_	0	0	-	0	_
Peak Hour Factor	75	75	85	85	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mymt Flow	0	53	96	0	64	23
	<u> </u>				Ψ.	
					0	
	1ajor1		Major2		/linor2	
Conflicting Flow All	96	0	-	0	149	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1510	-	-	-	848	966
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	1=10	-	-	-	0.40	
Mov Cap-1 Maneuver	1510	-	-	-	848	966
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	975	-
Approach	NB		SB		NE	
					9.4	
			0		5.4	
HCM Control Delay, s	0		0			
			0		9.4 A	
HCM Control Delay, s HCM LOS	0			NIDI	Α	ODT
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt	0	NELn11	NELn2	NBL		SBT
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h)	0	848	NELn2 966	NBL 1510	Α	SBT -
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	0	848 0.075	NELn2 966 0.024	1510 -	A NBT -	-
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	0	848 0.075 9.6	966 0.024 8.8	1510 - 0	A NBT	-
HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	0 t 1	848 0.075	NELn2 966 0.024	1510 -	A NBT -	-

Intersection						
Int Delay, s/veh	2.9					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	<b>Y</b>			4	<b>1</b>	
Traffic Vol, veh/h	14	41	21	47	92	58
Future Vol, veh/h	14	41	21	47	92	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	_	-	_	-
Veh in Median Storage		_	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	69	69	65	65	86	86
Heavy Vehicles, %	33	0	0	2	1	0
Mymt Flow	20	59	32	72	107	67
IVIVIII I IOW	20	33	32	12	101	07
Major/Minor I	Minor2	N	Major1	1	Major2	
Conflicting Flow All	277	141	174	0	-	0
Stage 1	141	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	_	_	_	_	_
Follow-up Hdwy	3.797	3.3	2.2	_	_	_
Pot Cap-1 Maneuver	651	912	1415	_	_	-
Stage 1	815	-	-	_	_	_
Stage 2	820	_	_	_	_	_
Platoon blocked, %	020			_	_	_
Mov Cap-1 Maneuver	635	912	1415	<u>-</u>	_	-
Mov Cap-1 Maneuver	635	912	1413	_		_
	795		-	-	-	-
Stage 1		-	-	-		-
Stage 2	820	-	-	-	-	-
Approach	SE		NE		SW	
HCM Control Delay, s	9.9		2.3		0	
HCM LOS	A		2.0		J	
TIOWI LOO	Α.					
Minor Lane/Major Mvm	nt	NEL	NET:	SELn1	SWT	SWR
Capacity (veh/h)		1415	-	821	-	-
HCM Lane V/C Ratio		0.023	-	0.097	-	-
HCM Control Delay (s)		7.6	0	9.9	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)	)	0.1	-	0.3	-	-

Intersection													
Int Delay, s/veh	1.8												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations			1		4			ă	ħβ			ħβ	
Traffic Vol., veh/h	0	0	67	6	0	24	98	23	878	133	0	704	2
Future Vol, veh/h	0	0	67	6	0	24	98	23	878	133	0	704	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	_	_	0	_	_	-	_	80	_	-	_	_	-
Veh in Median Storage,	# -	0	-	_	0	_	_	-	0	_	_	0	_
Grade, %	-	0	_	_	0	_	_	_	0	_	_	0	_
Peak Hour Factor	81	81	81	63	63	63	93	93	93	93	99	99	99
Heavy Vehicles, %	0	0	0	0	0	0	0	1	1	0	0	1	0
Mvmt Flow	0	0	83	10	0	38	105	25	944	143	0	711	2
IVIVIII( I IOW	U	U	00	10	U	00	100	20	דדע	טדו	U	7 1 1	
Major/Minor N	/linor1		N	/linor2		N	Major1			N	Major2		
Conflicting Flow All	-	_	544	1444	2059	357	713	713	0	0	<u> </u>		0
Stage 1		-	-	712	712	- 337	713	7 13	-	U		-	U
•		_	-	732	1347		_	-	_	_	_		_
Stage 2	-	-	6.9	7.5	6.5	6.9	6.4	4.12	-			-	<u>-</u>
Critical Hdwy				6.5	5.5			4.12	-	_			_
Critical Hdwy Stg 1	-	-	-			-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-	- 0.5	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	2.5	2.21	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	488	95	56	645	514	889	-	-	0	-	-
Stage 1	0	0	-	394	439	-	-	-	-	-	0	-	-
Stage 2	0	0	-	383	222	-	-	-	-	-	0	-	-
Platoon blocked, %			400	6.4	42	CAE.	E 11	E 4.4	-	-		-	-
Mov Cap-1 Maneuver	-	-	488	64	43	645	541	541	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	151	126	-	-	-	-	-	-	-	-
Stage 1	-	-	-	299 242	439 168	-	-	-	-	-	-	-	-
Stage 2	-	_	-	242	100	-	-	-	-	-	-	-	-
Annroach	NB			SB			NE				SW		
Approach HCM Control Delay, s	13.9			15.5			1.5				0		
HCM LOS	13.9 B			15.5 C			1.5				U		
HOW LOS	В			C									
Minor Lane/Major Mvmt	t	NEL	NET	NER	NBLn1	SBLn1	SWT	SWR					
Capacity (veh/h)		541			488	390	_						
HCM Lane V/C Ratio		0.24	_	-		0.122	_	_					
HCM Control Delay (s)		13.8	_	_	13.9	15.5	_	_					
HCM Lane LOS		В	_	_	В	C	_	_					
HCM 95th %tile Q(veh)		0.9	_	_	0.6	0.4	_	_					
HOW JOHN JUNE Q(VEII)		0.0	_	_	0.0	U. <del>T</del>		_					

Intersection						
Int Delay, s/veh	2.2					
Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	¥	HOIL	<b>†</b>	- ILLIX	ሻ	<b>^</b>
Traffic Vol, veh/h	43	65	948	3	81	663
Future Vol, veh/h	43	65	948	3	81	663
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-	_	-	100	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	87	87	89	89
Heavy Vehicles, %	6	0	2	0	2	2
Mvmt Flow	51	77	1090	3	91	745
NA = : = ::/NA::= = ::	\ <b>1</b> : <b>1</b>		1-:1		4-:0	
	Minor1		Major1		Major2	
Conflicting Flow All	1647	547	0	0	1093	0
Stage 1	1092	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Critical Hdwy	6.92	6.9	-	-	4.14	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.3	-	-	2.22	-
Pot Cap-1 Maneuver	86	486	-	-	634	-
Stage 1	275	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	74	486	-	-	634	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Approach	NB		NE		SW	
HCM Control Delay, s	26.1		0		1.3	
HCM LOS	20.1 D		U		1.3	
HOW LOS	U					
Minor Lane/Major Mvm	nt	NET	NERI	NBLn1	SWL	SWT
Capacity (veh/h)		-	-	297	634	-
HCM Lane V/C Ratio		-	-	0.433	0.144	-
HCM Control Delay (s)		-	-	26.1	11.6	-
HCM Lane LOS		-	-	D	В	-
HCM 95th %tile Q(veh)		-	-	2.1	0.5	-

Intersection						
Int Delay, s/veh	3.3					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		4	\$		ሻ	7
Traffic Vol, veh/h	0	42	84	0	66	14
Future Vol, veh/h	0	42	84	0	66	14
Conflicting Peds, #/hr	0	0	0	0	0	0
_	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	63	63	71	71	84	84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	67	118	0	79	17
Major/Minor Ma	nior1		Mais		line 2	
	ajor1		Major2		/linor2	415
Conflicting Flow All	118	0	-	0	185	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
	1483	-	-	-	809	939
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %		-	-	-		
	1483	-	-	-	809	939
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	961	-
Approach	NB		SB		NE	
HCM Control Delay, s	0		0		9.7	
HCM LOS	U		U		9.7 A	
TOW LOO						
Mineral and IAA in AA			VIEL C	ND	NDT	ODT
Minor Lane/Major Mvmt	1	VELn11		NBL	NBT	SBT
Capacity (veh/h)		809	939	1483	-	-
HCM Lane V/C Ratio		0.097		-	-	-
HCM Control Delay (s)		9.9	8.9	0	-	-
HCM Lane LOS		A	A	A	-	-
HCM 95th %tile Q(veh)		0.3	0.1	0	-	-

Intersection						
Int Delay, s/veh	3.6					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	¥			4	<b>1</b>	
Traffic Vol, veh/h	21	46	32	29	41	65
Future Vol, veh/h	21	46	32	29	41	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	_	-	_	-
Veh in Median Storage,		_	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	79	79	74	74	70	70
Heavy Vehicles, %	0	0	0	7	3	0
Mymt Flow	27	58	43	39	59	93
IVIVIIIL I IOW	ZI	50	40	33	03	30
Major/Minor N	1inor2	N	Major1	N	Major2	
Conflicting Flow All	231	106	152	0	-	0
Stage 1	106	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	_
Pot Cap-1 Maneuver	762	954	1441	-	_	-
Stage 1	923	-		_	_	_
Stage 2	906	_	_	_	_	_
Platoon blocked, %	000			_	_	_
Mov Cap-1 Maneuver	738	954	1441		_	
Mov Cap-1 Maneuver	738	354	1771	_	<u> </u>	_
Stage 1	894		_	-	_	_
_	906			_	-	-
Stage 2	900	-	-	-	_	-
Approach	SE		NE		SW	
HCM Control Delay, s	9.6		4		0	
HCM LOS	Α					
		N.E.	NET	<b>2</b> - 4	0147	0).675
Minor Lane/Major Mvmt		NEL		SELn1	SWT	SWR
Capacity (veh/h)		1441	-	874	-	-
HCM Lane V/C Ratio		0.03		0.097	-	-
HCM Control Delay (s)		7.6	0	9.6	-	-
HCM Lane LOS		Α	Α	Α	-	-
HCM 95th %tile Q(veh)		0.1	-	0.3	-	-

Civil • Structural • Transportation • Surveying	Troposed Retail Bank Expansion, Worcester, Wassachuset
Traffic Signal Warrant Analysis	

# Signal Warrant Analysis Minimu solune requirements from Manual on Uniform Traffic Control Devices, 2009 Edition

Side Street Minimum Volume

Mainline Minimum Volume 150

009

Warrant 1A (Minimum Vehicular Volume): Warrant 1B (Interruption of Cont. Traffic): Warrant 1 (Combination of A and B): Warrant 2 (Four Hour Vehicular Vol.): Warrant 3 (Peak Hour Vehicular Vol.):

120 75

006 009 See Figure 4C-1 See Figure 4C-3

	Shrewsbu	Shrewsbury Street at Oleum Court and 225
Location:		Shrewsbury Street
Mainline:	2	through lane(s) per direction
Side Street:	<b>-</b>	approach lanes
Veh. Speed:	30	mph
Population:	<b>№</b>	< 10,000

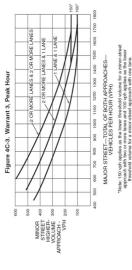
		>													
		Warrant 2	Met?	2	2	2	2	2	<u>8</u>	2	<u>8</u>	2	Yes	Yes	2
	Warrant 1	Combo	Met?	2	2	2	g	2	2	2	2	2	2	g	2
		Warrant 1B	Met?	% N	°N	°N	%	°N	% N	°N	% N	Yes	Yes	Yes	8 N
		Warrant 1A	Met?	<sub>N</sub>	°N	<sub>N</sub>	<sub>N</sub>	<sub>N</sub>	°N	<sub>N</sub>	°N	°N	oN N	<sub>N</sub>	N <sub>o</sub>
	Side Street	Total Avg. Mo.	x 1.00	12	23	46	43	41	89	58	62	79	88	92	64
Shrewsbury	Street	Total Avg. Mo.	× 1.00	1621	1677	1516	1542	1495	1711	1726	1956	1971	2089	2010	1774
225 Shrewsbury	W/ Development	Street TMC Count	S S	15	24	43	99	52	68	22	26	22	61	52	49
Oleum Court W/	Apartment	TMC Count	SB	12	23	46	43	41	89	28	62	79	88	92	64
	225 Shrewsbury	Street TMC Count	<u>R</u>	14	22	39	52	48	49	53	52	52	26	47	45
	Ole um Court	TMC Count	SB	9	16	8	31	31	55	20	51	71	80	83	23
		Shrewsbury Street TMC Counts	WB	537	564	561	929	640	989	692	817	968	1025	975	754
		Shrewsbury St	B	1084	1113	922	996	855	1025	1034	1139	1075	1064	1035	1020
			Hour	7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 PM	12-1 PM	1-2 PM	2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM



Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

OR MORE LANES & 2 OR MORE LANES 2 OR MORE LANES & 1 LANE LANE & 1 LANE

MINOR STREET 300 HIGHER-VOLUME APPROACH 200



400 500 600 700 800 900 1000 1100 1200
MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

### Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume Condition A—Minimum Vehicular Volume

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Warrant Met?

Z	umber of lan traffic on eac	Number of lanes for moving traffic on each approach	Vehicle (tota	Vehicles per hour on major street (total of both approaches)	r on majo approach	r street es)	Vehicle minor-stre	Vehicles per hour on higher-volume minor-street approach (one direction only	on higher-v n (one direc	olume ction only)
Σ	Major Street	Minor Street	100%	4%08	20%。	₽%99	100%	4%08	۷۰%۵۷	₽%95
	1	1	200	400	350	280	150	120	105	84
	2 or more	1	009	480	420	336	150	120	105	84
	2 or more	2 or more	009	480	420	336	200	160	140	112
	1	2 or more	200	400	350	280	200	160	140	112

## Condition B—Interruption of Continuous Traffic

ss for h app	Number of lanes for moving traffic on each approach	Vehicle (tot	Vehicles per hour (total of both	icles per hour on major street (total of both approaches)	r street es)	Vehicle minor-stre	Vehicles per hour on higher-volume minor-street approach (one direction or	on higher-v	n higher-volume (one direction only)
Mino	Minor Street	100%	4%08	70%°	₽%99	100%	4%08	۷۰%۵۷	£6% <sup>4</sup>
	1	750	009	525	420	75	09	23	42
	+	006	720	630	504	75	09	53	42
20	2 or more	006	720	630	504	100	80	20	99
20	2 or more	750	009	525	420	100	80	20	99

Basic minimum hourly volume
 Lead for combination of Conditions A and B after adequate trial of other remedial measures
 May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
 May be used for combination of Conditions A and B after adequate trial of other remedial measures when the day be used for combination of Conditions A and B after adequate trial of other remedial measures when the day be used for combination of rin an isolated community with a population of less than 10,000