

Transportation Impact Assessment

Proposed Travel Center
195 Charlton Road (Route 20)
Sturbridge, Massachusetts

Prepared for:

Noble Energy Real Estate Holdings LLC
Hartford, Connecticut

April 2021

Prepared by:

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

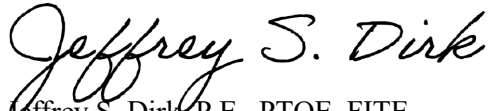
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Dear Reviewer:

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

Sincerely,

VANASSE & ASSOCIATES, INC.



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

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EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to assess the potential impacts on the transportation infrastructure associated with the proposed construction of a travel center with an associated fueling facility and an electrical vehicle discovery center to be located at 195, 197, 201 and 201A Charlton Road (Route 20) in Sturbridge, Massachusetts (hereafter referred to as the “Project”). This assessment was prepared in consultation with the Massachusetts Department of Transportation (MassDOT) and the Town of Sturbridge; was performed in accordance with MassDOT’s *Transportation Impact Assessment (TIA) Guidelines*; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. The Project will require the issuance of a State Highway Access Permit from MassDOT for access to Route 20, a State Highway under the jurisdiction of MassDOT.

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

1. Using empirical data obtained from operating travel centers that contain similar amenities to those that are proposed as a part of the Project and trip-generation statistics published by the Institute of Transportation Engineers (ITE),¹ the Project is expected to generate approximately 2,636 new vehicle trips on an average weekday (two-way, 24-hour volume), with 432 new vehicle trips expected during the weekday morning peak hour, 218 new vehicle trips expected during the weekday evening peak hour and 237 new vehicle trips expected during the Saturday midday peak hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to operate at a level-of-service (LOS) D or better under all analysis conditions where an LOS “D” or better is defined as “acceptable” operating conditions;
3. With the installation of a traffic control signal at the main (full-access) Project site driveway intersection with Route 20 and the accompanying construction of a left-turn lane on the Route 20 westbound approach, all movements at the intersection were shown to operate at LOS C or better during the peak hours;

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

4. All movements exiting from the one-way, exit-only Project site driveway to Route 20 are expected to operate at LOS D or better with a predicted vehicle queue of 2 vehicles;
5. Independent of the Project, left-turn movements from the Hall Road approach to Route 20 were found to be operating at or over capacity (i.e., LOS E or F, respectively) under 2020 Existing traffic-volume conditions with residual vehicle queues of up to 2 vehicles. Similarly, all movements from the private driveway located opposite Hall Road are currently operating over capacity during the weekday evening and Saturday midday peak hours with residual vehicle queues of up to 2 vehicles. Project-related impacts at this intersection are generally defined as an increase in vehicle queuing of up to 1 vehicle;
6. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and
7. Lines of sight to and from the Project site driveway intersections with Route 20 exceed the recommended minimum distances for the intersections to function in a safe and efficient manner based on the measured travel speed along Route 20 approaching the driveways.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of two driveways configured as follows: a full access driveway that will intersect the south side of Route 20 approximately 460 feet east of Hall Road that will be placed under traffic signal control and a one-way exit-only driveway that will intersect the south side of Route 20 approximately 855 feet east of Hall Road. The following recommendations are offered with respect to the design and operation of the access to the Project site and internal circulation, many of which are reflected on the Site Plans:

- The Project site driveways should be designed to accommodate the turning and maneuvering requirements of a large tractor semi-trailer combination (WB-67 design vehicle) and the largest anticipated responding emergency vehicle as defined by the Sturbridge Fire Department.
- A review of the warrants specified in the *Manual on Uniform Traffic Control Devices* (MUTCD)² for the installation of a traffic control signal indicates that **the installation of a traffic control signal at the full-access Project site driveway is warranted under 2028**

²*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

Build conditions. As such, it is recommended that a traffic control signal be installed at the intersection along with the following intersection geometry:

- **Route 20 Eastbound:** one through travel lane and one through/right-turn lane
- **Route 20 Westbound:** one left-turn lane and two through travel lanes
- **Project Site Driveway:** one left-turn lane and one right-turn lane

The Project proponent is in active discussions with Cornerstone Bank to relocate the west bank driveway opposite the Project site driveway and into the proposed traffic signal system. With the installation of a traffic control signal and the associated geometric improvements, all movements at the signalized intersection are predicted to operate at LOS C or better during the peak hours.

- The one-way, exit only Project site driveway should be 20 feet in width with vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided. In addition, appropriate signs (ONE WAY and DO NOT ENTER) should be installed to regulate the one-way operation of the driveway.
- Drive aisles within the Project site should be a minimum of 23 feet in width where perpendicular parking is proposed in order to allow for vehicle maneuvering.
- Appropriate signs (ONE WAY and DO NOT ENTER) and pavement markings should be provided to regulate and reinforce the one-way traffic flow through the drive-through facility and along the adjacent by-pass lane.
- Vehicles exiting the drive-through window facility and the adjacent by-pass lane should be placed under STOP-sign control with a marked STOP-line provided prior to the proposed crosswalk that crosses the lanes.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the MUTCD.³
- A sidewalk should be constructed along the Project site frontage on Route 20 that should be connected to the proposed travel center building and the proposed traffic signal at the main Project site driveway, where a marked crosswalk and pedestrian traffic signal equipment and phasing should be provided for crossing Route 20.
- Marked crosswalks and Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided for crossing the Project site driveways and at pedestrian crossings constructed or modified in conjunction with the Project where such accommodations do not currently exist.
- Signs and landscaping located within intersection sight triangle areas should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within sight triangle areas shall be promptly removed where such accumulations would impede sight lines.

³Ibid.

Off-Site

Route 20 at Hall Road

Independent of the Project, left-turn movements from the Hall Road approach to Route 20 were identified to be operating at or over capacity with vehicle queues on the approach extending up to 4 vehicles (through/right-turn lane). In an effort to identify potential improvement measures for the intersection, the Project proponent will perform a detailed Traffic Signal Warrants Analysis (TSWA) in accordance with the methodology defined in the MUTCD,⁴ including performing a 12-hour (7:00 AM to 7:00 PM) manual turning movement count (TMC) on an average weekday. The results of the TSWA will be summarized in a technical memorandum and will include a conceptual improvement plan and preliminary cost estimate to the extent that the installation of a traffic control signal is found to be warranted at the intersection. The technical memorandum will be provided to the Town and MassDOT prior to the issuance of a Certificate of Occupancy for the Project.

Transportation Demand Management

The Town of Sturbridge is a member of the Worcester Regional Transit Authority (WRTA); however, regularly scheduled, fixed-route public transportation services are not currently provided within the Town. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles (SOVs), the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- A transportation coordinator will be assigned for the Project to coordinate the TDM program.
- Information regarding commuting options will be posted in a central location and/or otherwise made available to employees of the project.
- The transportation coordinator will facilitate a rideshare matching program for employees to encourage carpooling.
- A “welcome packet” will be provided to employees detailing available commuter options and will include the contact information for the transportation coordinator and information to enroll in the employee rideshare program.
- An Emergency Ride Home program for employees that car/vanpool or that arrive to the Project site by means other than in a SOV will be provided at no cost to employees and managed by the transportation coordinator.
- Specific amenities will be provided to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak-traffic-volume periods.
- Pedestrian accommodations will be incorporated within the Project site and will be connected to a proposed sidewalk that will be constructed along the Project site frontage

⁴Ibid 2.

and a crossing of Route 20 that will be a part of the proposed traffic signal system that is to be installed at the main Project site driveway intersection with Route 20.

- Secure bicycle parking should be provided at an appropriate location within the Project site.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program, and to validate the trip projections and parking demands for the Project. The monitoring program will include:

- i. Obtaining traffic-volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii. Performing manual TMCs and vehicle classification counts at the Project site driveway intersections with Route 20 during the weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak periods; and
- iii. Evaluating motor vehicle crash data at the Project site driveway intersections with Route 20.

The monitoring program will commence six months after issuance of the Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed five years after completion of the Project. The results of the monitoring program will be summarized in a report to be provided to the Town of Sturbridge and MassDOT within two months after the completion of the data collection effort. The report will document: i) traffic volumes associated with the Project; ii) motorist delays, vehicle queuing, crash severity and calculated crash rates at the Project site driveway intersection with Route 20; and iii) the elements of the TDM program that have been implemented and use of alternative modes of transportation to SOVs by employees of the Project.

If any of the following conditions are documented as a part of the monitoring program: i) the measured traffic volumes exceed the observed traffic volumes that are presented herein by more than 10 percent on a regular and sustained basis during the monitoring period; ii) there is a material increase in the number of motor vehicle crashes occurring at or in immediate vicinity of the Project site driveway intersection that are attributable to the Project; or iii) operations along Route 20 at the Project site driveways deteriorate to the extent that there is an impact to operations along Route 20 as evidenced by extended vehicle queuing; the Project proponent will identify and undertake corrective measures in conjunction with the appropriate parties and subject to receipt of all necessary rights permits and approvals. These measures may include without limitation:

- Sign and pavement marking installation;
- Traffic signal timing modifications at the Route 20/Project site drive intersection;
- Geometric improvements along Route 20 at and approaching the Project site driveways to the extent that said improvements can be completed within the public right-of-way or on land controlled by the Project proponent; and

- On-site operations and management strategies to include: expansion of the elements of the TDM program to include financial incentives for employees to car/vanpool; scheduling employee shifts to minimize impacts during peak traffic volume periods along Route 20; evaluating implementation of an employee shuttle program with other area businesses; and other such measures that are designed to reduce the overall volume of traffic generated by the Project.

The identified corrective measures, if any, will be documented in the transportation monitoring program report, and will include the appropriate parties responsible for implementation, required approvals, and the timeline for implementation. The status of implementation of the identified improvement measure will be documented in the subsequent monitoring report.

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

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a travel center with an associated fueling facility and an electrical vehicle discovery center to be located at 195, 197, 201, and 201A Charlton Road (Route 20) in Sturbridge, Massachusetts (hereafter referred to as the “Project”). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions along Route 20 and at the following specific intersections: Route 20 at The Center at Hobbs Brook driveway; Route 20 at the 201A Charlton Road driveway; Route 20 at the 201 and 208 Charlton Road driveways, and Route 20 at Hall Road.

PROJECT DESCRIPTION

The Project will entail the construction of a travel center with an associated fueling facility and an electrical vehicle discovery center to be located at 195, 197, 201, and 201A Charlton Road (Route 20) in Sturbridge, Massachusetts (hereafter referred to as the “Project”). As proposed, the travel center will include the following components: a 8,437± square foot (sf) building that will contain a convenience store, coffee shop with drive-through window, a restaurant, an ice cream parlor and a common seating area; a 10-pump (20 vehicle fueling position (vfp)) fueling facility; a 4-pump diesel fueling facility; and 10 electric vehicle (EV) charging stations. The electric vehicle discovery center will consist of a separate 16,640± sf building that will contain an 8,866± sf electrical vehicle discovery conference center, 4,482± sf office space and a 120-seat sit-down restaurant. The conference center component of the discovery center will be used by electric vehicle manufacturers to display their vehicles and allow visitors to interact with manufacturer representatives and sales people

The Project site is bounded by Route 20 (Charlton Road) to the north; areas of open and wooded space to the south; and commercial properties to the east and the west. Figure 1 depicts the Project site location in relation to the existing roadway network. At present, the Project site is occupied by several commercial buildings and supporting appurtenances that are accessed from four driveways that intersect the south side of Route 20. The existing structures and appurtenances will be removed in conjunction with the Project and two of the four existing driveways will be closed.



Figure 1
Site Location Map



Access to the Project site will be provided by way of two driveways configured as follows: a full access driveway that will intersect the south side of Route 20 approximately 460 feet east of Hall Road that will be placed under traffic signal control and a one-way, exit-only driveway that will intersect the south side of Route 20 approximately 855 feet east of Hall Road. The Project will require the issuance of a State Highway Access Permit from the Massachusetts Department of Transportation (MassDOT) for access to Route 20, a State Highway under the jurisdiction of MassDOT, and, based on the predicted increase in average weekday traffic, is subject to the filing of both an Environmental Notification Form (ENF) and an Environment Impact Report (EIR) under the provisions of the Massachusetts Environmental Policy Act (MEPA).

On-site parking will be provided as follows:

- *Travel Center* – On-site accommodations will be provided for 71 vehicles including 38 standard (10 feet wide by 20 feet long) parking spaces; 10 parking spaces located at electric vehicle charging stations; 3 handicapped accessible spaces; and 20 vehicle fueling positions within the fueling facility that can accommodate one vehicle at each position. In addition, there are 2 tractor semi-trailer parking spaces and 4 trucks can be accommodated at the diesel fueling facility.
- *Electric Vehicle Discovery Center* – 75 parking spaces, including 3 handicapped accessible spaces. In addition, permeable grass pavers will be installed to the south of the paved parking lot and configured to accommodate parking for an additional 59 vehicles as needed for a total of 134 maximum on-site parking spaces.

STUDY METHODOLOGY

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

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

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

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

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in September and October 2020. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area for the Project was selected to contain the major roadway providing access to the Project site, Route 20, and the following specific intersections: Route 20 at The Center at Hobbs Brook driveway; Route 20 at the 201A Charlton Road driveway; Route 20 at the 201 and 208 Charlton Road driveways; and Route 20 at Hall Road.

The following describes Route 20 within the study area and the study area intersections.

ROADWAY

Route 20 (Charlton Road)

- Four-lane urban principal arterial roadway under MassDOT jurisdiction.
- Traverses study area in a general east-west direction parallel to and south of the Interstate 90 (I-90, the Massachusetts Turnpike) and provides access to I-84 to the west (Exit 3).
- Provides two 12-foot wide travel lanes per direction in the vicinity of the Project site that are separated by a double-yellow centerline and a striped median, with 1- to 2-foot wide marked shoulders and additional travel lanes at major intersections.
- Sidewalks are provided along the south side of Route 20 in the vicinity of the Project site between the Cracker Barrel Old Country Store restaurant driveway and a point approximately 160 feet south of Gifford Road.
- Illumination is provided intermittently by way of streetlights mounted on wood poles.
- Posted speed limit is 50 miles per hour (mph) in the vicinity of the Project site.
- Land use consists of the Project site, commercial properties, and areas of open and wooded space.

INTERSECTIONS

Table 1 and Figure 2 summarize existing lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in October 2020.

Table 1
STUDY AREA INTERSECTION DESCRIPTION

Intersection	Traffic Control Type^a	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Rte. 20/The Center at Hobbs Brook Dwy.	TS	1 left-turn lane and 2 through lanes on Rte. 20 eastbound; 2 through lanes and a channelized right-turn lane on Rte. 20 westbound; 2 left-turn lanes and 1 right-turn lane on The Center at Hobbs Brook Dwy.	Yes – 1 to 9 feet on Rte. 20	No	No
Rte. 20/201A Charlton Rd. Dwy.	S	2 general-purpose travel lanes on Rte. 20 approaches; 1 general-purpose travel lane on the 201A Charlton Rd. dwy.	Yes - 2 to 10-feet on Rte. 20	Yes – sidewalk along the south side of Route 20	No
Route 20/201 Charlton Rd./208 Charlton Rd. Dwys.	S	2 general-purpose travel lanes on Rte. 20 approaches; 1 general-purpose travel lane on both 201 Charlton Rd. and 208 Charlton Rd. dwys.	Yes - 2 to 10-feet on Rte. 20	Yes – sidewalk along the south side of Route 20	No
Rte. 20/Hall Rd./Private Dwy.	S	2 general-purpose travel lanes on Rte. 20 eastbound; 1 left-turn lane, 1 through lane and 1 through/right-turn lane on Rte. 20 westbound; 1 left-turn lane and 1 through/right-turn lane on Hall Rd.; 1 general-purpose travel lane on the private dwy.	Yes – 1 to 2 feet on Rte. 20	Yes – sidewalk along the south side of Rte. 20; marked crosswalk provided for crossing Hall Rd.	No

NB = northbound; SB = southbound; EB = eastbound; WB = westbound

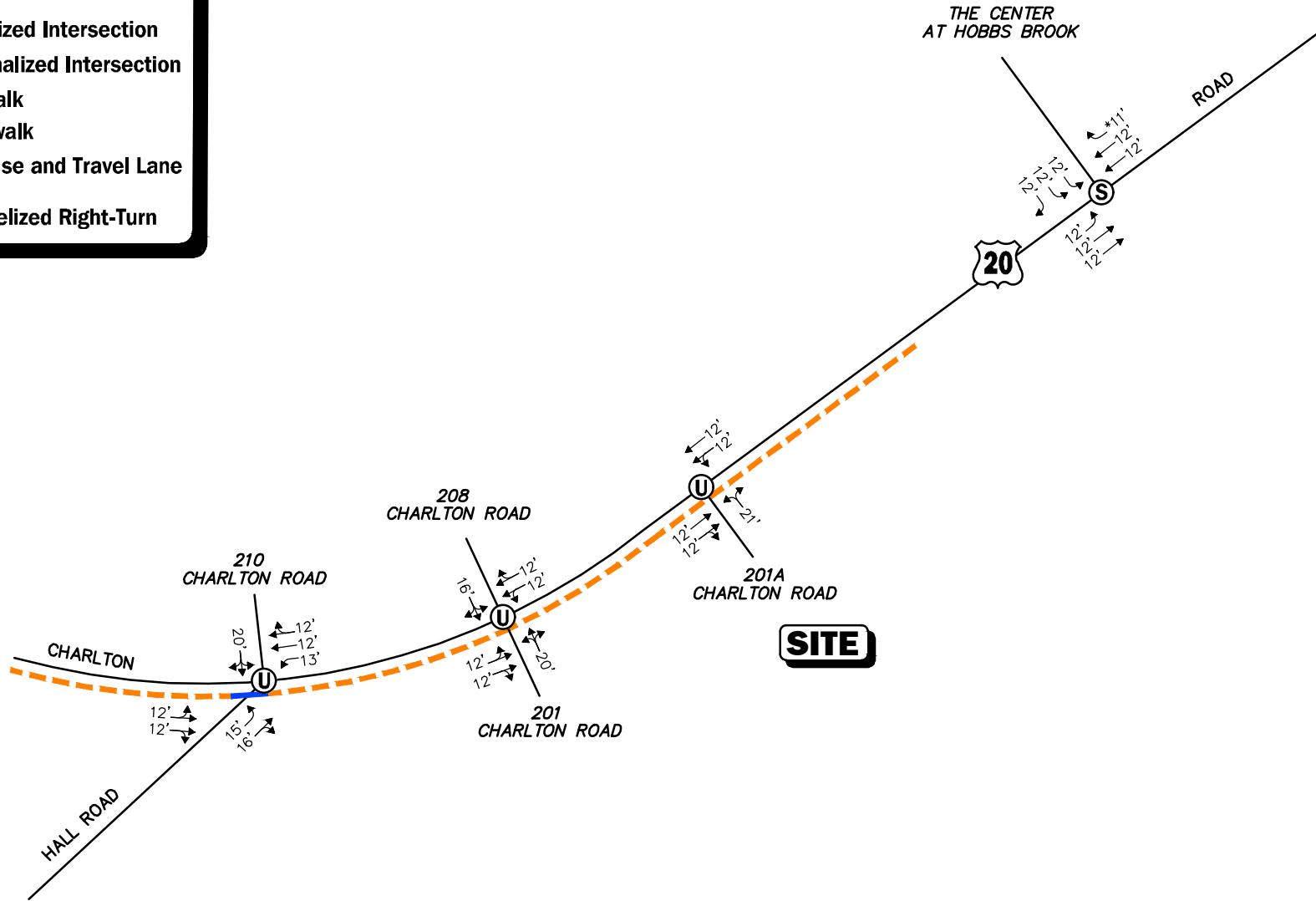
^aTS = traffic signal control; S = STOP-sign control; Y = YIELD-sign control; NC = no control present.

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs), and vehicle classification counts were completed in October 2020. ATR counts were conducted on Route 20 in the vicinity of the Project site over a continuous 72-hour period from Thursday, October 15, 2020 through Saturday, October 17, 2020, in order to record weekday and Saturday daily traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period TMCs conducted on Thursday, October 1, 2020, and Saturday midday (11:00 AM to 2:00 PM) peak-period manual TMCs performed on and Saturday, October 3, 2020. These time

Legend:

- Ⓢ Signalized Intersection
- Ⓤ Unsignalized Intersection
- Sidewalk
- Crosswalk
- XX' ↔ Lane Use and Travel Lane Width
- *XX' ↘ Channelized Right-Turn



Not To Scale



Figure 2

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

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periods were selected for analysis purposes as they are representative of the peak-traffic-volume hours for both the Project and the adjacent roadway network.

Traffic-Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic-volume data from MassDOT Continuous Count Station No. 3929 located on I-84 south of Route 20 in Sturbridge were reviewed.⁵ Based on a review of this data, it was determined that traffic volumes for the month of October are approximately 2.0 percent above average-month conditions and, therefore, the raw traffic count data was not adjusted downward in order to provide a conservative (above-average) analysis condition.

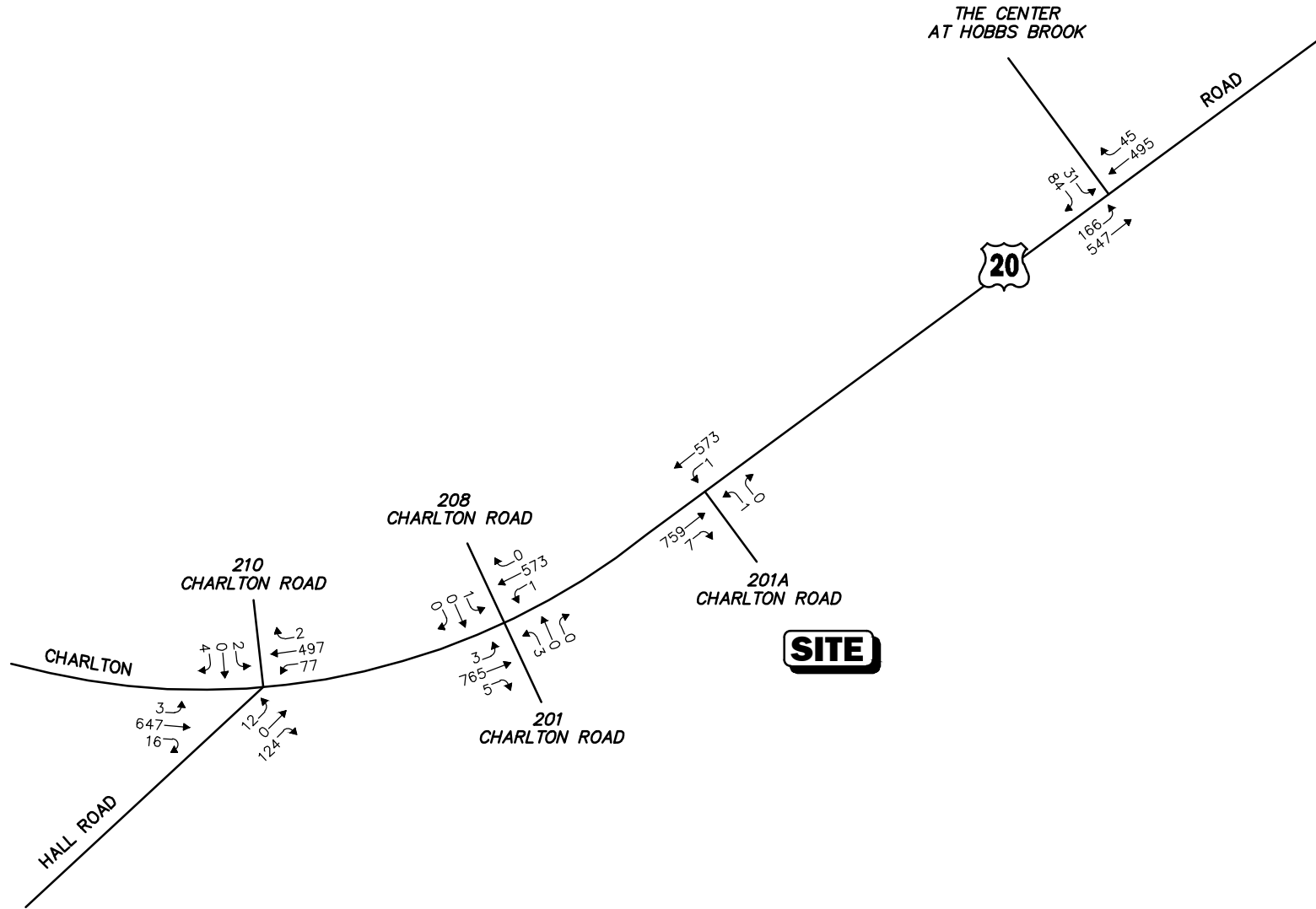
In order to account for the impact on traffic volumes and trip patterns resulting from the “safer-at-home” order and the phased “Reopening Massachusetts” plan that was issued by the Governor on May 18, 2020, in response to the COVID-19 pandemic, traffic-volume data collected at the intersection of Route 20 at The Center at Hobbs Brook driveway in October 2020 was compared to traffic-volume data that was collected at the intersection in September 2019 as a part of a prior study conducted by VAI.⁶ Both traffic counts were adjusted to average-month conditions and the 2019 traffic volumes were expanded to 2020 by applying a background traffic growth rate of 1.0 percent per year (discussion follows) in order to allow for a comparison of the data. Based on this pre- and post-COVID-19 traffic count data comparison, the 2020 traffic-volume data that was collected at the study intersections were adjusted upward as follows in order to account for the reduced traffic volumes resulting from the phased “Reopening Massachusetts” plan:

- Average weekday: 8 percent
- Weekday morning peak-hour: 15 percent
- Weekday evening peak-hour: 1 percent
- Saturday: 8 percent
- Saturday midday peak-hour: 1 percent

The 2020 Existing traffic volumes are summarized in Table 2, with the weekday morning, weekday evening, and Saturday midday peak-hour traffic volumes graphically depicted on Figures 3, 4, and 5, respectively. Note that the peak-hour traffic volumes presented in Table 2 were obtained from the aforementioned figures.

⁵MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2020.

⁶*Transportation Impact Assessment*, Proposed Warehouse, Sturbridge Road (Route 20), Charlton, Massachusetts: VAI; April 2020.

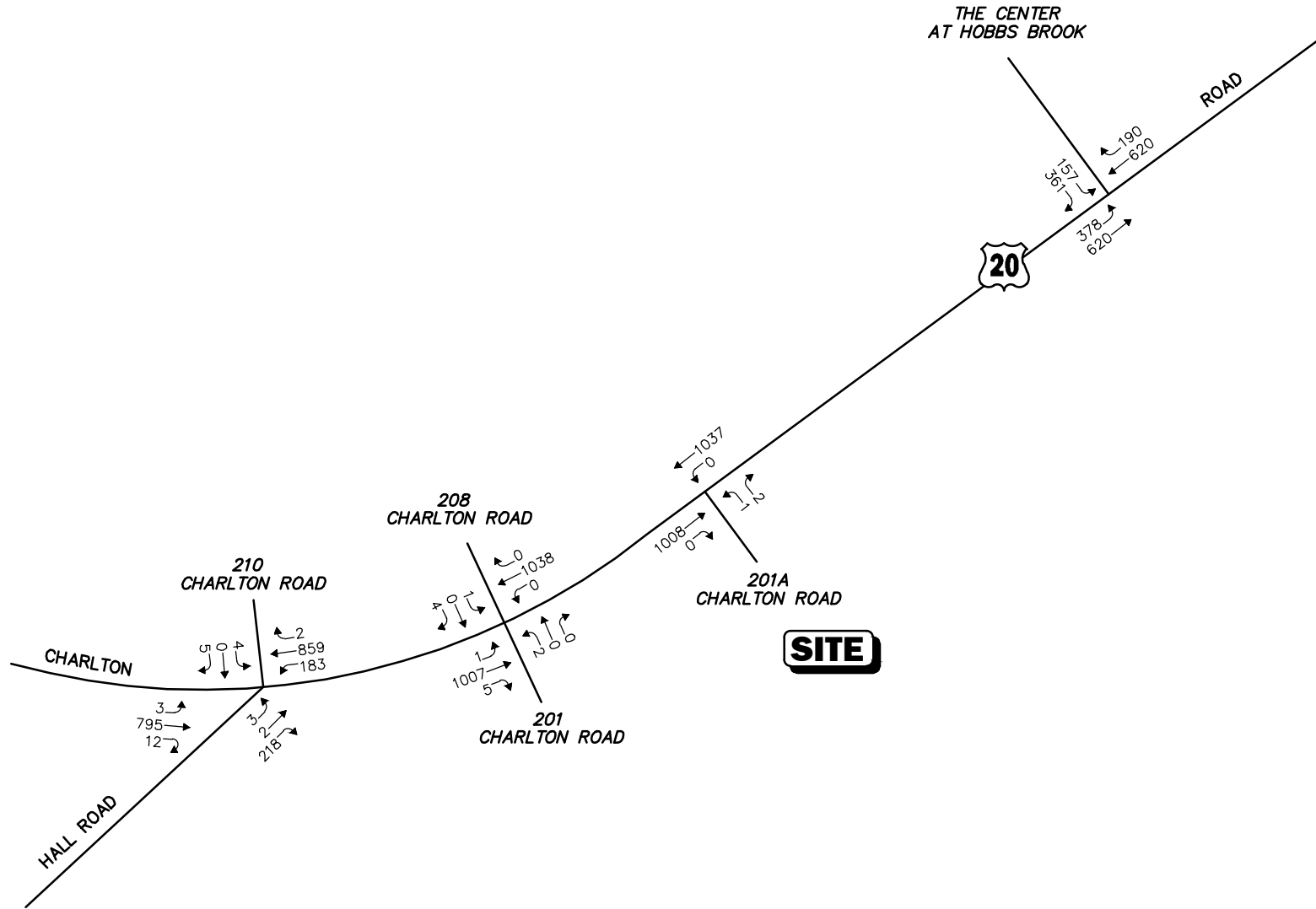


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 3

2020 Existing
Weekday Morning
Peak-Hour Traffic Volumes



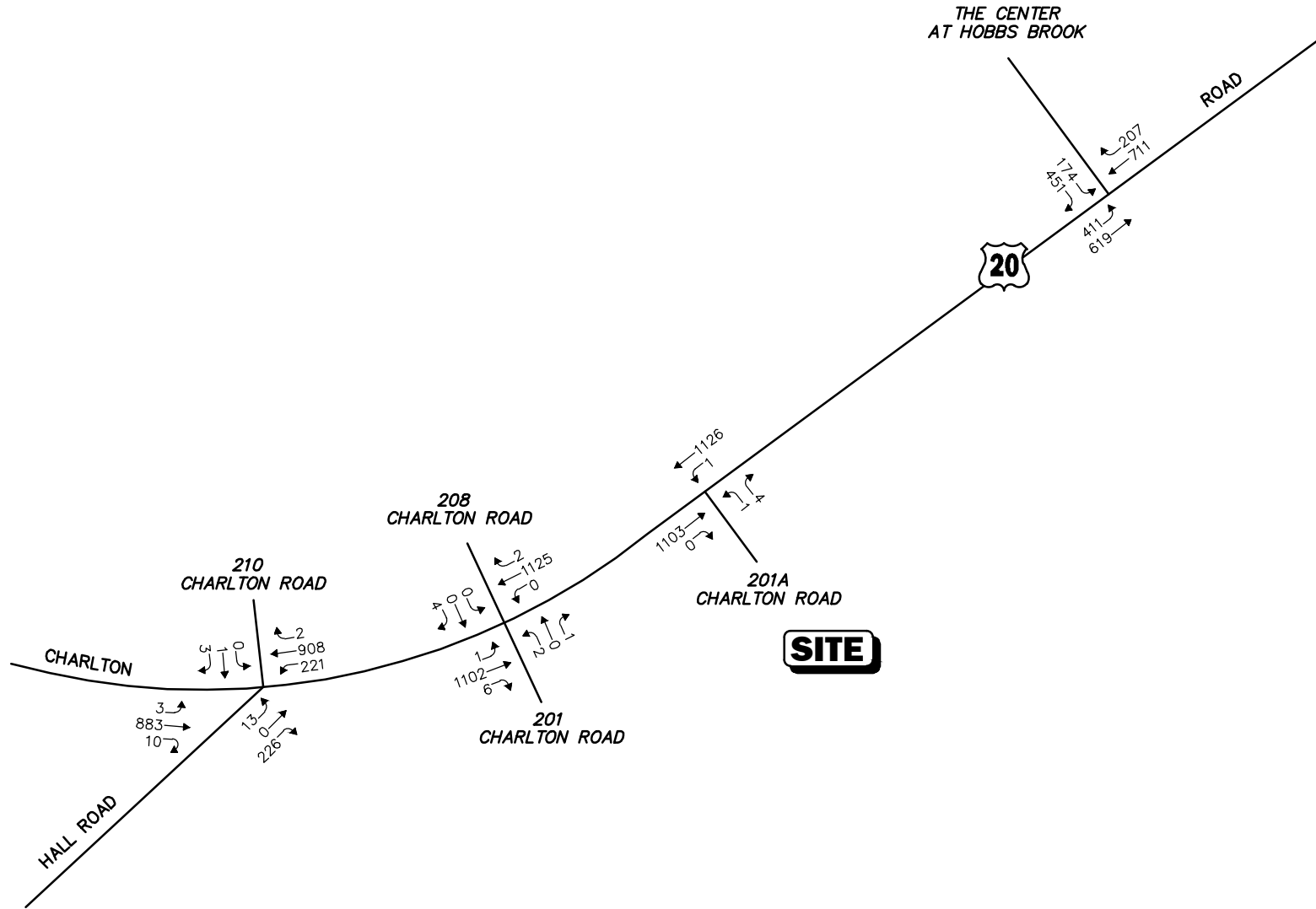
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 4

2020 Existing
Weekday Evening
Peak-Hour Traffic Volumes





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

Not To Scale

Figure 5

2020 Existing
Saturday Midday
Peak-Hour Traffic Volumes



Table 2
2020 EXISTING TRAFFIC VOLUMES

Location/Peak Hour	AWT ^a	Saturday ^b	VPH ^c	K Factor ^d	Directional Distribution ^e
<i>Route 20 in the vicinity of the Project Site:</i>	24,570	25,385	--	--	--
Weekday Morning (8:00 – 9:00 AM)	--	--	1,333	5.4	56.9% EB
Weekday Evening (4:15 – 5:15 PM)	--	--	2,047	8.3	50.6% WB
Saturday Midday (12:00 – 1:00 PM)	--	--	2,234	8.8	50.4% WB

^aAverage weekday traffic in vehicles per day.

^bVehicles.

^cVehicles per hour.

^dPercent of daily traffic occurring during the peak hour.

^ePercent traveling in peak direction.

EB = eastbound; WB = westbound.

As can be seen in Table 2, Route 20 in the vicinity of the Project site was estimated to accommodate approximately 24,570 vehicles on an average weekday and 25,385 vehicles on a Saturday (both two-way, 24-hour volumes), with approximately 1,333 vehicles per hour (vph) during the weekday morning peak-hour, 2,047 vph during the weekday evening peak-hour and 2,234 vph during the Saturday midday peak-hour.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Route 20 in the vicinity of the Project site in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 20	
	Eastbound	Westbound
Mean Travel Speed (mph)	47	45
85 th Percentile Speed (mph)	52	51
Posted Speed Limit (mph)	50	50

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Route 20 in the vicinity of the Project site was found to be 47 mph in the eastbound direction and 45 mph westbound. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 52 mph in the eastbound direction and 51 mph westbound, which approximates the posted speed limit in the vicinity of the Project site (50 mph).

The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances and is often used in establishing posted speed limits.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in October 2020. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 2, a sidewalk is provided along the south side of Route 20 and along the Project site frontage, extending from the Cracker Barrel Old Country Store restaurant driveway to a point approximately 160 feet west of Gifford Road, with a crosswalk provided for crossing Hall Road at the Route 20/Hall Road intersection.

Formal bicycle facilities are not provided within the study area and it was noted that the study area roadways do not provide sufficient width on a continuous basis (combined travel lane and paved shoulder) to support bicycle travel in a shared traveled-way configuration.⁷

PUBLIC TRANSPORTATION

The Town of Sturbridge is a member of the Worcester Regional Transit Authority (WRTA); however, regularly scheduled, fixed-route public transportation services are not currently provided within the Town.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2014 through 2018, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and is presented in Table 4.

As can be seen in Table 4, the study intersections experienced an average of approximately 5 or fewer reported motor vehicle crashes per year over the five-year review period and, were found to have a motor vehicle crash rate below both the MassDOT statewide and District averages for a signalized or unsignalized intersection, as appropriate, for the MassDOT Highway Division District in which the intersections are located (District 3). The majority of the crashes reported within the study area occurred on a weekday; during daylight; under clear weather conditions; and involved rear-end type collisions that resulted in property damage only.

A review of the MassDOT statewide High Crash Location List indicated that there are no locations within the study area that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as high crash locations. In addition, no fatal motor vehicle crashes were reported to have occurred at the study area intersections over the five-year review period.

⁷A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared traveled-way condition.

The detailed MassDOT Crash Rate Worksheets and High Crash Location mapping are provided in the Appendix.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Route 20/ The Center at Hobbs Brook Dr.	Route 20/ Hall Road	Route 20/ 201A Charlton Road	Route 20/ 201 Charlton Road/ 208 Charlton Road
Traffic Control Type: ^b	TS	S	S	S
<i>Year:</i>				
2014	4	3	1	0
2015	4	4	0	0
2016	2	5	0	0
2017	6	4	0	0
<u>2018</u>	<u>2</u>	<u>7</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0
Average Rate ^c	3.60	4.60	0.20	0.00
MassDOT Crash Rate: ^d	0.78/0.89	0.57/0.61	0.57/0.61	0.57/0.61
Significant? ^e	No	No	No	No
<i>Type:</i>				
Angle	3	6	0	0
Rear-End	12	9	0	0
Head-On	0	2	0	0
Sideswipe	2	4	1	0
Fixed Object	1	0	0	0
Pedestrian/Bicycle	0	0	0	0
<u>Unknown/Other</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0
<i>Day of Week:</i>				
Monday-Friday	13	16	1	0
Saturday	2	3	0	0
<u>Sunday</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0
<i>Conditions:</i>				
Clear	6	12	0	0
Cloudy	7	3	1	0
Rain	3	6	0	0
<u>Snow/Ice</u>	<u>2</u>	<u>2</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0
<i>Lighting:</i>				
Daylight	15	20	1	0
Dawn/Dusk	1	0	0	0
Dark (Road Lit)	2	3	0	0
<u>Dark (Road Unlit)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0
<i>Severity:</i>				
Property Damage Only	15	16	1	0
Personal Injury	3	7	0	0
<u>Fatality</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	18	23	1	0

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2014 through 2018.

^bTraffic Control Type: U = unsignalized; TS = traffic signal.

^cCrash rate per million vehicles entering the intersection.

^dStatewide/District crash rate.

^eThe intersection crash rate is significant if it is found to exceed the MassDOT statewide and/or District crash rate for the MassDOT Highway Division District in which the Project is located (District 3).

FUTURE CONDITIONS

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

FUTURE TRAFFIC GROWTH

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

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

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

Specific Development by Others

The Planning Departments of the Towns of Sturbridge and Charlton were contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on these discussions, the following projects were identified for inclusion in this assessment:

- ***Cold Storage Warehouse, 6 Picker Road, Sturbridge, Massachusetts.*** This Project will entail the construction of a 120,662± sf cold storage warehouse building that will be located at 6 Picker Road.

- ***Propane Facility, 51 Technology Park Road, Sturbridge, Massachusetts.*** This project entails the construction of a 10,000± sf service building with a 30,000-gallon underground propane storage tank to be located at 51 Technology Park Road.
- ***Marijuana Dispensary, 660 Main Street, Sturbridge, Massachusetts.*** This project will entail the construction of a 3,292± sf marijuana dispensary to be located at 660 Main Street.
- ***Marijuana Dispensary, 365 Main Street, Sturbridge, Massachusetts.*** This project will entail the construction of a 2,592± sf marijuana dispensary and 2,400± sf of retail space to be located at 365 Main Street.
- ***Cold Storage Warehouse, 90 Charlton Road, Sturbridge, Massachusetts.*** This Project will entail the construction of an 83,045± sf cold storage warehouse building that will be located at 90 Charlton Road.
- ***Proposed Propane Storage Facility, 59 Technology Park Road, Sturbridge, Massachusetts.*** This project entails the addition of a propane storage tank to be located at 59 Technology Park Road. This project is not expected to result in an increase in traffic during the weekday commuter peak hours that would exceed the general background traffic growth rate.
- ***Tree House Brewing Expansion, 129 Sturbridge Road Charlton, Massachusetts.*** This project consists of the expansion of the existing Tree House Brewing brewery located at 129 Sturbridge Road from 43,000± sf to 67,718± sf, of which 43,000± sf will continue as the brewery operation, 20,710± sf will be devoted to retail sales and 4,008± sf will consist of a timber frame pavilion to provide additional outdoor space for customers. In addition, a 7,600± sf outdoor “beer garden” area will also be constructed between the main building and the pavilion. This project is not expected to result in an increase in traffic during the weekday commuter peak hours that would exceed the general background traffic growth rate.
- ***Marijuana Dispensary, 144 Sturbridge Road, Charlton, Massachusetts.*** This project will entail the construction of a 20,000± sf marijuana dispensary to be located at 144 Sturbridge Road.
- ***Auto Storage and Towing Facility, 299 Sturbridge Road, Charlton, Massachusetts.*** This project is currently under construction at 299 Sturbridge Road and is not expected to result in an increase in traffic within the study area that would exceed the general background traffic growth rate.
- ***Proposed Warehouse Development, 214 Sturbridge Road, Charlton, Massachusetts.*** This project entails the construction of a 1,200,000± sf warehouse to be located at 214 Sturbridge Road east of the Project site.
- ***Proposed Recreational Marijuana Dispensary, 46 Worcester Road, Charlton, Massachusetts.*** This project will entail the conversion of the existing 3,300± sf medical marijuana dispensary located at 46 Worcester Road into a recreational marijuana dispensary.

Traffic volumes associated with the aforementioned specific development projects by others were obtained from the traffic study prepared in support of the project or were developed by using trip-

generation information available from the ITE⁸ for the appropriate land use and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from Continuous Count Station No. 3929 located on I-84 south of Route 20 in Sturbridge were reviewed. Based on a review of this data, it was determined that traffic volumes within the study area have increased by approximately 0.9 percent per year over the past several years. In order to provide a conservative (high) analysis scenario and a prudent planning condition for the Project, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

MassDOT and the Town of Sturbridge were contacted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2028 within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

No-Build Traffic Volumes

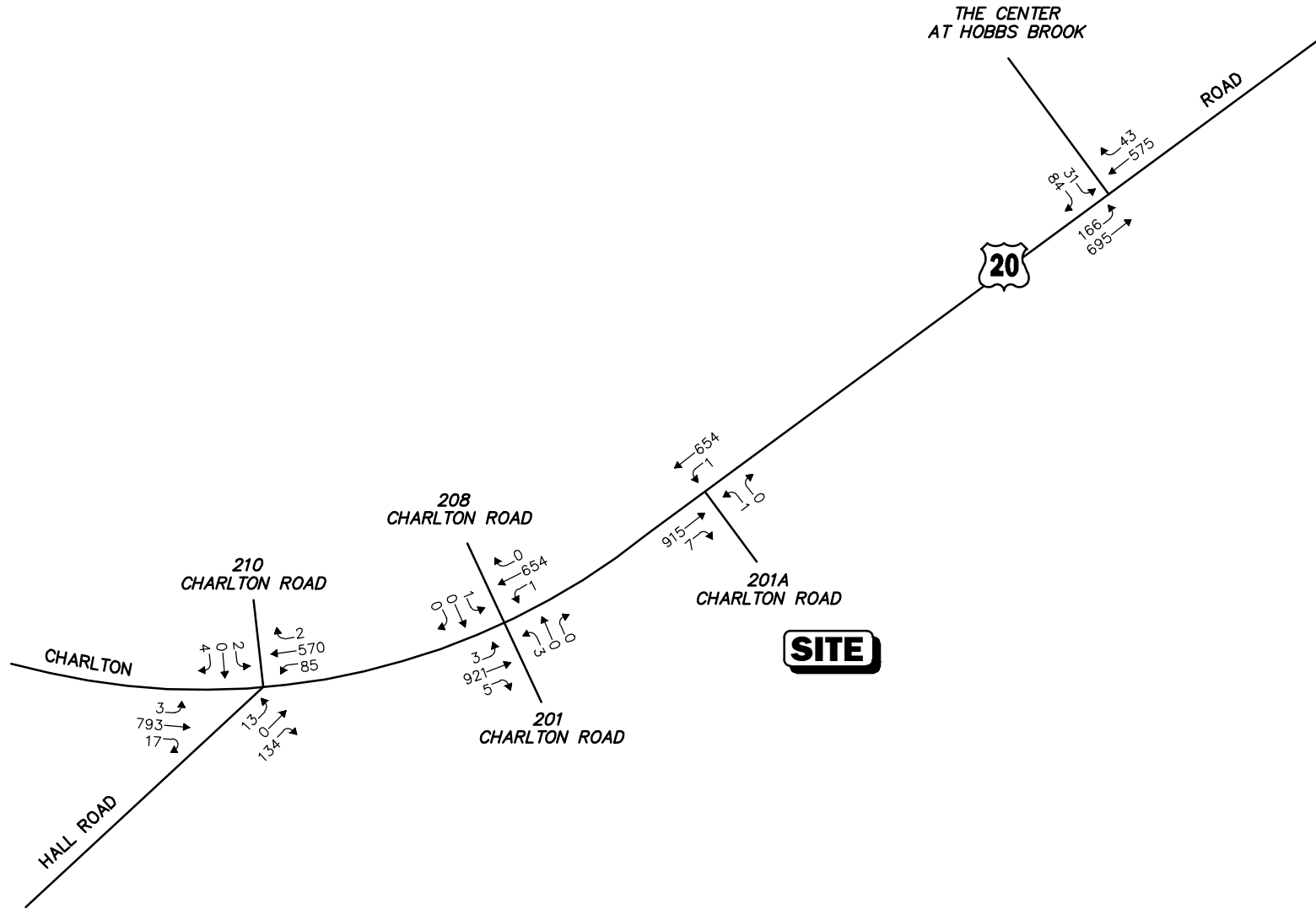
The 2028 No-Build condition peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2020 Existing peak-hour traffic volumes and then adding the peak-hour traffic volumes associated with the identified specific development projects by others. The resulting 2028 No-Build weekday morning, weekday evening, and Saturday midday peak-hour traffic volumes are shown on Figures 6, 7, and 8, respectively.

PROJECT-GENERATED TRAFFIC

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

As proposed, the Project will include two components: a travel center with an associated vehicle fueling facility and an electric vehicle discovery center. The travel center will include the following elements: a 8,437± sf building that will contain a convenience store, coffee shop with drive-through window, a restaurant, an ice cream parlor and a common seating area; a 10-pump (20 vfp) fueling facility; a 4-pump diesel fueling facility; and 10 electric vehicle (EV) charging stations. The electric vehicle discovery center will consist of a separate 16,640± sf building that will contain an 8,866± sf electrical vehicle discovery conference center, 4,482± sf office space and a 120-seat sit-down restaurant. In order to establish the traffic characteristics of the Project, trip-generation data

⁸Ibid 1.



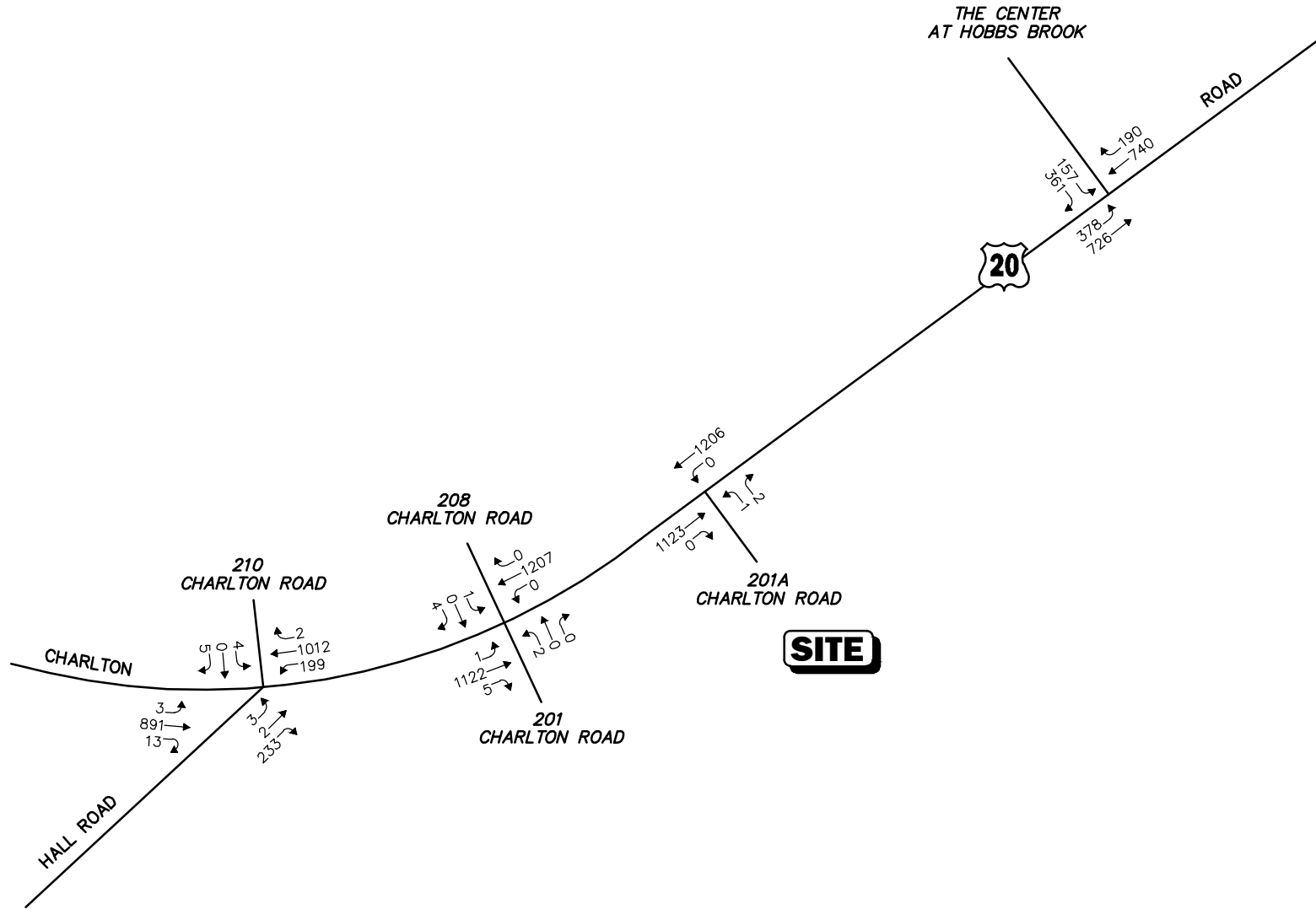
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 6

2028 No-Build
Weekday Morning
Peak-Hour Traffic Volumes





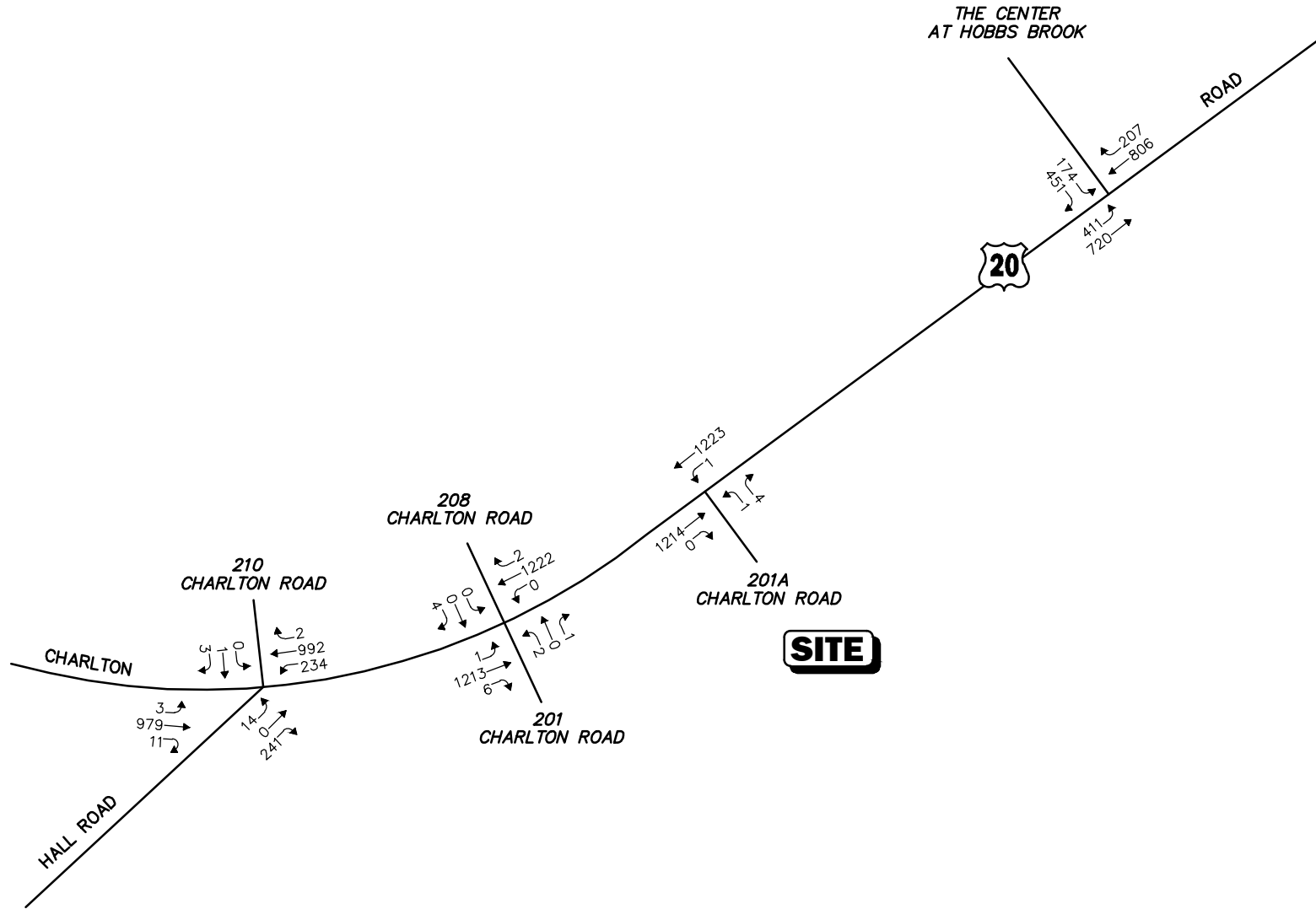
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 7

2028 No-Build
Weekday Evening
Peak-Hour Traffic Volumes





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

Not To Scale

Figure 8

2028 No-Build
Saturday Midday
Peak-Hour Traffic Volumes



obtained from the ITE⁹ and empirical trip rates derived from operating travel centers that contain similar amenities to those that are proposed as a part of the Project were used.

For the electrical vehicle discovery center, ITE Land Use Codes (LUCs) 840, *Automobile Sales (New)*, 710, *General Office Building*, and 932, *High-Turnover (Sit-Down) Restaurant* were used. It should be noted that the electric vehicle discovery center will not function as a typical automobile dealership in that the electric vehicles will not be sold or serviced at this location. The discovery center will host electric vehicle manufacturers and allow potential customers to view electric vehicles and interact with manufacturer representatives and sales people. As such, the trip estimates for this component of the discovery center may overstate the actual volume of traffic that will be produced. For the travel center, a review of the ITE trip-generation database indicates that composite trip rates are not available for a similar use. As such and as recommended by the ITE and discussed with MassDOT, empirical trip rates were derived from traffic counts performed at travel centers that contain a similar level of amenities to those that are proposed as a part of the Project. The selected sites were determined in consultation with MassDOT and included the following locations:

- *XtraMart* – 100 Worcester-Providence Turnpike, Millbury, Massachusetts
- *XtraMart* – 27 Worcester-Providence Turnpike, Sutton, Massachusetts

The data collection effort consisted of TMCs that were conducted at the driveway(s) serving each location over a 24-hour period on a weekday and during the Saturday midday (11:00 AM to 2:00 PM) peak period. The collected data was adjusted in order to account for the traffic-volume impacts resulting from the travel restrictions associated with the COVID-19 pandemic and then normalized to a trip rate per 1,000 sf. The trip rates for each site were then averaged to develop the trip rates to be applied to the Project. The detailed traffic count data and supporting calculations that were used to develop the empirical trip rates for the travel center component of the Project are provided in the Appendix.

Pass-By Trips

Not all of the trips expected to be generated by the travel center and the sit-down restaurant components of the Project will be new trips on the roadway network. A significant portion of these trips will consist of pass-by trips or vehicles already traveling along Route 20 for other purposes that will patronize the Project in conjunction with their trip and then continue to their original destination. These trips are not new trips on the roadway network as a result of the Project. Statistics published by the ITE¹⁰ for similar land uses indicate that on average up to 66 percent of the trips generated by a convenience market with gasoline pumps, up to 89 percent of the trips generated by a coffee shop with drive-through window and up to 43 percent of the trips generated by a restaurant may consist of pass-by trips. In accordance with MassDOT guidelines which limits pass-by trips to the lesser of: i) 15 percent of the adjacent roadway traffic volume; or ii) the ITE pass-by trip rate for the specific use; the methodology that resulted in the lower volume of pass-by trips was applied to the base trip-generation calculations for the travel center and the restaurant components of the Project.

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

⁹Ibid 1.

¹⁰*Trip Generation Handbook*, 3rd Edition, A Recommended Practice of the Institute of Transportation Engineers; Institute of Transportation Engineers; Washington, D.C.; September 2017.

**Table 5
TRIP-GENERATION SUMMARY**

Time Period/Direction	Vehicle trips									
	Travel Center			Electric Vehicle Discovery Center						
	(A) Travel Center (8,437 sf) ^a	(B) Pass-By Trips ^b	(C = A - B) New Trips	(D) Electric Vehicle Discovery Center (8,866 sf) ^c	(E) Office (4,482 sf) ^d	(F) Restaurant (120 seats) ^e	(G) Pass-By Trips ^f	(H = F-G) New Trips	(I = B + G) Total Pass-by Trips	(J = C+D+E+H) Total New Trips
<i>Average Weekday Daily:</i>										
Entering	3,008	1,985	1,023	124	22	262	113	149	2,098	1,318
Exiting	3,008	1,985	1,023	124	22	262	113	149	2,098	1,318
Total	6,016	3,970	2,046	248	44	524	226	298	4,196	2,636
<i>Weekday Morning Peak Hour:</i>										
Entering	308	107	201	12	4	30	11	19	118	236
Exiting	280	107	173	5	1	28	11	17	118	196
Total	588	214	374	17	5	58	22	36	236	432
<i>Weekday Evening Peak Hour:</i>										
Entering	215	142	73	15	1	29	11	18	153	107
Exiting	215	142	73	23	5	21	11	10	153	111
Total	430	284	146	38	6	50	22	28	306	218
<i>Saturday Midday Peak Hour:</i>										
Entering	239	159	80	18	1	34	14	20	173	119
Exiting	242	159	83	18	1	30	14	16	173	118
Total	481	318	163	36	2	64	28	36	346	237

^aBased on traffic counts conducted on Thursday, January 7, 2021 and Saturday, January 9, 2021 at the XtraMarts located at 27 Worcester-Providence Turnpike in Sutton, Massachusetts and 100 Worcester-Providence Turnpike in Millbury, Massachusetts.

^bPass-by trips: rates were obtained from ITE LUC 853, *Convenience Market with Gasoline Pumps*, and were applied to the traffic volumes associated with the travel center as follows: average weekday daily, weekday evening peak-hour, and Saturday midday peak-hour = 66 percent; weekday morning peak-hour, 15 percent of adjacent roadway traffic volumes.

^cBased on ITE LUC 840, *Automobile Sales (New)*.

^dBased ITE LUC 710, *General Office Building*.

^eBased ITE LUC 932, *High-Turnover (Sit-Down) Restaurant*.

^fPass-by trips: weekday daily, weekday evening peak-hour and Saturday midday peak-hour = 43 percent; weekday morning peak-hour, 15 percent of adjacent roadway traffic volumes.

Project-Generated Traffic Volume Summary

As can be seen in Table 5, the Project is expected to generate approximately 2,636 new vehicle trips on an average weekday (two-way volume over the operational day of the Project, or 1,318 vehicles entering and 1,318 exiting), with 432 new vehicle trips (236 vehicles entering and 196 exiting) expected during the weekday morning peak-hour, 218 new vehicle trips (107 vehicles entering and 111 exiting) expected during the weekday evening peak-hour and 237 new vehicle trips (119 vehicles entering and 118 exiting) expected during the Saturday midday peak-hour.

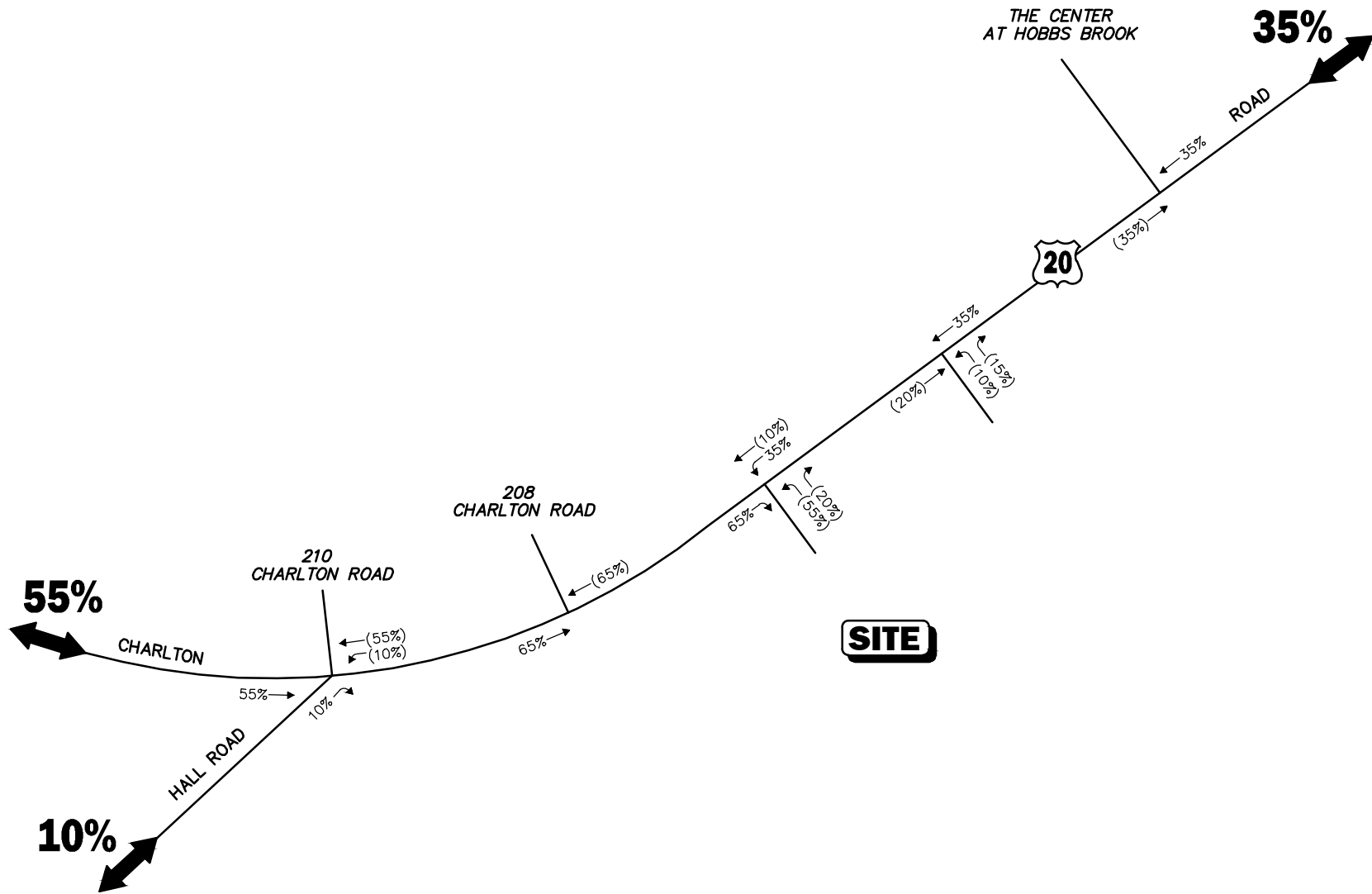
TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of generated trips to and from the Project site was determined based on a review of existing traffic patterns within the study area and the location of the Project site in relation to connections to the Interstate Highway System (IHS) given the nature of the proposed use. The general trip distribution for the Project is graphically depicted on Figure 9. The additional traffic expected to be generated by the Project was assigned on the study area roadway network as shown on Figures 10, 11, and 12 for the weekday morning, weekday evening and Saturday midday peak hours, respectively.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

The 2028 Build condition traffic volumes consist of the 2028 No-Build traffic volumes with: i) the removal of the traffic associated with the existing uses that occupy the Project site; and ii) the addition of the traffic expected to be generated by the Project. The 2028 Build weekday morning, weekday evening and Saturday midday peak-hour traffic volumes are graphically depicted on Figures 13, 14, and 15, respectively.

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



Not To Scale

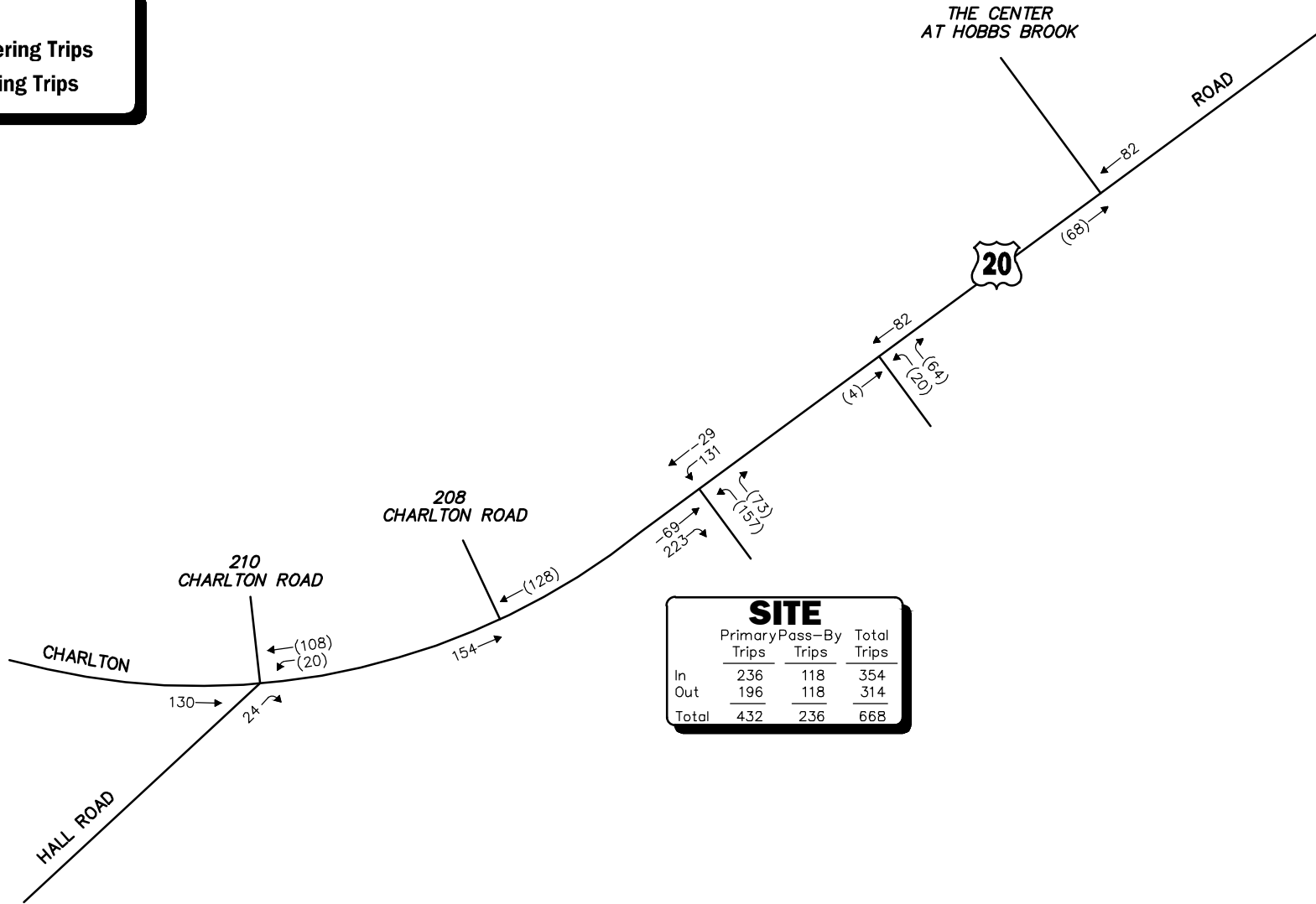
Figure 9

Trip Distribution Map



Legend:

XX Entering Trips
 (XX) Exiting Trips



	SITE		Total Trips
	Primary Trips	Pass-By Trips	
In	236	118	354
Out	196	118	314
Total	432	236	668

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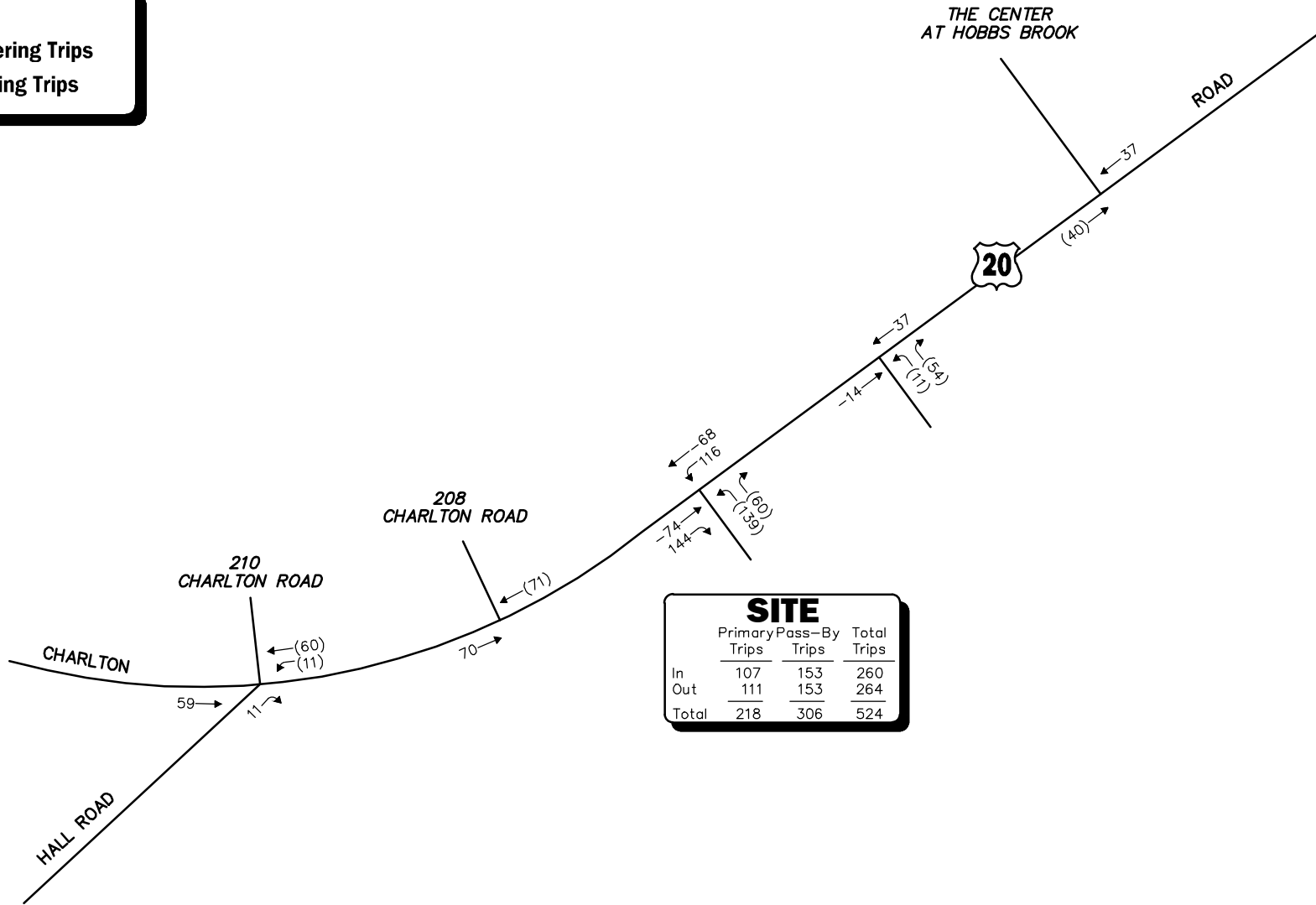


Figure 10

Project-Generated
 Weekday Morning
 Peak-Hour Traffic Volumes

Legend:

- XX Entering Trips
- (XX) Exiting Trips



	SITE		Total Trips
	Primary Trips	Pass-By Trips	
In	107	153	260
Out	111	153	264
Total	218	306	524



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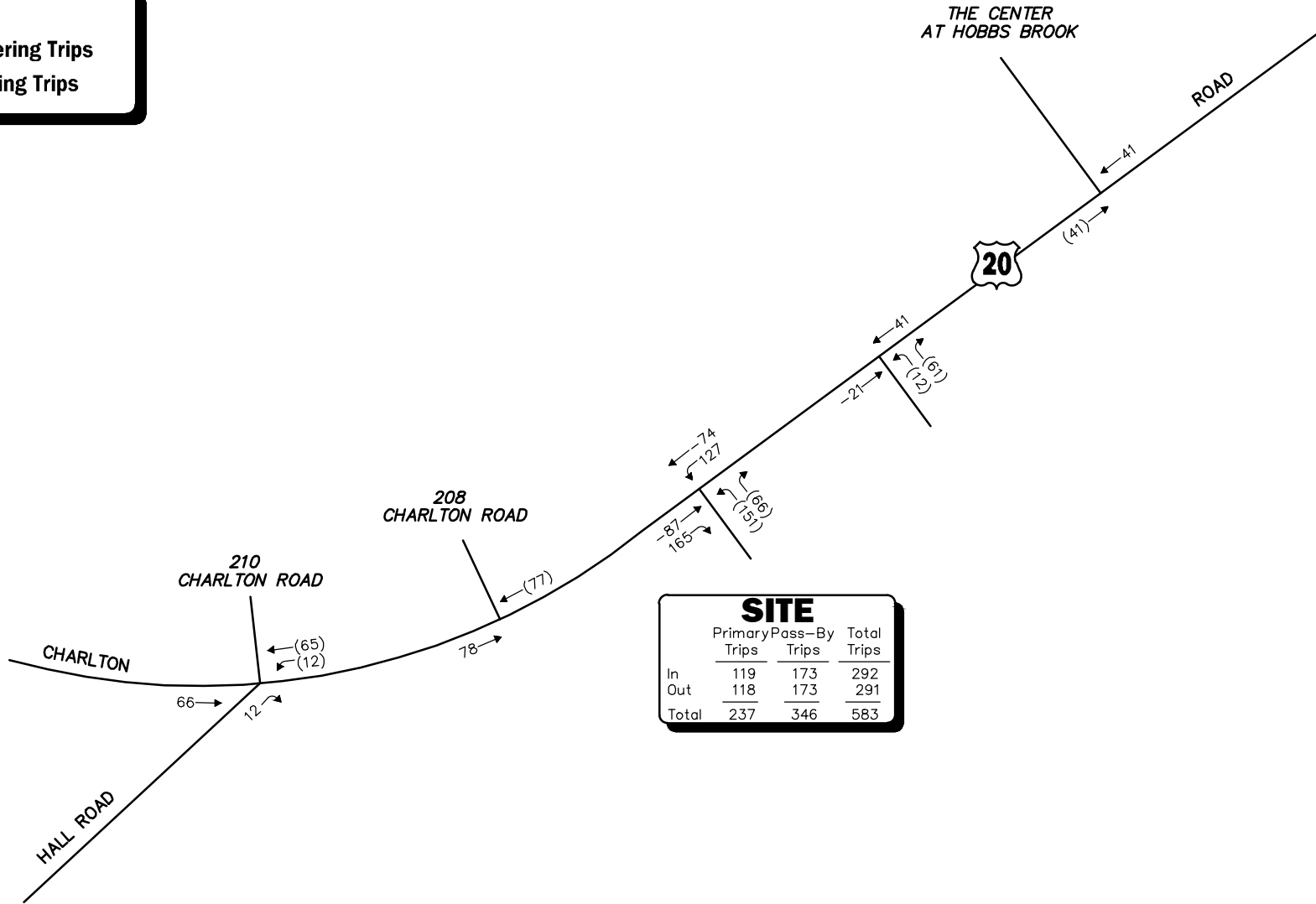


Figure 11

**Project-Generated
Weekday Evening
Peak-Hour Traffic Volumes**

Legend:

- XX Entering Trips
- (XX) Exiting Trips



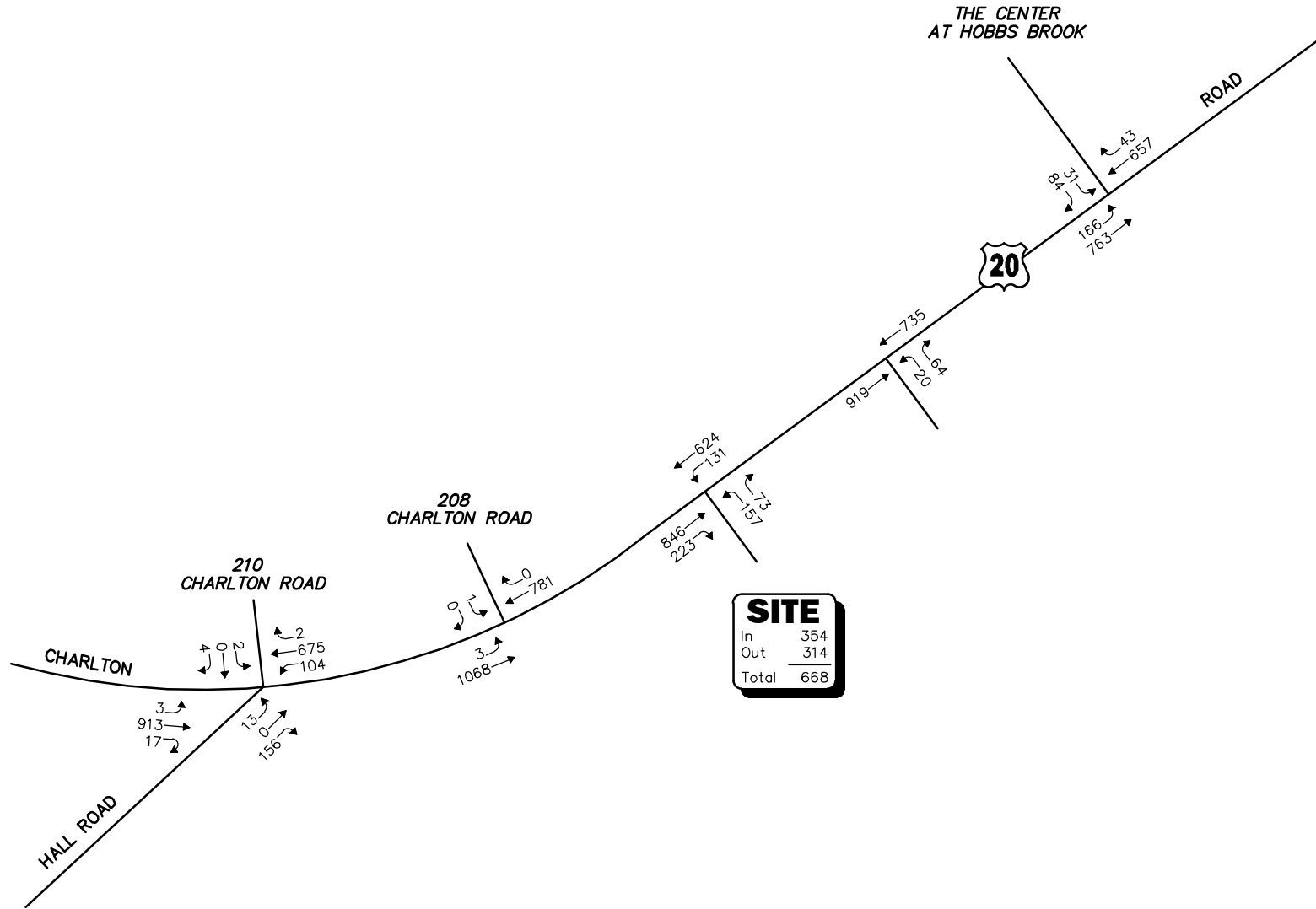
SITE			
	Primary Trips	Pass-By Trips	Total Trips
In	119	173	292
Out	118	173	291
Total	237	346	583

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Figure 12
 Project-Generated
 Saturday Midday
 Peak-Hour Traffic Volumes

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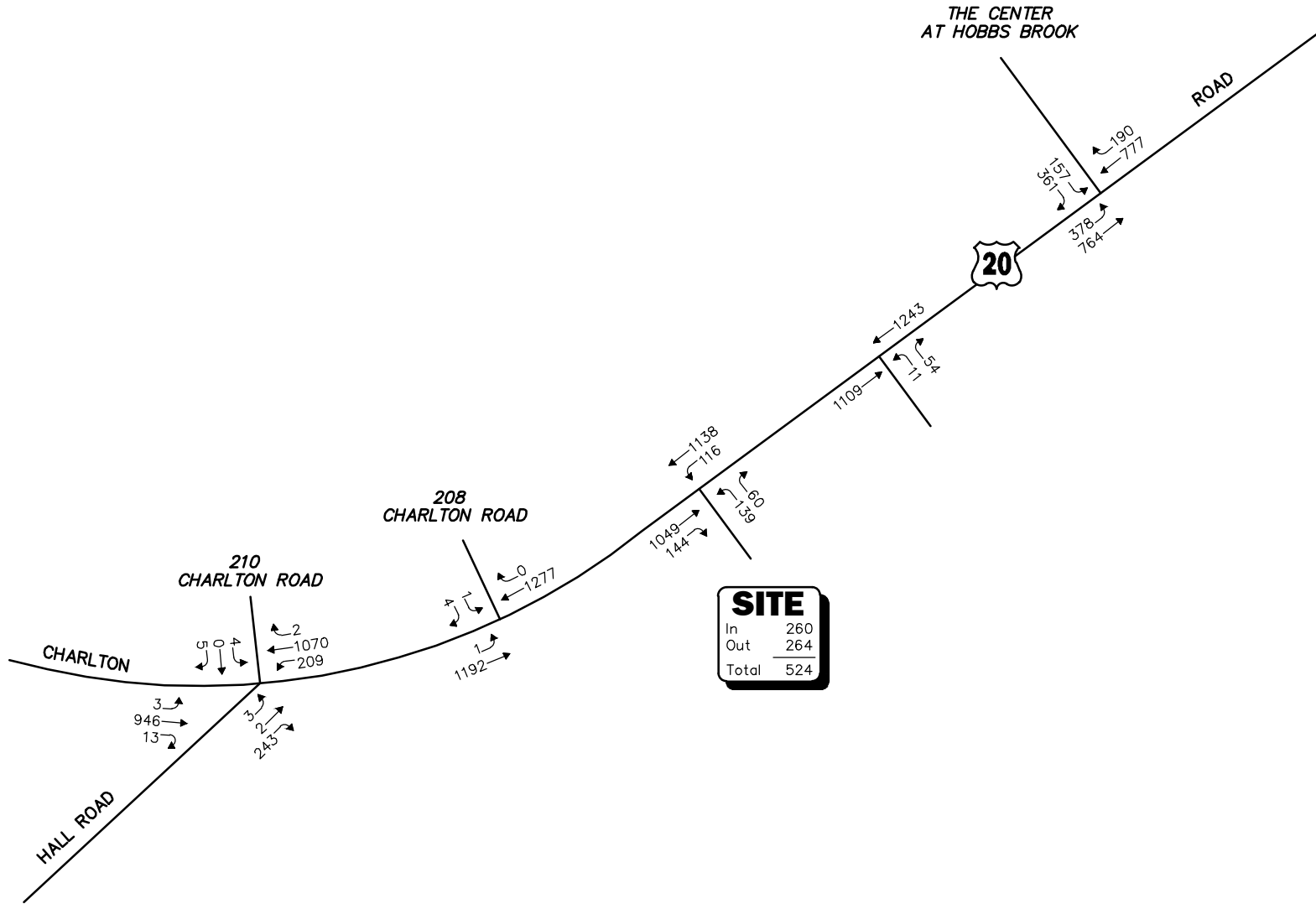


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
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Figure 13
2028 Build
Weekday Morning
Peak-Hour Traffic Volumes



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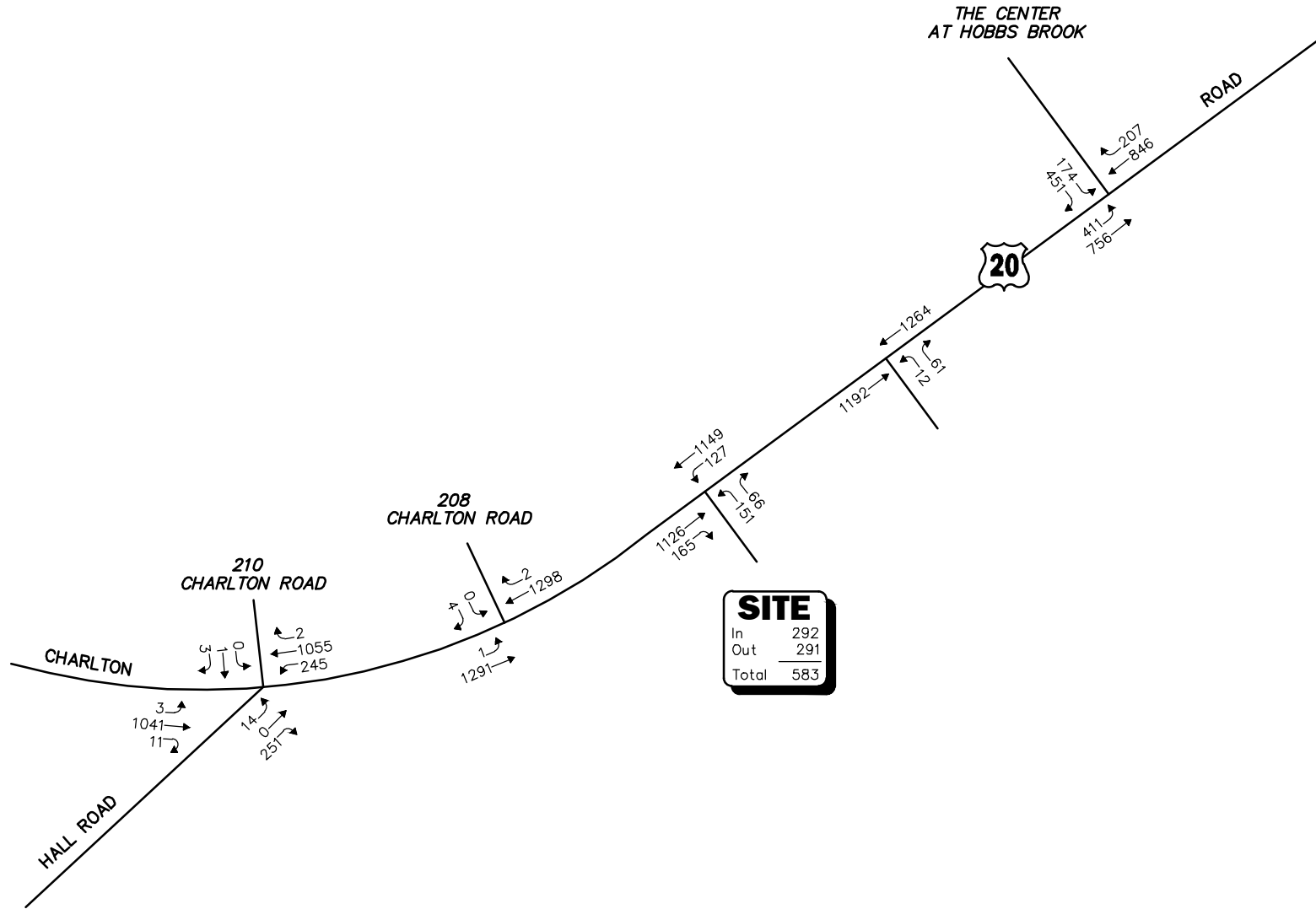
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 14

2028 Build
Weekday Evening
Peak-Hour Traffic Volumes





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

Not To Scale

Figure 15

2028 Build
 Saturday Midday
 Peak-Hour Traffic Volumes



Table 6
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2020 Existing	2028 No-Build	2028 Build	Traffic-Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Route 20, east of The Center at Hobbs Brook:</i>					
Weekday Morning	1,116	1,344	1,494	150	11.2
Weekday Evening	1,587	1,813	1,888	75	4.1
Saturday MIDDAY	1,711	1,907	1,983	76	4.0
<i>Route 20, west of Hall Road:</i>					
Weekday Morning	1,179	1,400	1,625	225	16.1
Weekday Evening	1,677	1,927	2,040	113	5.9
Saturday MIDDAY	1,820	2,002	2,127	125	6.2
<i>Hall Road, south of Route 20:</i>					
Weekday Morning	229	249	290	31	16.5
Weekday Evening	418	450	470	20	4.4
Saturday MIDDAY	471	501	522	21	4.2

As shown in Table 6, Project-related traffic-volume increases outside of the study area relative to 2028 No-Build conditions are anticipated to range from 4.0 to 16.5 percent during the peak periods, with vehicle increases shown to range from 20 to 225 vehicles.

TRAFFIC OPERATIONS ANALYSIS

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

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.¹¹ The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

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

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

¹¹The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Signalized Intersections

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

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

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual*¹² and implemented as a part of the Synchro® 10 software. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay, and final acceleration delay. Table 7 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

¹²*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000.

Table 7
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS^a

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

^aSource: *Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2000; page 16-2.

Unsignalized Intersections

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

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

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual*.¹³ Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2010 *Highway Capacity Manual*. Table 8 summarizes the relationship between level of service and average control delay for two-way STOP-controlled intersections.

¹³*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Table 8
LEVEL-OF-SERVICE CRITERIA FOR
UNSIGNALIZED INTERSECTIONS^a

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

^aSource: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; page 19-2.

Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection’s ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro® intersection capacity analysis software which is based upon the methodology and procedures presented in the 2010 *Highway Capacity Manual*. The Synchro® vehicle queue analysis methodology is a simulation based model which reports the number of vehicles that experience a delay of 6 seconds or more at an intersection. For signalized intersections, Synchro® reports both the average (50th percentile) the 95th percentile vehicle queue. For unsignalized intersections, Synchro® reports the 95th percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95th percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately 3 minutes out of 60 minutes during the peak one hour of the day (during the remaining 57 minutes, the vehicle queue length will be less than the 95th percentile queue length).

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2020 Existing, 2028 No-Build, and 2028 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 9 and 10. The detailed analysis results are presented in the Appendix.

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

As can be seen in Tables 9 and 10, the majority of the movements at the study area intersections were shown to operate at LOS D or better during the peak hours with the addition of Project-related traffic. Project-related impacts at the study area intersections were identified as follows:

Signalized Intersections

Route 20 at The Center at Hobbs Brook Driveway

No change (degradation) in level of service was shown to occur over No-Build conditions, with all movements shown to continue to operate at LOS C or better and Project-related impacts defined as a predicted increase in overall average motorist delay of less than 1.0 seconds and in vehicle queuing of up to 1 vehicle.

Route 20 at the Main Project Site Driveway

With the installation of a traffic control signal and associated geometric improvements (addition of a left-turn lane on the Route 20 westbound approach), the main Project site driveway intersection with Route 20 is expected to operate at an overall LOS B during the peak hours, with no movement operating below LOS C and residual vehicle queues of up to 14 vehicles (Route 20 eastbound). The Project proponent has committed to design and install a traffic control signal at this intersection with associated geometric improvements subject to receipt of all necessary rights, permits, and approvals (TSWA and conceptual improvement plan follow).

Unsignalized Intersections

Route 20 at Hall Road

The addition of Project-related traffic to this unsignalized intersection was shown to result in a degradation in level of service for through/right-turn movements from the Hall Road approach from LOS B to C and the private driveway approach from LOS D to E during the weekday morning peak hour as a result of a predicted increase in average motorist delay of 2.7 seconds and 19.7 seconds, respectively. Independent of the Project, it was noted that the left-turn movements from Hall Road and all movements from the private driveway located opposite Hall Road are currently operating at or over capacity (defined as LOS "E" or "F", respectively) during one or more peak hours, with residual vehicle queues of up to 4 vehicles. Project-related impacts on these movements were generally defined as an increase in vehicle queuing of up to 1 vehicle.

Route 20 at the 201 Charlton Road and 208 Charlton Road Driveways

Under 2028 Build conditions, the driveway to 201 Charlton Road will be closed and all movements exiting the private driveway are predicted to operate at LOS E during the weekday morning peak-hour, at LOS D during the weekday evening peak-hour and at LOS C during the Saturday midday peak-hour with negligible vehicle queuing.

Route 20 at the 201A Charlton Road Driveway

The driveway to 201A Charlton Road will be closed under 2028 Build conditions.

Route 20 at the Exit-Only Project Site Driveway

All movements exiting the exit-only Project site driveway are predicted to operate at LOS D or better under all analysis conditions with residual vehicle queues of up to 2 vehicles. All movements along Route 20 approaching the Project site driveway were shown to operate at LOS A with negligible vehicle queuing predicted.

Table 9
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak-Hour/Movement	2020 Existing				2028 No-Build				2028 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 20 at The Center at Hobbs Brook Driveway												
<i>Weekday Morning:</i>												
Route 20 EB LT	0.43	16.8	B	2/5	0.44	18.2	B	2/5	0.45	19.6	B	3/5
Route 20 EB TH	0.26	2.0	A	1/2	0.33	2.0	A	2/2	0.35	2.0	A	2/3
Route 20 WB TH	0.44	10.5	B	3/5	0.49	10.6	B	4/6	0.53	10.8	B	4/7
The Center at Hobbs Brook Driveway SB LT	0.15	21.6	C	1/1	0.15	23.3	C	1/1	0.16	25.0	C	1/1
The Center at Hobbs Brook Driveway SB RT	0.07	11.6	B	0/1	0.09	12.8	B	0/1	0.13	14.2	B	1/1
Overall	--	7.0	A	--	--	7.9	A	--	--	8.1	A	--
<i>Weekday Evening:</i>												
Route 20 EB LT	0.65	21.5	C	6/12	0.69	24.9	C	7/13	0.70	26.3	C	7/14
Route 20 EB TH	0.26	3.0	A	2/3	0.30	3.0	A	2/3	0.32	3.0	A	2/4
Route 20 WB TH	0.57	19.3	B	5/8	0.62	19.5	B	7/9	0.63	19.6	B	7/10
The Center at Hobbs Brook Driveway SB LT	0.33	26.5	C	2/3	0.34	28.8	C	2/3	0.35	29.6	C	2/3
The Center at Hobbs Brook Driveway SB RT	0.36	11.2	B	2/5	0.41	13.3	B	3/7	0.42	14.1	B	4/8
Overall	--	12.9	B	--	--	13.8	B	--	--	14.1	B	--
<i>Saturday Midday:</i>												
Route 20 EB LT	0.73	25.7	C	8/16	0.76	29.7	C	8/18	0.78	31.7	C	9/18
Route 20 EB TH	0.26	3.0	A	2/3	0.30	3.0	A	2/3	0.31	3.0	A	2/4
Route 20 WB TH	0.63	21.5	C	6/9	0.66	21.5	C	8/11	0.67	21.6	C	8/11
The Center at Hobbs Brook Driveway SB LT	0.39	30.0	C	2/3	0.40	32.1	C	2/4	0.41	33.0	C	2/4
The Center at Hobbs Brook Driveway SB RT	0.52	13.9	B	5/10	0.56	16.4	B	6/12	0.58	17.5	B	6/13
Overall	--	15.2	B	--	--	16.1	B	--	--	16.6	B	--

See notes at end of table.

Table 9 (Continued)

SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak-Hour/Movement	2020 Existing				2028 No-Build				2028 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 20 at the Main Project Site Driveway												
<i>Weekday Morning:</i>												
Route 20 EB TH/RT	--	--	--	--	--	--	--	--	0.69	13.2	B	8/12
Route 20 WB LT	--	--	--	--	--	--	--	--	0.56	27.3	C	2/5
Route 20 WB TH	--	--	--	--	--	--	--	--	0.29	3.5	A	2/3
Main Project Site Driveway NB LT	--	--	--	--	--	--	--	--	0.58	26.2	C	3/5
Main Project Site Driveway NB RT	--	--	--	--	--	--	--	--	0.06	14.9	B	0/1
Overall	--	--	--	--	--	--	--	--	--	12.2	B	--
<i>Weekday Evening:</i>												
Route 20 EB TH/RT	--	--	--	--	--	--	--	--	0.74	13.9	B	9/13
Route 20 WB LT	--	--	--	--	--	--	--	--	0.48	25.1	C	2/4
Route 20 WB TH	--	--	--	--	--	--	--	--	0.49	4.1	A	4/6
Main Project Site Driveway NB LT	--	--	--	--	--	--	--	--	0.54	25.6	C	3/5
Main Project Site Driveway NB RT	--	--	--	--	--	--	--	--	0.07	15.0	B	1/1
Overall	--	--	--	--	--	--	--	--	--	10.8	B	--
<i>Saturday Midday:</i>												
Route 20 EB TH/RT	--	--	--	--	--	--	--	--	0.75	13.2	B	10/14
Route 20 WB LT	--	--	--	--	--	--	--	--	0.65	33.5	C	3/4
Route 20 WB TH	--	--	--	--	--	--	--	--	0.49	4.1	A	5/6
Main Project Site Driveway NB LT	--	--	--	--	--	--	--	--	0.59	28.7	C	3/5
Main Project Site Driveway NB RT	--	--	--	--	--	--	--	--	0.09	17.0	B	1/2
Overall	--	--	--	--	--	--	--	--	--	11.3	B	--

^aVolume-to-capacity ratio.

^bControl (signal) delay per vehicle in seconds.

^cLevel of service.

^dQueue length in vehicle.

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

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

Unsignalized Intersection/ Peak Hour/Movement	2020 Existing				2028 No-Build				2028 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Route 20 at Hall Road												
<i>Weekday Morning:</i>												
Route 20 EB LT/TH/RT	666	0.0	A	0	813	0.0	A	0	933	0.0	A	0
Route 20 WB LT	77	9.6	A	1	85	10.5	B	1	104	11.5	B	1
Route 20 WB TH/RT	499	0.0	A	0	572	0.0	A	0	677	0.0	A	0
Hall Road NB LT	12	39.3	E	1	13	>50.0	F	1	13	>50.0	F	2
Hall Road NB TH/RT	124	12.8	B	1	134	14.7	B	2	156	17.4	C	2
Driveway SB LT/TH/RT	6	21.6	C	0	6	29.7	D	0	6	49.4	E	1
<i>Weekday Evening:</i>												
Route 20 EB LT/TH/RT	810	0.1	A	0	907	0.1	A	0	962	0.1	A	0
Route 20 WB LT	183	11.1	B	1	199	12.2	B	1	209	12.9	B	2
Route 20 WB TH/RT	861	0.0	A	0	1,014	0.0	A	0	1,072	0.0	A	0
Hall Road NB LT	3	>50.0	F	0	3	>50.0	F	1	3	>50.0	F	1
Hall Road NB TH/RT	220	19.3	C	3	235	25.5	D	4	245	31.7	D	5
Driveway SB LT/TH/RT	9	>50.0	F	2	9	>50.0	F	3	9	>50.0	F	3
<i>Saturday Midday:</i>												
Route 20 EB LT/TH/RT	896	0.0	A	0	993	0.1	A	0	1,055	0.1	A	0
Route 20 WB LT	221	12.4	B	2	234	13.8	B	2	245	15.0	B	2
Route 20 WB TH/RT	910	0.0	A	0	994	0.0	A	0	1,057	0.0	A	0
Hall Road NB LT	13	>50.0	F	2	14	>50.0	F	2	14	>50.0	F	3
Hall Road NB TH/RT	216	16.5	C	2	241	19.5	C	3	251	21.7	C	4
Driveway SB LT/TH/RT	4	>50.0	F	1	4	>50.0	F	1	4	>50.0	F	1

See notes at end of table.

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

Unsignalized Intersection/ Peak Hour/Movement	2020 Existing				2028 No-Build				2028 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Route 20 at the 201 and 208 Charlton Road Driveways												
<i>Weekday Morning:</i>												
Route 20 EB LT/TH/RT	773	0.0	A	0	929	0.0	A	0	1,071	0.1	A	0
Route 20 WB LT/TH/RT	574	0.0	A	0	655	0.0	A	0	781	0.0	A	0
201 Charlton Road Driveway NB LT/TH/RT	3	41.0	E	0	3	>50.0	F	0	--	--	--	--
208 Charlton Road Driveway SB LT/TH/RT	1	38.7	D	0	1	38.0	E	0	1	41.7	E	0
<i>Weekday Evening:</i>												
Route 20 EB LT/TH/RT	1,013	0.0	A	0	1,128	0.0	A	0	1,193	0.0	A	0
Route 20 WB LT/TH/RT	1,038	0.0	A	0	1,207	0.0	A	0	1,277	0.0	A	0
201 Charlton Road Driveway NB LT/TH/RT	2	>50.0	F	0	2	>50.0	F	0	--	--	--	--
208 Charlton Road SB LT/TH/RT	5	23.4	C	0	5	30.5	D	0	5	27.9	D	0
<i>Saturday Midday:</i>												
Route 20 EB LT/TH/RT	1,109	0.0	A	0	1,220	0.0	A	0	1,282	0.1	A	0
Route 20 WB LT/TH/RT	1,127	0.0	A	0	1,224	0.0	A	0	1,300	0.0	A	0
201 Charlton Road Driveway NB LT/TH/RT	3	>50.0	F	1	3	>50.0	F	1	--	--	--	--
208 Charlton Road SB LT/TH/RT	4	13.6	B	0	4	14.4	B	0	4	16.1	C	0
Route 20 at the 201A Charlton Road Driveway												
<i>Weekday Morning:</i>												
Route 20 EB TH/RT	766	0.0	A	0	922	0.0	A	0				
Route 20 WB LT/TH	574	0.0	A	0	654	0.0	A	0				
201A Charlton Road Driveway NB LT/RT	1	25.2	D	0	1	33.3	D	0				
<i>Weekday Evening:</i>												
Route 20 EB TH/RT	1,008	0.0	A	0	1,123	0.0	A	0				
Route 20 WB LT/TH	1,037	0.0	A	0	1,206	0.0	A	0				
201A Charlton Road Driveway NB LT/RT	3	23.2	C	0	3	29.0	D	0				
<i>Saturday Midday:</i>												
Route 20 EB TH/RT	1,103	0.0	A	0	1,214	0.0	A	0				
Route 20 WB LT/TH	1,127	0.0	A	0	1,224	0.0	A	0				
201A Charlton Road Driveway NB LT/RT	5	22.1	C	0	5	26.2	D	0				

Driveway Closed under Build Conditions

See notes at end of table.

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

Unsignalized Intersection/ Peak Hour/Movement	2020 Existing				2028 No-Build				2028 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Route 20 at the Exit-Only Project Site Driveway												
<i>Weekday Morning:</i>												
Route 20 EB TH	--	--	--	--	--	--	--	--	919	0.0	A	0
Route 20 WB TH	--	--	--	--	--	--	--	--	735	0.0	A	0
Exit-Only Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	84	21.8	C	1
<i>Weekday Evening:</i>												
Route 20 EB TH	--	--	--	--	--	--	--	--	1,109	0.0	A	0
Route 20 WB TH	--	--	--	--	--	--	--	--	1,243	0.0	A	0
Exit-Only Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	65	29.1	D	2
<i>Saturday Midday:</i>												
Route 20 EB TH	--	--	--	--	--	--	--	--	1,192	0.0	A	0
Route 20 WB TH	--	--	--	--	--	--	--	--	1,264	0.0	A	0
Exit-Only Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	73	33.0	D	2

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel of service.

^dQueue length in vehicles.

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

TRAFFIC SIGNAL WARRANTS ANALYSIS

A detailed Traffic Signal Warrants Analysis (TSWA) was performed for the main Project site driveway intersection with Route 20 following the methodology defined in the MUTCD.¹⁴

METHODOLOGY

The MUTCD establishes nine warrants or criteria to evaluate a location for the installation (or retention) of a traffic signal; however, satisfaction of a warrant in and of itself does not necessarily indicate that the installation of a traffic signal is the best traffic control solution. An engineering evaluation of the location in question should indicate that the establishment of traffic signal control will improve the overall safety and/or operation of the intersection. Table 11 lists the nine warrants used to evaluate an intersection for traffic signal control as presented in the MUTCD.

Table 11
TRAFFIC SIGNAL WARRANTS

Warrant No.	Description
1	Eight-Hour Vehicular Volume
2	Four-Hour Vehicular Volume
3	Peak-Hour
4	Pedestrian Volume
5	School Crossing
6	Coordinated Signal System
7	Crash Experience
8	Roadway Network
9	Intersection Near a Grade Crossing

Each of the nine traffic signal warrants listed in Table 11 were evaluated for the subject intersection, the results of which follow.

¹⁴Ibid.

ANALYSIS RESULTS

The traffic signal warrants listed in Table 11 were evaluated for the main Project site driveway intersection with Route 20 under following conditions:

- **Design Speed:** >40 mph
- **Traffic Volumes:** 2028 Build average-month conditions¹⁵
- **Geometry:**
 - *Route 20 Eastbound:* one through travel lane and one through/right-turn lane
 - *Route 20 Westbound:* one left-turn lane and two through travel lanes
 - *Main Project Site Driveway:* one left-turn lane and one right-turn lane

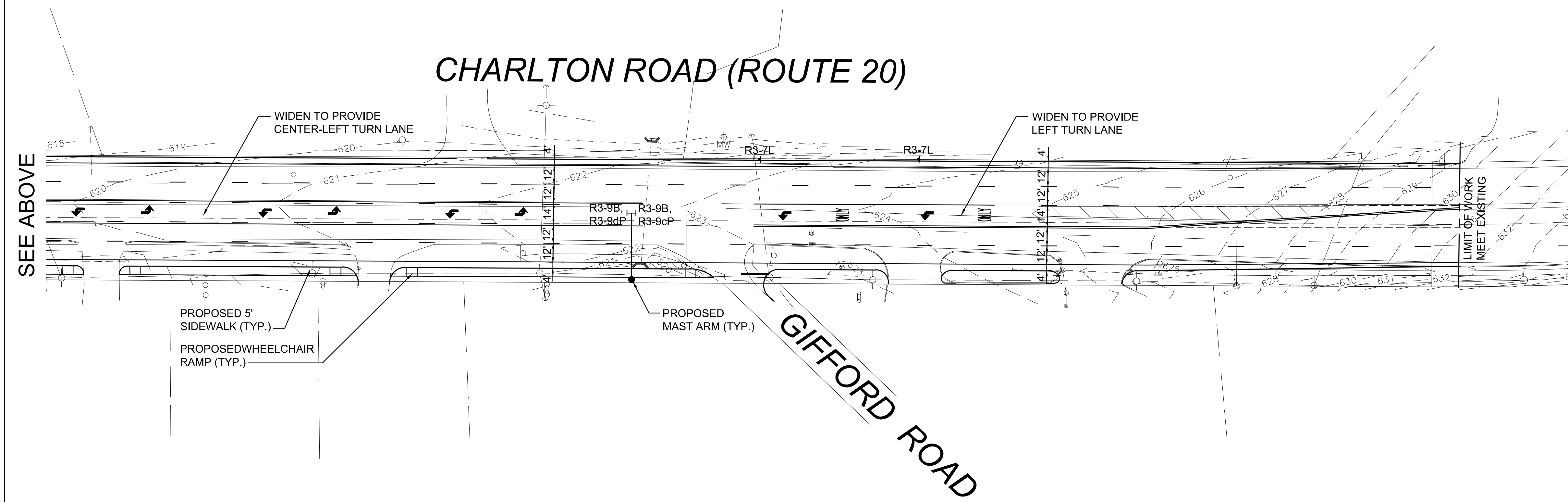
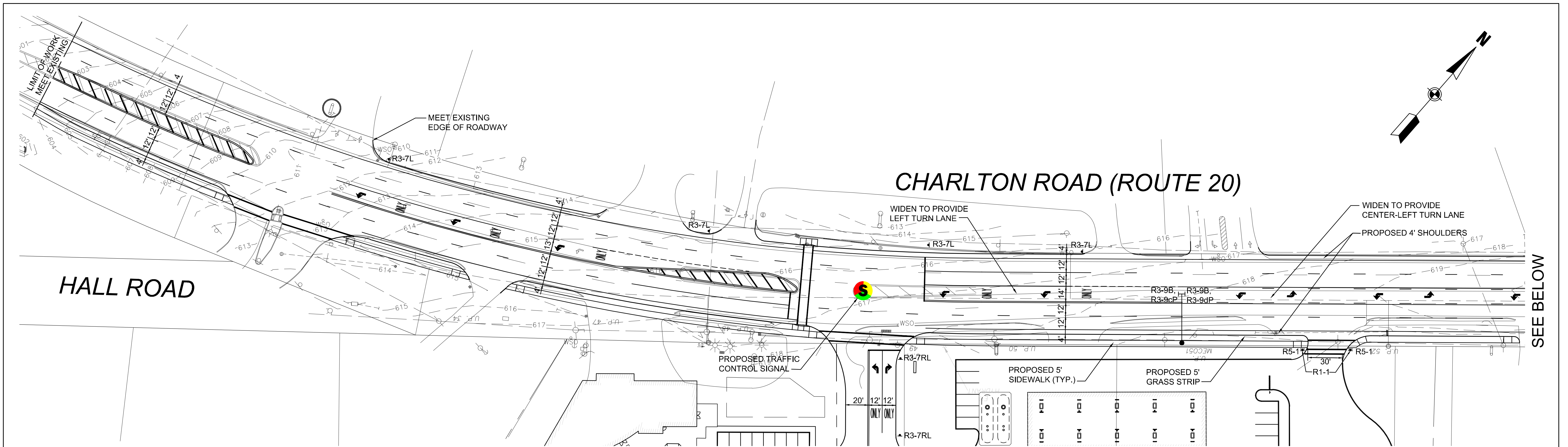
Table 12 summarizes the results of the TSWA for the subject intersection, with the detailed TSWA worksheets and supporting materials attached.

Table 12
TRAFFIC SIGNAL WARRANTS ANALYSIS –
ROUTE 20 AT THE MAIN PROJECT SITE DRIVEWAY

Warrant No.	Description	2028 Build Satisfied?
1	Eight-Hour Vehicular Volume	Yes
2	Four-Hour Vehicular Volume	Yes
3	Peak Hour	Yes
4	Pedestrian Volume	No
5	School Crossing	No
6	Coordinated Signal System	No
7	Crash Experience	No
8	Roadway Network	No
9	Intersection Near a Grade Crossing	No

As can be seen in Table 12, the main Project site driveway intersection with Route 20 was found to satisfy Warrant 1, *Eight-Hour Vehicular Volume*, Warrant 2, *Four-Hour Vehicular Volume*, and Warrant 3, *Peak Hour*, under 2028 Build traffic-volume conditions. As such, it is recommended that a traffic control signal be installed at the intersection and that Route 20 westbound approaching the intersection be widened to provide a left-turn lane as shown on Figure 16. The Project proponent is in active discussions with Cornerstone Bank to relocate the west bank driveway opposite the Project site driveway and into the proposed traffic signal system. To the extent that the parties agree to the driveway relocation, the intersection improvements will incorporate the bank driveway into the intersection and the traffic signal system.

¹⁵Traffic volumes at the intersection were adjusted downward to average-month conditions.



SIGN LEGEND			
R1-1		R3-9b	
R3-7L		R3-9cP	
R3-7RL		R3-9dP	
R5-1			

FIGURE 16
CONCEPTUAL IMPROVEMENT PLAN
ROUTE 20 AT THE MAIN PROJECT
SITE DRIVEWAY

PROJECT:
PROPOSED TRAVEL CENTER
STURBRIDGE, MASSACHUSETTS

PROPONENT:
NOBLE ENERGY REAL ESTATE HOLDINGS LLC
HARTFORD, CONNECTICUT

NO.	REVISIONS	DATE

Vanasse & Associates inc
Transportation Engineers & Planners
35 New England Business Center Drive - Suite 140 - Andover, MA 01810
www.dva.com 978-474-8800

DESIGNED BY: BG DATE: 04/08/21
DRAWN BY: JTG SCALE: 1" = 40'
CHECKED BY: JSD SHEET 1 OF 2

NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
2. BASE PLAN INFORMATION OBTAINED FROM CONTROL POINT ASSOCIATES, INC.



SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersections with Route 20 in accordance with American Association of State Highway and Transportation Officials (AASHTO)¹⁶ requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 13 presents the measured SSD and ISD at the subject intersections.

¹⁶*A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.

Table 13
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
<i>Route 20 at the Exit-Only Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Route 20 approaching from the east	495	--	750+
Route 20 approaching from the west	495	--	750+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Exit-Only Project Site Driveway	495	650	750+
Looking to the west from the Exit-Only Project Site Driveway	495	530	750+
<i>Route 20 at the Main Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Route 20 approaching from the east	495	--	750+
Route 20 approaching from the west	495	--	644
<i>Intersection Sight Distance:</i>			
Looking to the east from the Main Project Site Driveway	495	650	750+
Looking to the west from the Main Project Site Driveway	495	530	730

^aRecommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 55 mph approach speed along Route 20.

^bValues shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed. The gap time for the intersection sight distance values for left-turn movements was adjusted in order to account for the increased time required to cross the additional travel lanes on Route 20.

As can be seen in Table 13, the available lines of sight at the Project site driveway intersections with Route 20 were found to exceed the required minimum distances to function in a safe (SSD) and efficient (ISD) manner based on a 55 mph approach speed along Route 20, which is 3 to 4 mph above the measured 85th percentile vehicle travel speed (51/52 mph) and 5 mph above the posted speed limit (50 mph) in the vicinity of the Project site. We note that the main Project site driveway intersection with Route 20 is proposed to be placed under traffic signal control.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed an assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of a travel center with an associated fueling facility and an electric vehicle discovery center to be located at 195, 197, 201, and 201A Charlton Road (Route 20) in Sturbridge, Massachusetts. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions. Based on this assessment, we have concluded the following with respect to the Project:

1. Using empirical data obtained from operating travel centers that contain similar amenities to those that are proposed as a part of the Project and trip-generation statistics published by the ITE,¹⁷ the Project is expected to generate approximately 2,636 new vehicle trips on an average weekday (two-way, 24-hour volume), with 432 new vehicle trips expected during the weekday morning peak hour, 218 new vehicle trips expected during the weekday evening peak hour and 237 new vehicle trips expected during the Saturday midday peak hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with the majority of the movements at the study intersections shown to operate at LOS D or better under all analysis conditions where an LOS “D” or better is defined as “acceptable” operating conditions;
3. With the installation of a traffic control signal at the main (full-access) Project site driveway intersection with Route 20 and the accompanying construction of a left-turn lane on the Route 20 westbound approach, all movements at the intersection were shown to operate at LOS C or better during the peak hours;
4. All movements exiting from the one-way, exit-only Project site driveway to Route 20 are expected to operate at LOS D or better with a predicted vehicle queue of 2 vehicles;

¹⁷Ibid 1.

5. Independent of the Project, left-turn movements from the Hall Road approach to Route 20 were found to be operating at or over capacity (i.e., LOS E or F, respectively) under 2020 Existing traffic-volume conditions with residual vehicle queues of up to 2 vehicles. Similarly, all movements from the private driveway located opposite Hall Road are currently operating over capacity during the weekday evening and Saturday midday peak hours with residual vehicle queues of up to 2 vehicles. Project-related impacts at this intersection are generally defined as an increase in vehicle queuing of up to 1 vehicle;
6. No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study intersections; and
7. Lines of sight to and from the Project site driveway intersections with Route 20 exceed the recommended minimum distances for the intersections to function in a safe and efficient manner based on the measured travel speed along Route 20 approaching the driveways.

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

RECOMMENDATIONS

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

Project Access

Access to the Project site will be provided by way of two driveways configured as follows: a full access driveway that will intersect the south side of Route 20 approximately 460 feet east of Hall Road that will be placed under traffic signal control and a one-way exit-only driveway that will intersect the south side of Route 20 approximately 855 feet east of Hall Road. The following recommendations are offered with respect to the design and operation of the access to the Project site and internal circulation, many of which are reflected on the Site Plans:

- The Project site driveways should be designed to accommodate the turning and maneuvering requirements of a large tractor semi-trailer combination (WB-67 design vehicle) and the largest anticipated responding emergency vehicle as defined by the Sturbridge Fire Department.
- A review of the warrants specified in the MUTCD¹⁸ for the installation of a traffic control signal indicates that **the installation of a traffic control signal at the full-access Project site driveway is warranted under 2028 Build conditions**. As such, it is recommended that a traffic control signal be installed at the intersection along with the following intersection geometry:
 - ***Route 20 Eastbound:*** one through travel lane and one through/right-turn lane

¹⁸Ibid 2.

- **Route 20 Westbound:** one left-turn lane and two through travel lanes
- **Project Site Driveway:** one left-turn lane and one right-turn lane

The Project proponent is in active discussions with Cornerstone Bank to relocate the west bank driveway opposite the Project site driveway and into the proposed traffic signal system. With the installation of a traffic control signal and the associated geometric improvements, all movements at the signalized intersection are predicted to operate at LOS C or better during the peak hours.

- The one-way, exit only Project site driveway should be 20 feet in width with vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided. In addition, appropriate signs (ONE WAY and DO NOT ENTER) should be installed to regulate the one-way operation of the driveway.
- Drive aisles within the Project site should be a minimum of 23 feet in width where perpendicular parking is proposed in order to allow for vehicle maneuvering.
- Appropriate signs (ONE WAY and DO NOT ENTER) and pavement markings should be provided to regulate and reinforce the one-way traffic flow through the drive-through facility and along the adjacent by-pass lane.
- Vehicles exiting the drive-through window facility and the adjacent by-pass lane should be placed under STOP-sign control with a marked STOP-line provided prior to the proposed crosswalk that crosses the lanes.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the MUTCD.¹⁹
- A sidewalk should be constructed along the Project site frontage on Route 20 that should be connected to the proposed travel center building and the proposed traffic signal at the main Project site driveway, where a marked crosswalk and pedestrian traffic signal equipment and phasing should be provided for crossing Route 20.
- Marked crosswalks and Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided for crossing the Project site driveways and at pedestrian crossings constructed or modified in conjunction with the Project where such accommodations do not currently exist.
- Signs and landscaping located within intersection sight triangle areas should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within sight triangle areas shall be promptly removed where such accumulations would impede sight lines.

Off-Site

Route 20 at Hall Road

Independent of the Project, left-turn movements from the Hall Road approach to Route 20 were identified to be operating at or over capacity with vehicle queues on the approach extending up to

¹⁹Ibid 2.

4 vehicles (through/right-turn lane). In an effort to identify potential improvement measures for the intersection, the Project proponent will perform a detailed TSWA in accordance with the methodology defined in the MUTCD,²⁰ including performing a 12-hour (7:00 AM to 7:00 PM) manual turning movement count (TMC) on an average weekday. The results of the TSWA will be summarized in a technical memorandum and will include a conceptual improvement plan and preliminary cost estimate to the extent that the installation of a traffic control signal is found to be warranted at the intersection. The technical memorandum will be provided to the Town and MassDOT prior to the issuance of a Certificate of Occupancy for the Project.

Transportation Demand Management

The Town of Sturbridge is a member of the WRTA; however, regularly scheduled, fixed-route public transportation services are not currently provided within the Town. In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles (SOVs), the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- A transportation coordinator will be assigned for the Project to coordinate the TDM program.
- Information regarding commuting options will be posted in a central location and/or otherwise made available to employees of the project.
- The transportation coordinator will facilitate a rideshare matching program for employees to encourage carpooling.
- A “welcome packet” will be provided to employees detailing available commuter options and will include the contact information for the transportation coordinator and information to enroll in the employee rideshare program.
- An Emergency Ride Home program for employees that car/vanpool or that arrive to the Project site by means other than in a SOV will be provided at no cost to employees and managed by the transportation coordinator.
- Specific amenities will be provided to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak-traffic-volume periods.
- Pedestrian accommodations will be incorporated within the Project site and will be connected to a proposed sidewalk that will be constructed along the Project site frontage and a crossing of Route 20 that will be a part of the proposed traffic signal system that is to be installed at the main Project site driveway intersection with Route 20.
- Secure bicycle parking should be provided at an appropriate location within the Project site.

²⁰Ibid 2.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program, and to validate the trip projections and parking demands for the Project. The monitoring program will include:

- i. Obtaining traffic-volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii. Performing manual TMCs and vehicle classification counts at the Project site driveway intersections with Route 20 during the weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak periods; and
- iii. Evaluating motor vehicle crash data at the Project site driveway intersections with Route 20.

The monitoring program will commence six months after issuance of the Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed five years after completion of the Project. The results of the monitoring program will be summarized in a report to be provided to the Town of Sturbridge and MassDOT within two months after the completion of the data collection effort. The report will document: i) traffic volumes associated with the Project; ii) motorist delays, vehicle queuing, crash severity and calculated crash rates at the Project site driveway intersection with Route 20; and iii) the elements of the TDM program that have been implemented and use of alternative modes of transportation to SOVs by employees of the Project.

If any of the following conditions are documented as a part of the monitoring program: i) the measured traffic volumes exceed the observed traffic volumes that are presented herein by more than 10 percent on a regular and sustained basis during the monitoring period; ii) there is a material increase in the number of motor vehicle crashes occurring at or in immediate vicinity of the Project site driveway intersection that are attributable to the Project; or iii) operations along Route 20 at the Project site driveways deteriorate to the extent that there is an impact to operations along Route 20 as evidenced by extended vehicle queuing; the Project proponent will identify and undertake corrective measures in conjunction with the appropriate parties and subject to receipt of all necessary rights permits and approvals. These measures may include without limitation:

- Sign and pavement marking installation;
- Traffic signal timing modifications at the Route 20/Project site drive intersection;
- Geometric improvements along Route 20 at and approaching the Project site driveways to the extent that said improvements can be completed within the public right-of-way or on land controlled by the Project proponent; and
- On-site operations and management strategies to include: expansion of the elements of the TDM program to include financial incentives for employees to car/vanpool; scheduling employee shifts to minimize impacts during peak traffic volume periods along Route 20; evaluating implementation of an employee shuttle program with other area businesses; and other such measures that are designed to reduce the overall volume of traffic generated by the Project.

The identified corrective measures, if any, will be documented in the transportation monitoring program report, and will include the appropriate parties responsible for implementation, required approvals, and the timeline for implementation. The status of implementation of the identified improvement measure will be documented in the subsequent monitoring report.

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

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
VEHICLE TRAVEL SPEED DATA
MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING
BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS
GENERAL BACKGROUND TRAFFIC GROWTH
TRIP-GENERATION CALCULATIONS
REMOVAL OF EXISTING SITE TRIPS
CAPACITY ANALYSIS WORKSHEETS
TRAFFIC SIGNAL WARRANT ANALYSIS



PROJECT SITE PLAN



**ZONING INFORMATION TABLE - STURBRIDGE, MA
PROPOSED LOT 1 (#195 & 197 CHARLTON ROAD)**

APPLICANT: NOBLE ENERGY REAL ESTATE HOLDINGS, LLC. OWNER: SCOTT CONNER
 141 BUCKINGHAM STREET, SUITE 301 HARTFORD, CT 06106
 ESTATE OF PHILLIP C. CONNER 7 MEADOWBROOK ROAD SPENCER, MA 01562

ASSESSOR'S MAP ID: 208-02622-195 DEED: BK 60404 PG 267
 208-02622-197

ZONING: COMMERCIAL II (C2)
 EXISTING USE: VACANT TAVERN
 PROPOSED USE: GASOLINE FILLING STATION AND CONVENIENCE STORE WITH DRIVE-THRU

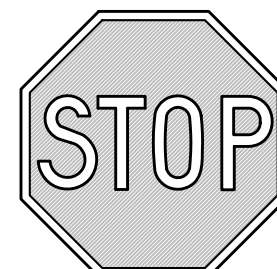
EXISTING ZONING REQUIREMENTS	REQUIRED	EXISTING	PROPOSED
LOT SIZE (MIN.)	1 ACRE	172,262 S.F. (3.95 Ac.)	188,668 S.F. (4.33 Ac.)
FRONTAGE	150 FT.	448.20 FT.	495.92 FT.
STREET SETBACK	25 FT.	52.87 FT.	40.61 FT.
OTHER SETBACK	10 FT.	291.01 FT.	30.32 FT.
MAX. LOT COVERAGE	30%	1.3% (2,223± S.F.)	9.5% (17,950± S.F.)
MAX. BLDG. HEIGHT	35 FT. (3 STORIES)	< 35 FT.	30.62'
MAX IMPERVIOUS SURFACE	N/A	56% (97,663± S.F.)	61% (116,330± S.F.)

PROPOSED PARKING CALCULATION:

	REQUIRED	PROPOSED
Convenience Store (1 Space / 200 s.f. GFA) 3,100 s.f. * (1 Space / 200 s.f.)	16 Spaces	8 Spaces
Proposed Fuel Canopy Fueling Positions		20 Spaces
Proposed Electric Vehicle Charging Stations		10 Spaces
Restaurant (1 Space / 3 Seats) & (1 Space/ Employee) Tenant 1 & Tenant 2 = 34 Seats * (1 Space / 3 Seats) + 10 Employees	22 Spaces	26 Spaces
Frisbies Ice Cream = 26 Seats * (1 Space / 3 Seats) + 4 Employees	13 Spaces	7 Spaces
Total Spaces =	51 Spaces	71 Spaces
Marked Handicap Accessible Spaces (51-75 Spaces) Van Accessible	3 HC Spaces	3 HC Spaces

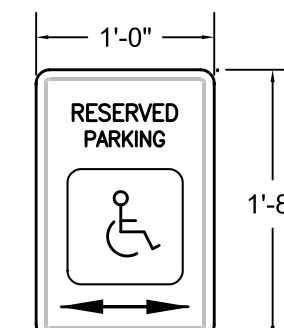
LEGEND

- MON MONUMENT
- N.F. NOT FOUND
- N/F NOW OR FORMERLY
- EX. EXISTING
- PROP. PROPOSED
- INV. INVERT
- HYDRANT
- SEWER MANHOLE
- DRAIN MANHOLE
- UTILITY POLE
- BIT. BITUMINOUS
- CONC. CONCRETE
- CB DRAIN CATCH BASIN
- LSA PROPOSED LANDSCAPE AREA

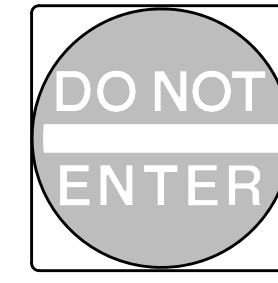


**(A) R1-1
30" STOP SIGN**

SIGN LEGEND:



**(B) R7-8
ACCESSIBLE PARKING SIGN**



**(C) 31-0119
"DO NOT ENTER" SIGN**

**ZONING INFORMATION TABLE - STURBRIDGE, MA
PROPOSED LOT 2 (#201 & 201A CHARLTON ROAD)**

APPLICANT: NOBLE ENERGY REAL ESTATE HOLDINGS, LLC. OWNER: SCOTT CONNER
 141 BUCKINGHAM STREET, SUITE 301 HARTFORD, CT 06106
 ESTATE OF PHILLIP C. CONNER 7 MEADOWBROOK ROAD SPENCER, MA 01562

ASSESSOR'S MAP ID: 208-02622-201 DEED: BK 60404 PG 267
 208-02622-201A

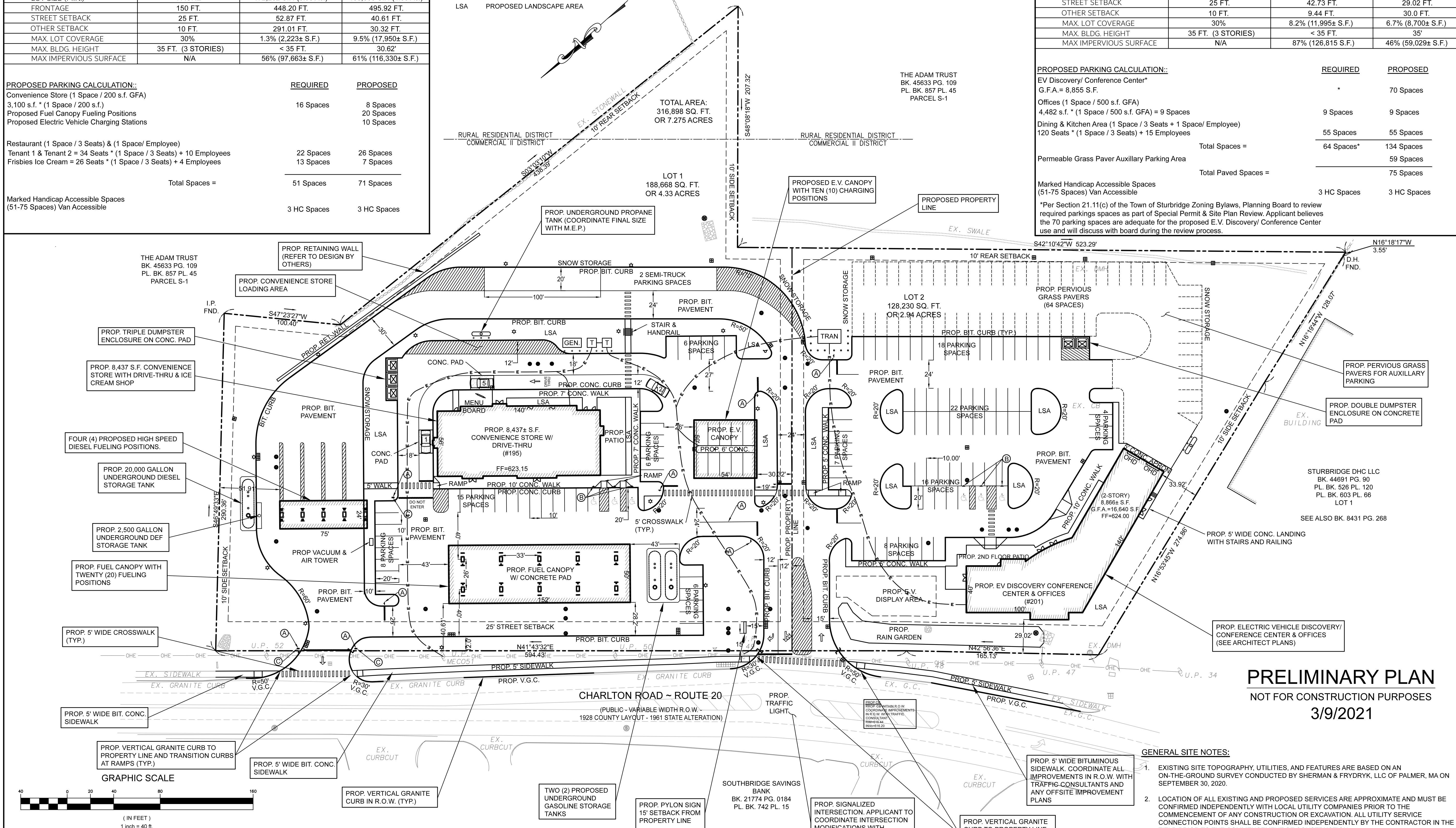
ZONING: COMMERCIAL II (C2)
 EXISTING USE: TOWING COMPANY
 PROPOSED USE: ELECTRIC VEHICLE DISCOVERY / CONFERENCE CENTER, OFFICES, AND DINING AREA

EXISTING ZONING REQUIREMENTS	REQUIRED	EXISTING	PROPOSED
LOT SIZE (MIN.)	1 ACRE	144,636 S.F. (3.32 Ac.)	128,230 S.F. (2.94 Ac.)
FRONTAGE	150 FT.	311.36 FT.	263.64 FT.
STREET SETBACK	25 FT.	42.73 FT.	29.02 FT.
OTHER SETBACK	10 FT.	9.44 FT.	30.0 FT.
MAX. LOT COVERAGE	30%	8.2% (11,995± S.F.)	6.7% (8,700± S.F.)
MAX. BLDG. HEIGHT	35 FT. (3 STORIES)	< 35 FT.	35'
MAX IMPERVIOUS SURFACE	N/A	87% (126,815 S.F.)	46% (59,029± S.F.)

PROPOSED PARKING CALCULATION:

	REQUIRED	PROPOSED
EV Discovery/ Conference Center* G.F.A. = 8,855 S.F.		70 Spaces
Offices (1 Space / 500 s.f. GFA) 4,482 s.f. * (1 Space / 500 s.f. GFA) = 9 Spaces	9 Spaces	9 Spaces
Dining & Kitchen Area (1 Space / 3 Seats + 1 Space/ Employee) 120 Seats * (1 Space / 3 Seats) + 15 Employees	55 Spaces	55 Spaces
Total Spaces =	64 Spaces*	134 Spaces
Permeable Grass Paver Auxiliary Parking Area		59 Spaces
Total Paved Spaces =		75 Spaces
Marked Handicap Accessible Spaces (51-75 Spaces) Van Accessible	3 HC Spaces	3 HC Spaces

*Per Section 21.11(c) of the Town of Sturbridge Zoning Bylaws, Planning Board to review required parking spaces as part of Special Permit & Site Plan Review. Applicant believes the 70 parking spaces are adequate for the proposed E.V. Discovery/ Conference Center use and will discuss with board during the review process.



REVISIONS

NO.	DATE	DESCRIPTION

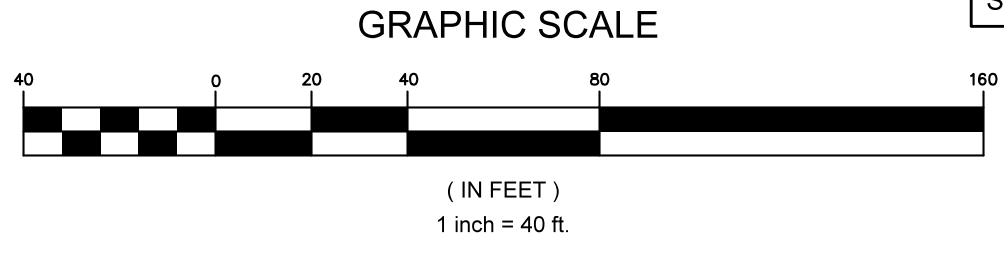
PROJECT: NOBLE ENERGY
 PROPOSED TRAVEL CENTER
 #195, 197, 201, & 201A CHARLTON ROAD (ROUTE 20)
 STURBRIDGE, MA 01566

PREPARED FOR:
 NOBLE ENERGY REAL ESTATE HOLDINGS, LLC.
 131 BUCKINGHAM STREET, SUITE 301
 HARTFORD, CT 06106

ENGINEERING SERVICES
 ENVIRONMENTAL SERVICES
 67 Hall Road
 Sturbridge, MA 01560
 Phone: 774-241-0901
 fax: 774-241-0906

PRELIMINARY PLAN
 NOT FOR CONSTRUCTION PURPOSES
 3/9/2021

- GENERAL SITE NOTES:**
- EXISTING SITE TOPOGRAPHY, UTILITIES, AND FEATURES ARE BASED ON AN ON-THE-GROUND SURVEY CONDUCTED BY SHERMAN & FRYDRYK, LLC OF PALMER, MA ON SEPTEMBER 30, 2020.
 - LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. ALL UTILITY SERVICE CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
 - PROPOSED IMPROVEMENTS APPEARS TO LIE WITHIN THE ZONE X, AREA OF MINIMAL FLOOD HAZARD, ACCORDING TO FEMA FIRMEETTE ONLINE RESOURCES, MAP NO. 25027C0931E, EFFECTIVE DATE JULY 4, 2011.



DIG SAFE NOTE (1-888-344-7233):
 CONTRACTOR REQUIRED TO NOTIFY "DIG SAFE" 72 HOURS PRIOR TO ANY ON-SITE EXCAVATION OR CONSTRUCTION AT 1-888-344-7233. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER AND SEWER DEPARTMENTS TO MARK OUT THEIR UTILITIES.

ISSUE DATE: 3/9/2021
 DRAWN BY: RL CHECKED BY: JAB
 SCALE: 1" = 40'
 PROJECT NO.: 2020-127
SITE LAYOUT PLAN
 C-2.0

AUTOMATIC TRAFFIC RECORDER COUNT DATA



Accurate Counts
978-664-2565

Location : Route 20 NB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707NBV1

Start Time	10/15/202		10/16/202		10/17/202		Daily Average			
	Thu A.M.	P.M.	Fri A.M.	P.M.	Sat A.M.	P.M.	A.M.	P.M.		
12:00	7	208	8	238	16	311	10	252		
12:15	12	218	12	264	13	294	12	259		
12:30	7	237	8	222	11	325	9	261		
12:45	12	187	5	212	10	303	9	234		
01:00	7	195	5	255	5	328	6	259		
01:15	6	220	10	235	5	309	7	255		
01:30	3	253	3	259	6	258	4	257		
01:45	8	228	5	262	8	285	7	258		
02:00	4	202	7	247	5	271	5	240		
02:15	4	217	3	258	2	247	3	241		
02:30	12	256	7	251	2	287	7	265		
02:45	9	243	8	249	8	253	8	248		
03:00	5	260	12	242	2	277	6	260		
03:15	12	256	15	276	6	310	11	281		
03:30	16	282	11	268	5	240	11	263		
03:45	11	273	17	270	8	247	12	263		
04:00	9	247	14	285	3	265	9	266		
04:15	15	262	17	248	8	249	13	253		
04:30	23	285	18	275	4	203	15	254		
04:45	24	234	33	241	11	213	23	229		
05:00	35	262	27	248	9	205	24	238		
05:15	49	223	39	211	14	233	34	222		
05:30	64	209	58	192	17	210	46	204		
05:45	101	226	77	181	24	182	67	196		
06:00	87	192	66	216	28	175	60	194		
06:15	117	178	103	176	41	174	87	176		
06:30	128	168	108	178	30	176	89	174		
06:45	145	139	151	134	67	132	121	135		
07:00	138	119	112	122	42	137	97	126		
07:15	131	106	121	110	50	120	101	112		
07:30	158	78	134	106	85	93	126	92		
07:45	191	77	173	85	87	100	150	87		
08:00	131	67	142	90	92	67	122	75		
08:15	150	82	150	74	76	96	125	84		
08:30	165	51	165	70	115	61	148	61		
08:45	156	64	162	65	145	68	154	66		
09:00	161	60	170	62	143	73	158	65		
09:15	155	55	169	82	169	62	164	66		
09:30	171	45	169	40	184	47	175	44		
09:45	171	33	185	39	207	65	188	46		
10:00	182	37	145	42	183	60	170	46		
10:15	157	30	201	40	221	41	193	37		
10:30	176	33	165	22	258	31	200	29		
10:45	208	16	200	25	289	22	232	21		
11:00	175	34	188	30	255	33	206	32		
11:15	190	20	239	12	287	27	239	20		
11:30	193	19	220	18	302	14	238	17		
11:45	196	11	224	19	298	24	239	18		
Total	4287	7397	4281	7746	3856	8203	4140	7781		
Combined Total	11684		12027		12059		11921			
Peak	10:45	03:00	-	11:00	-	11:00	00:30	-	11:00	03:15
Vol.	766	1071	-	871	-	1142	1265	-	922	1073
P.H.F.	0.921	0.949	-	0.911	-	0.945	0.964	-	0.964	0.955
ADT	ADT 11,923		AADT 11,923							

Accurate Counts
978-664-2565

Location : Route 20 NB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707NBV1

Start Time	Mon 10/12/2020	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	*	38	33	36	50	*	40
01:00	*	*	*	24	23	24	24	*	24
02:00	*	*	*	29	25	27	17	*	24
03:00	*	*	*	44	55	50	21	*	40
04:00	*	*	*	71	82	76	26	*	60
05:00	*	*	*	249	201	225	64	*	171
06:00	*	*	*	477	428	452	166	*	357
07:00	*	*	*	618	540	579	264	*	474
08:00	*	*	*	602	619	610	428	*	550
09:00	*	*	*	658	693	676	703	*	685
10:00	*	*	*	723	711	717	951	*	795
11:00	*	*	*	754	871	812	1142	*	922
12:00 PM	*	*	*	850	936	893	1233	*	1006
01:00	*	*	*	896	1011	954	1180	*	1029
02:00	*	*	*	918	1005	962	1058	*	994
03:00	*	*	*	1071	1056	1064	1074	*	1067
04:00	*	*	*	1028	1049	1038	930	*	1002
05:00	*	*	*	920	832	876	830	*	861
06:00	*	*	*	677	704	690	657	*	679
07:00	*	*	*	380	423	402	450	*	418
08:00	*	*	*	264	299	282	292	*	285
09:00	*	*	*	193	223	208	247	*	221
10:00	*	*	*	116	129	122	154	*	133
11:00	*	*	*	84	79	82	98	*	87
Total	0	0	0	11684	12027	11857	12059	0	11924
% Avg. WkDay	0.0%	0.0%	0.0%	98.5%	101.4%	100.0%			
% Avg. Week	0.0%	0.0%	0.0%	98.0%	100.9%	99.4%	101.1%	0.0%	
AM Peak	-	-	-	11:00	11:00	-	11:00	-	11:00
Vol.	-	-	-	754	871	-	812	-	922
PM Peak	-	-	-	15:00	15:00	-	15:00	-	15:00
Vol.	-	-	-	1071	1056	-	1064	-	1067
Total	0	0	0	11684	12027	11857	12059	0	11924
ADT	ADT 11,923		AADT 11,923						

Accurate Counts
978-664-2565

Location : Route 20 SB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707SBV1

Start Time	10/15/202		10/16/202		10/17/202		Daily Average				
	Thu A.M.	P.M.	Fri A.M.	P.M.	Sat A.M.	P.M.	A.M.	P.M.			
12:00	6	189	18	200	19	282	14	224			
12:15	18	183	16	227	13	255	16	222			
12:30	10	215	9	219	16	272	12	235			
12:45	5	207	12	233	16	278	11	239			
01:00	10	184	10	222	10	285	10	230			
01:15	3	217	8	217	8	268	6	234			
01:30	11	214	6	220	9	266	9	233			
01:45	7	204	3	248	7	269	6	240			
02:00	2	208	2	209	10	271	5	229			
02:15	2	221	1	245	0	266	1	244			
02:30	12	223	6	245	2	248	7	239			
02:45	8	228	3	228	6	238	6	231			
03:00	3	251	5	243	2	221	3	238			
03:15	7	213	6	223	5	293	6	243			
03:30	12	236	2	245	7	272	7	251			
03:45	9	226	13	262	5	248	9	245			
04:00	14	260	15	287	4	242	11	263			
04:15	13	247	14	256	8	253	12	252			
04:30	22	261	17	263	13	220	17	248			
04:45	35	238	20	252	9	231	21	240			
05:00	19	259	25	278	9	246	18	261			
05:15	45	250	39	259	12	191	32	233			
05:30	57	243	43	259	22	218	41	240			
05:45	60	244	48	239	24	211	44	231			
06:00	70	212	69	252	25	199	55	221			
06:15	78	170	92	219	35	170	68	186			
06:30	94	209	82	163	36	168	71	180			
06:45	111	156	102	168	30	171	81	165			
07:00	118	127	96	142	37	145	84	138			
07:15	121	139	133	151	41	143	98	144			
07:30	141	101	129	146	60	113	110	120			
07:45	136	106	116	96	64	115	105	106			
08:00	152	101	137	94	77	68	122	88			
08:15	127	80	141	84	105	109	124	91			
08:30	142	78	106	81	102	81	117	80			
08:45	123	57	137	69	106	62	122	63			
09:00	142	46	116	69	136	63	131	59			
09:15	140	54	130	68	144	74	138	65			
09:30	130	52	124	41	149	62	134	52			
09:45	120	48	149	58	184	52	151	53			
10:00	149	27	160	35	169	48	159	37			
10:15	161	44	147	45	195	52	168	47			
10:30	156	21	164	30	207	31	176	27			
10:45	170	23	176	29	231	29	192	27			
11:00	156	21	201	41	222	29	193	30			
11:15	200	27	195	23	219	27	205	26			
11:30	195	22	187	13	258	32	213	22			
11:45	188	12	212	14	273	17	224	14			
Total	3710	7354	3642	7910	3341	8104	3565	7786			
Combined Total	11064		11552		11445		11351				
Peak	11:00	04:30	-	11:00	03:45	-	11:00	00:30	-	11:00	03:30
Vol.	739	1008	-	795	1068	-	972	1103	-	835	1011
P.H.F.	0.924	0.966		0.938	0.930		0.890	0.968		0.932	0.961
ADT	ADT 11,354		AADT 11,354								

Accurate Counts
978-664-2565

Location : Route 20 SB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707SBV1

Start Time	Mon 10/12/2020	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	*	39	55	47	64	*	53
01:00	*	*	*	31	27	29	34	*	31
02:00	*	*	*	24	12	18	18	*	18
03:00	*	*	*	31	26	28	19	*	25
04:00	*	*	*	84	66	75	34	*	61
05:00	*	*	*	181	155	168	67	*	134
06:00	*	*	*	353	345	349	126	*	275
07:00	*	*	*	516	474	495	202	*	397
08:00	*	*	*	544	521	532	390	*	485
09:00	*	*	*	532	519	526	613	*	555
10:00	*	*	*	636	647	642	802	*	695
11:00	*	*	*	739	795	767	972	*	835
12:00 PM	*	*	*	794	879	836	1087	*	920
01:00	*	*	*	819	907	863	1088	*	938
02:00	*	*	*	880	927	904	1023	*	943
03:00	*	*	*	926	973	950	1034	*	978
04:00	*	*	*	1006	1058	1032	946	*	1003
05:00	*	*	*	996	1035	1016	866	*	966
06:00	*	*	*	747	802	774	708	*	752
07:00	*	*	*	473	535	504	516	*	508
08:00	*	*	*	316	328	322	320	*	321
09:00	*	*	*	200	236	218	251	*	229
10:00	*	*	*	115	139	127	160	*	138
11:00	*	*	*	82	91	86	105	*	93
Total	0	0	0	11064	11552	11308	11445	0	11353
% Avg. WkDay	0.0%	0.0%	0.0%	97.8%	102.2%	100.0%			
% Avg. Week	0.0%	0.0%	0.0%	97.5%	101.8%	99.6%	100.8%	0.0%	
AM Peak	-	-	-	11:00	11:00	-	11:00	-	11:00
Vol.	-	-	-	739	795	-	767	-	835
PM Peak	-	-	-	16:00	16:00	-	16:00	-	16:00
Vol.	-	-	-	1006	1058	-	1032	-	1003
Total	0	0	0	11064	11552	11308	11445	0	11353
ADT	ADT 11,354		AADT 11,354						

MANUAL TURNING MOVEMENT COUNT DATA



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

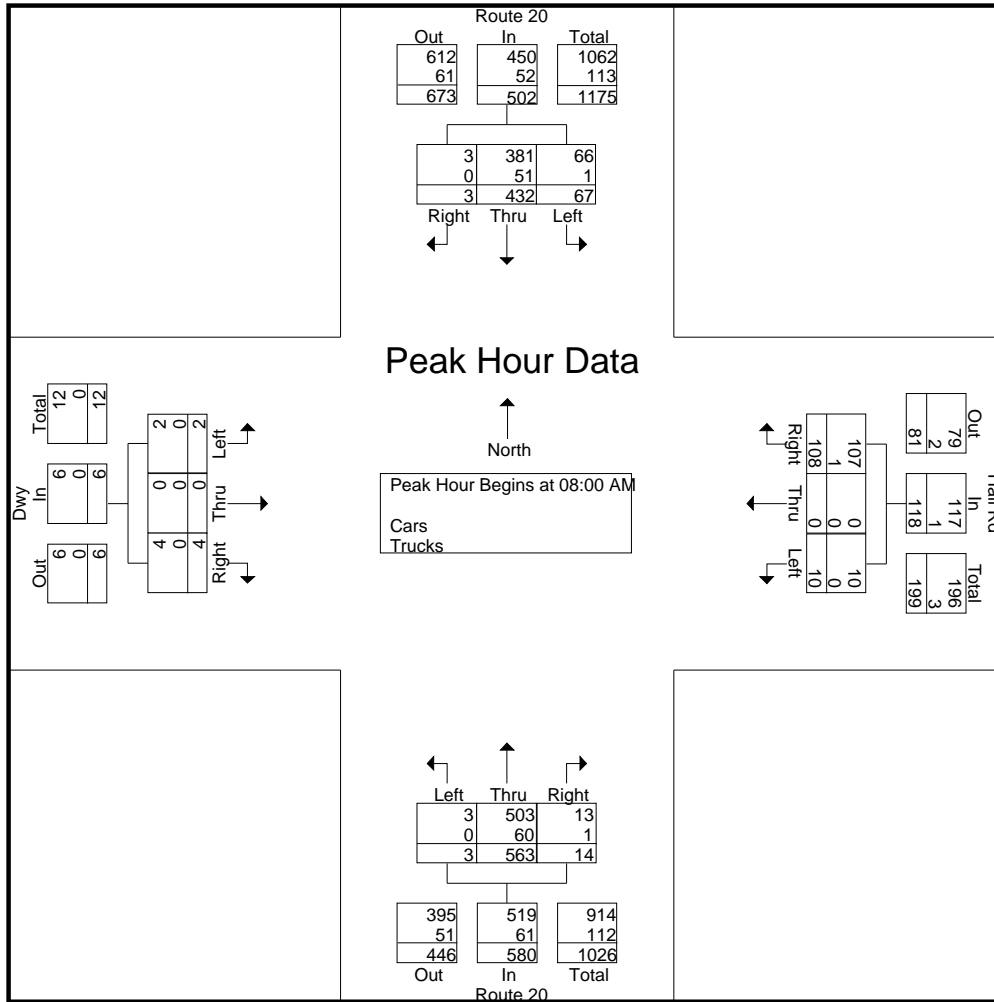
File Name : 87070001
 Site Code : 87070001
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	8	96	1	3	0	11	0	111	0	0	0	0	230
07:15 AM	13	163	0	5	0	24	0	131	1	0	0	0	337
07:30 AM	11	128	0	3	0	17	1	134	1	0	0	0	295
07:45 AM	16	114	1	3	0	20	3	131	2	0	0	0	290
Total	48	501	2	14	0	72	4	507	4	0	0	0	1152
08:00 AM	11	100	1	4	0	17	1	129	3	0	0	1	267
08:15 AM	22	137	0	3	0	24	2	121	7	1	0	1	318
08:30 AM	8	97	2	3	0	25	0	155	3	0	0	2	295
08:45 AM	26	98	0	0	0	42	0	158	1	1	0	0	326
Total	67	432	3	10	0	108	3	563	14	2	0	4	1206
Grand Total	115	933	5	24	0	180	7	1070	18	2	0	4	2358
Apprch %	10.9	88.6	0.5	11.8	0	88.2	0.6	97.7	1.6	33.3	0	66.7	
Total %	4.9	39.6	0.2	1	0	7.6	0.3	45.4	0.8	0.1	0	0.2	
Cars	114	842	5	24	0	177	6	962	17	2	0	4	2153
% Cars	99.1	90.2	100	100	0	98.3	85.7	89.9	94.4	100	0	100	91.3
Trucks	1	91	0	0	0	3	1	108	1	0	0	0	205
% Trucks	0.9	9.8	0	0	0	1.7	14.3	10.1	5.6	0	0	0	8.7

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	11	100	1	112	4	0	17	21	1	129	3	133	0	0	1	1	267
08:15 AM	22	137	0	159	3	0	24	27	2	121	7	130	1	0	1	2	318
08:30 AM	8	97	2	107	3	0	25	28	0	155	3	158	0	0	2	2	295
08:45 AM	26	98	0	124	0	0	42	42	0	158	1	159	1	0	0	1	326
Total Volume	67	432	3	502	10	0	108	118	3	563	14	580	2	0	4	6	1206
% App. Total	13.3	86.1	0.6		8.5	0	91.5		0.5	97.1	2.4		33.3	0	66.7		
PHF	.644	.788	.375	.789	.625	.000	.643	.702	.375	.891	.500	.912	.500	.000	.500	.750	.925
Cars	66	381	3	450	10	0	107	117	3	503	13	519	2	0	4	6	1092
% Cars	98.5	88.2	100	89.6	100	0	99.1	99.2	100	89.3	92.9	89.5	100	0	100	100	90.5
Trucks	1	51	0	52	0	0	1	1	0	60	1	61	0	0	0	0	114
% Trucks	1.5	11.8	0	10.4	0	0	0.9	0.8	0	10.7	7.1	10.5	0	0	0	0	9.5

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	07:15 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	13	163	0	176	4	0	17	21	1	129	3	133	0	0	1	1
+15 mins.	11	128	0	139	3	0	24	27	2	121	7	130	1	0	1	2
+30 mins.	16	114	1	131	3	0	25	28	0	155	3	158	0	0	2	2
+45 mins.	11	100	1	112	0	0	42	42	0	158	1	159	1	0	0	1
Total Volume	51	505	2	558	10	0	108	118	3	563	14	580	2	0	4	6
% App. Total	9.1	90.5	0.4		8.5	0	91.5		0.5	97.1	2.4		33.3	0	66.7	
PHF	.797	.775	.500	.793	.625	.000	.643	.702	.375	.891	.500	.912	.500	.000	.500	.750
Cars	51	462	2	515	10	0	107	117	3	503	13	519	2	0	4	6
% Cars	100	91.5	100	92.3	100	0	99.1	99.2	100	89.3	92.9	89.5	100	0	100	100
Trucks	0	43	0	43	0	0	1	1	0	60	1	61	0	0	0	0
% Trucks	0	8.5	0	7.7	0	0	0.9	0.8	0	10.7	7.1	10.5	0	0	0	0

Accurate Counts

978-664-2565

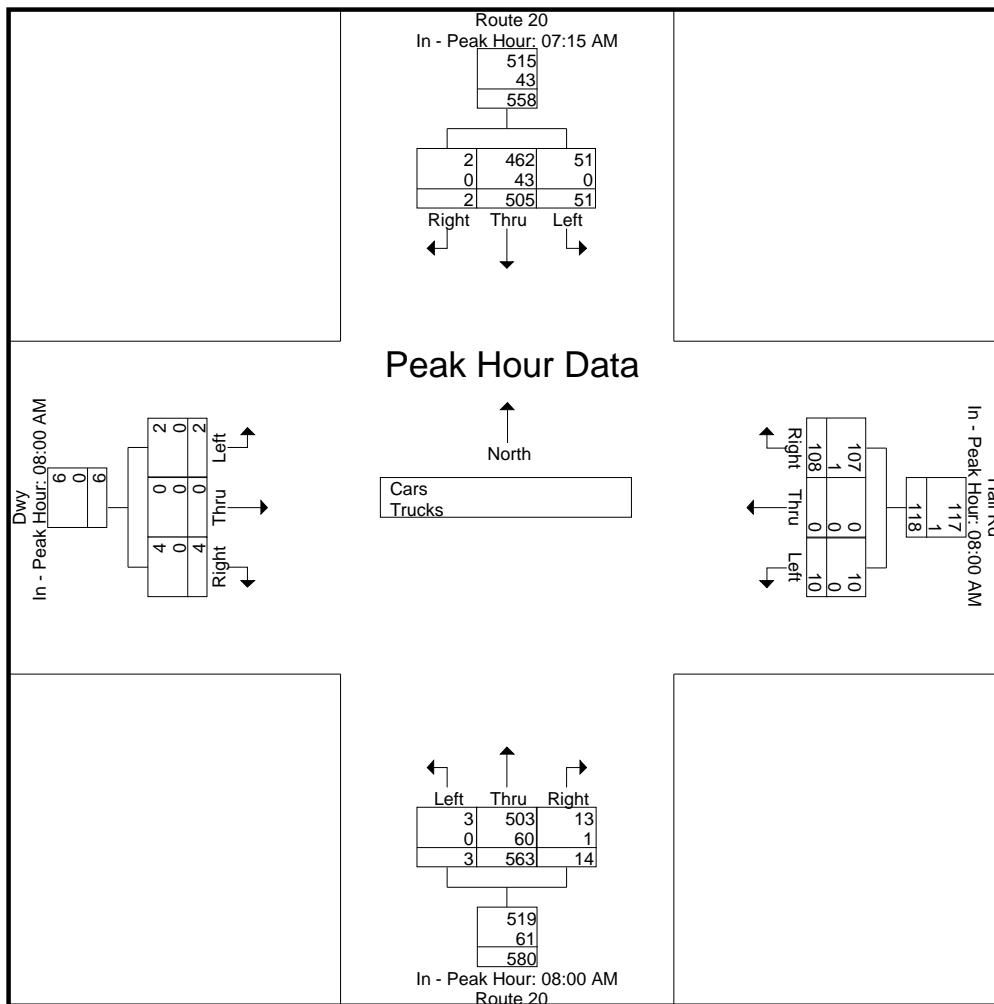
File Name : 87070001

Site Code : 87070001

Start Date : 10/1/2020

Page No : 3

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

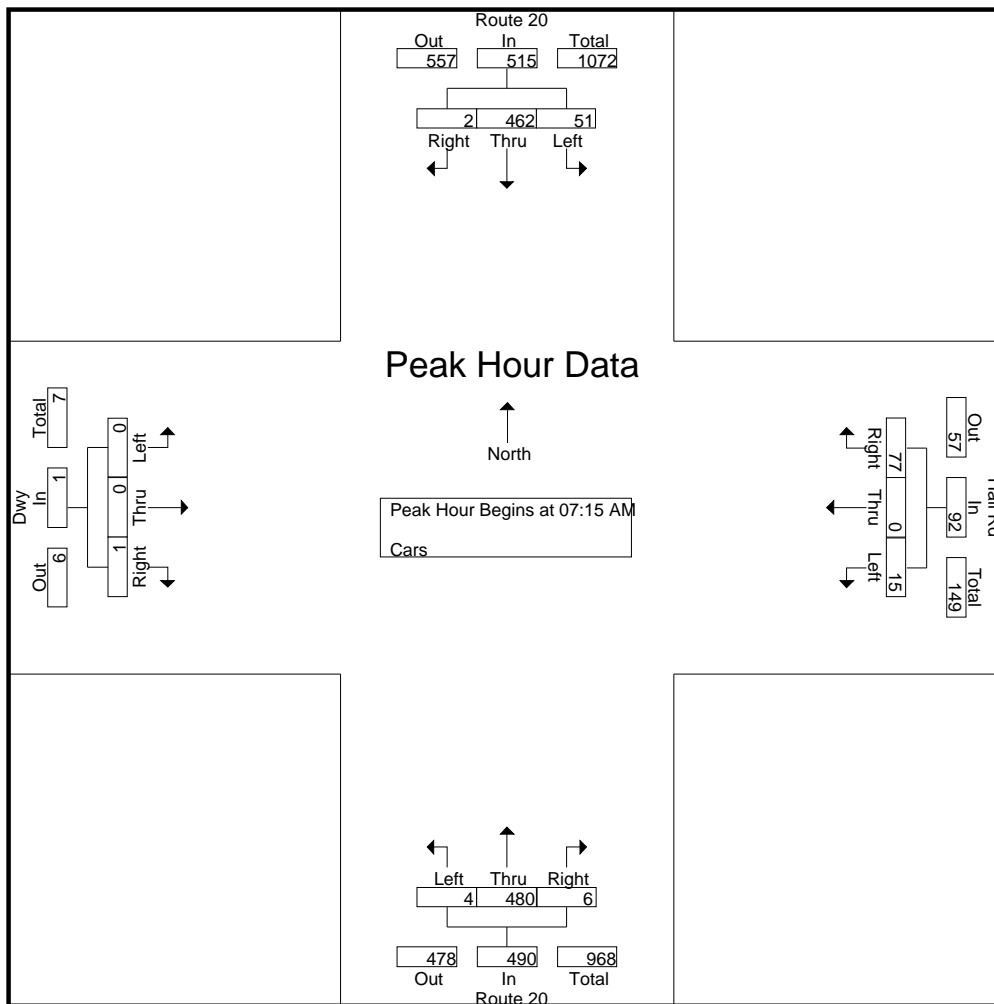
File Name : 87070001
 Site Code : 87070001
 Start Date : 10/1/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	8	89	1	3	0	10	0	100	0	0	0	0	211
07:15 AM	13	153	0	5	0	24	0	114	1	0	0	0	310
07:30 AM	11	116	0	3	0	17	1	123	1	0	0	0	272
07:45 AM	16	103	1	3	0	19	2	122	2	0	0	0	268
Total	48	461	2	14	0	70	3	459	4	0	0	0	1061
08:00 AM	11	90	1	4	0	17	1	121	2	0	0	1	248
08:15 AM	21	120	0	3	0	24	2	110	7	1	0	1	289
08:30 AM	8	86	2	3	0	25	0	135	3	0	0	2	264
08:45 AM	26	85	0	0	0	41	0	137	1	1	0	0	291
Total	66	381	3	10	0	107	3	503	13	2	0	4	1092
Grand Total	114	842	5	24	0	177	6	962	17	2	0	4	2153
Apprch %	11.9	87.6	0.5	11.9	0	88.1	0.6	97.7	1.7	33.3	0	66.7	
Total %	5.3	39.1	0.2	1.1	0	8.2	0.3	44.7	0.8	0.1	0	0.2	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	13	153	0	166	5	0	24	29	0	114	1	115	0	0	0	0	310
07:30 AM	11	116	0	127	3	0	17	20	1	123	1	125	0	0	0	0	272
07:45 AM	16	103	1	120	3	0	19	22	2	122	2	126	0	0	0	0	268
08:00 AM	11	90	1	102	4	0	17	21	1	121	2	124	0	0	1	1	248
Total Volume	51	462	2	515	15	0	77	92	4	480	6	490	0	0	1	1	1098
% App. Total	9.9	89.7	0.4		16.3	0	83.7		0.8	98	1.2		0	0	100		
PHF	.797	.755	.500	.776	.750	.000	.802	.793	.500	.976	.750	.972	.000	.000	.250	.250	.885

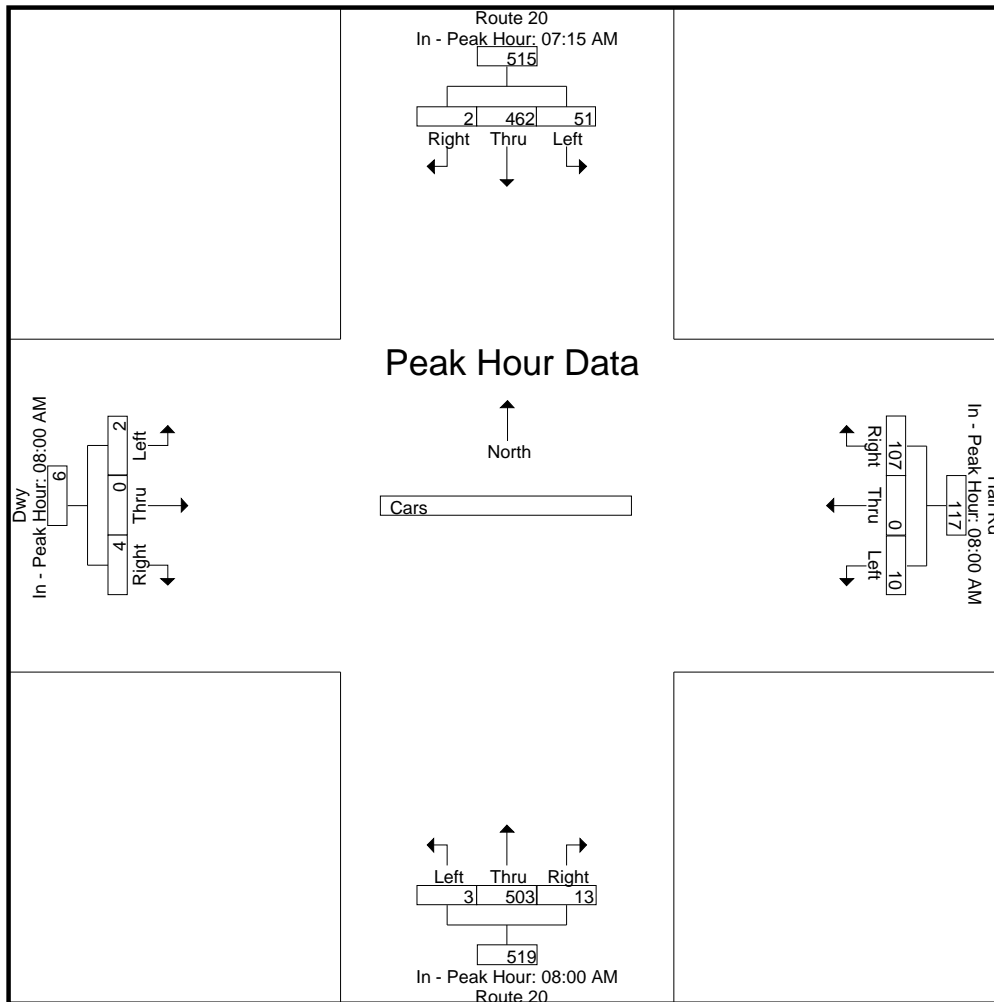
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	07:15 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	13	153	0	166	4	0	17	21	1	121	2	124	0	0	1	1
+15 mins.	11	116	0	127	3	0	24	27	2	110	7	119	1	0	1	2
+30 mins.	16	103	1	120	3	0	25	28	0	135	3	138	0	0	2	2
+45 mins.	11	90	1	102	0	0	41	41	0	137	1	138	1	0	0	1
Total Volume	51	462	2	515	10	0	107	117	3	503	13	519	2	0	4	6
% App. Total	9.9	89.7	0.4		8.5	0	91.5		0.6	96.9	2.5		33.3	0	66.7	
PHF	.797	.755	.500	.776	.625	.000	.652	.713	.375	.918	.464	.940	.500	.000	.500	.750

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

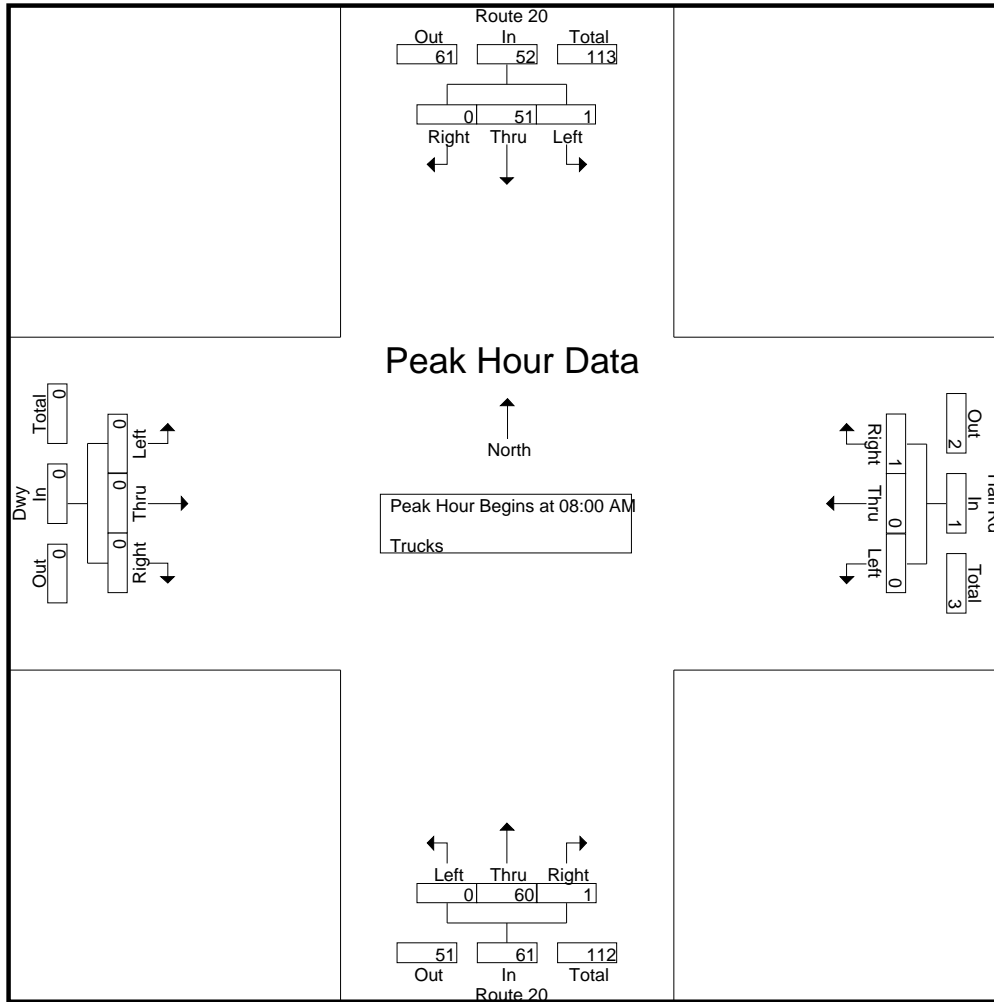
File Name : 87070001
 Site Code : 87070001
 Start Date : 10/1/2020
 Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	7	0	0	0	1	0	11	0	0	0	0	19
07:15 AM	0	10	0	0	0	0	0	17	0	0	0	0	27
07:30 AM	0	12	0	0	0	0	0	11	0	0	0	0	23
07:45 AM	0	11	0	0	0	1	1	9	0	0	0	0	22
Total	0	40	0	0	0	2	1	48	0	0	0	0	91
08:00 AM	0	10	0	0	0	0	0	8	1	0	0	0	19
08:15 AM	1	17	0	0	0	0	0	11	0	0	0	0	29
08:30 AM	0	11	0	0	0	0	0	20	0	0	0	0	31
08:45 AM	0	13	0	0	0	1	0	21	0	0	0	0	35
Total	1	51	0	0	0	1	0	60	1	0	0	0	114
Grand Total	1	91	0	0	0	3	1	108	1	0	0	0	205
Apprch %	1.1	98.9	0	0	0	100	0.9	98.2	0.9	0	0	0	
Total %	0.5	44.4	0	0	0	1.5	0.5	52.7	0.5	0	0	0	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	10	0	10	0	0	0	0	0	8	1	9	0	0	0	0	19
08:15 AM	1	17	0	18	0	0	0	0	0	11	0	11	0	0	0	0	29
08:30 AM	0	11	0	11	0	0	0	0	0	20	0	20	0	0	0	0	31
08:45 AM	0	13	0	13	0	0	1	1	0	21	0	21	0	0	0	0	35
Total Volume	1	51	0	52	0	0	1	1	0	60	1	61	0	0	0	0	114
% App. Total	1.9	98.1	0		0	0	100		0	98.4	1.6		0	0	0		
PHF	.250	.750	.000	.722	.000	.000	.250	.250	.000	.714	.250	.726	.000	.000	.000	.000	.814

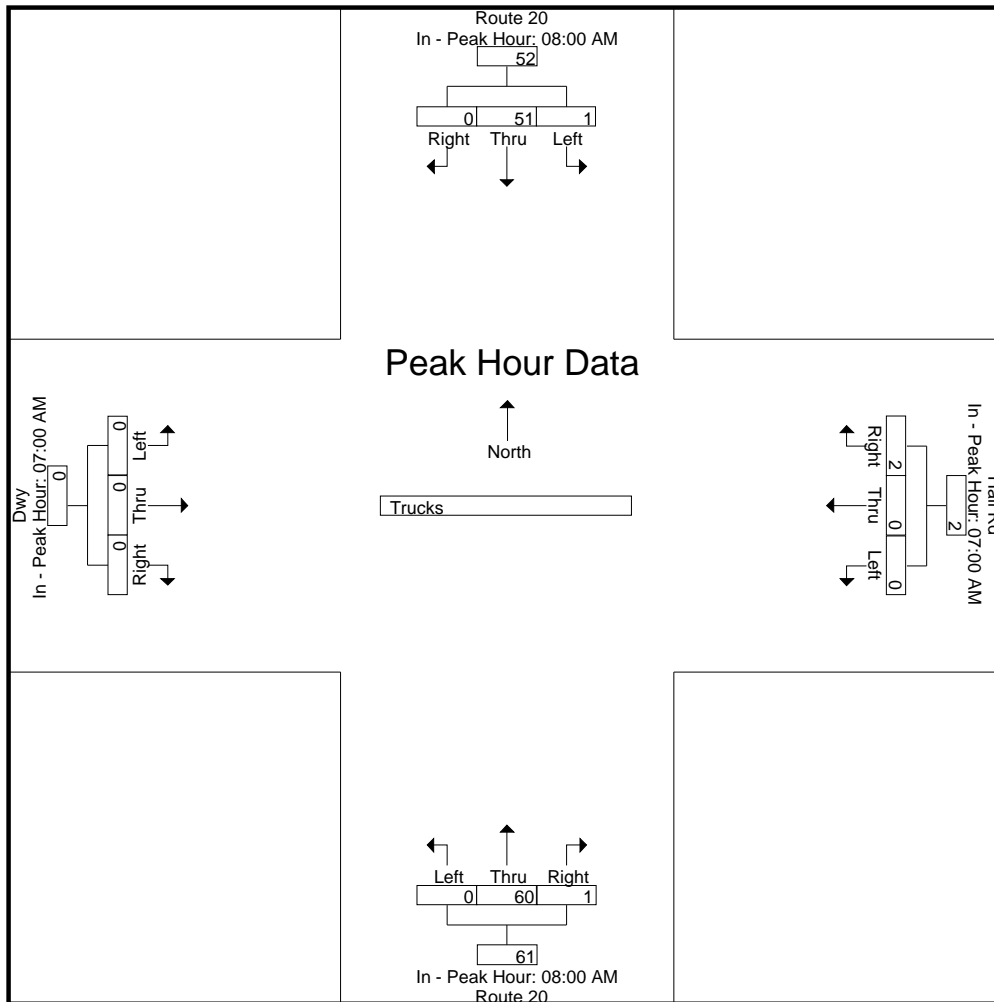
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	08:00 AM				07:00 AM				08:00 AM				07:00 AM			
+0 mins.	0	10	0	10	0	0	1	1	0	8	1	9	0	0	0	0
+15 mins.	1	17	0	18	0	0	0	0	0	11	0	11	0	0	0	0
+30 mins.	0	11	0	11	0	0	0	0	0	20	0	20	0	0	0	0
+45 mins.	0	13	0	13	0	0	1	1	0	21	0	21	0	0	0	0
Total Volume	1	51	0	52	0	0	2	2	0	60	1	61	0	0	0	0
% App. Total	1.9	98.1	0		0	0	100		0	98.4	1.6		0	0	0	
PHF	.250	.750	.000	.722	.000	.000	.500	.500	.000	.714	.250	.726	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070001
Site Code : 87070001
Start Date : 10/1/2020
Page No : 10

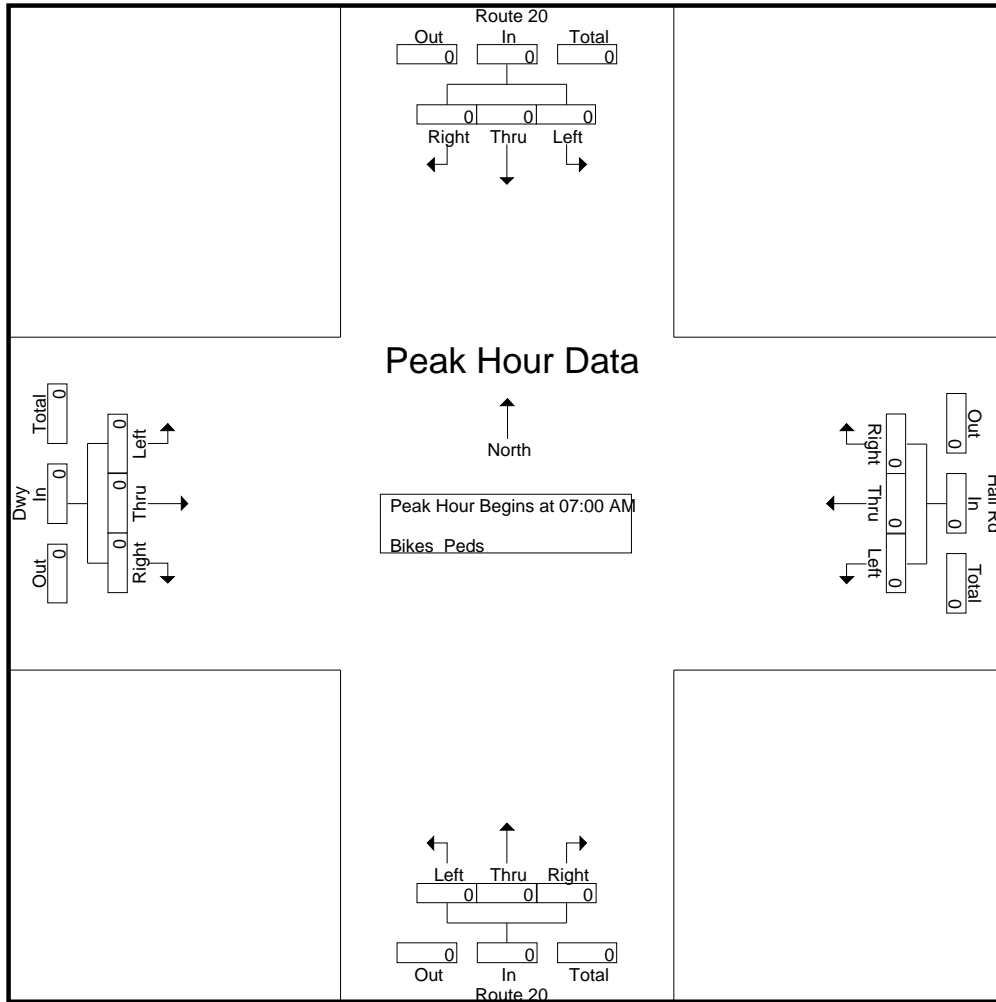
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:00 AM																		
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0			
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

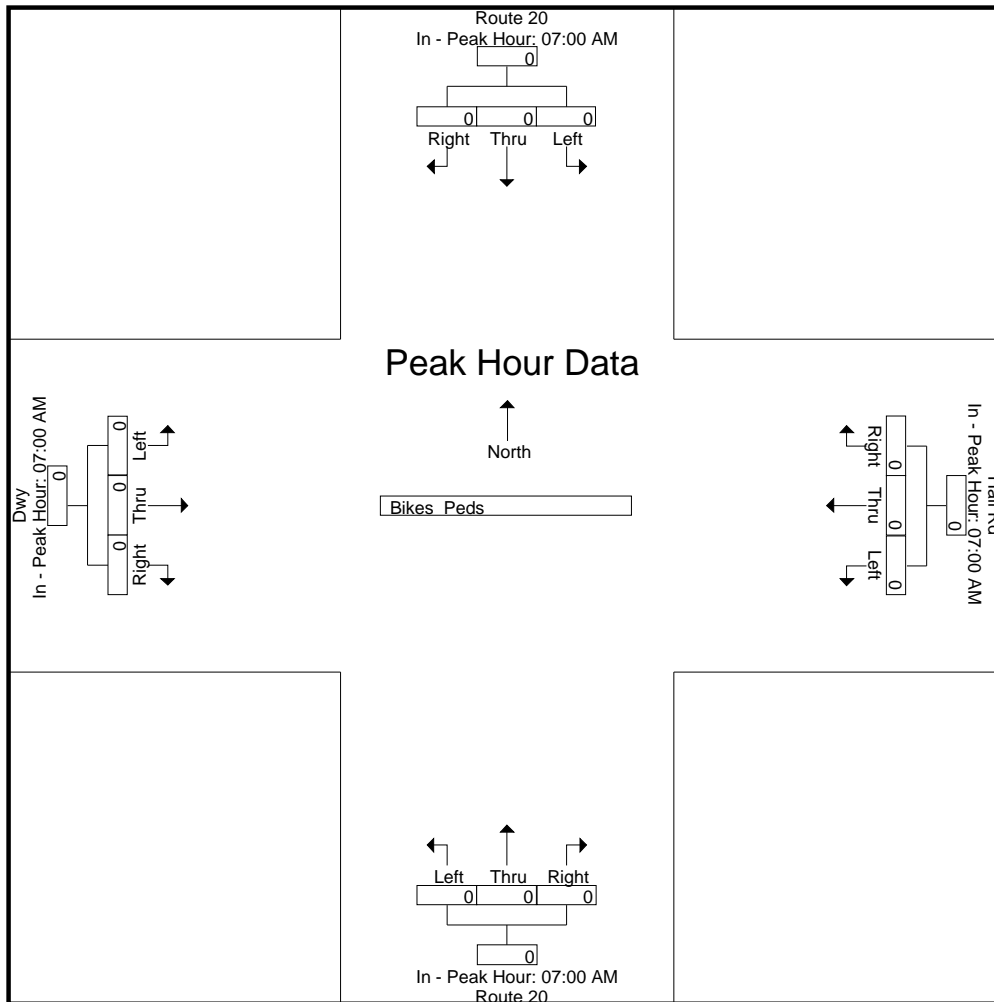
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

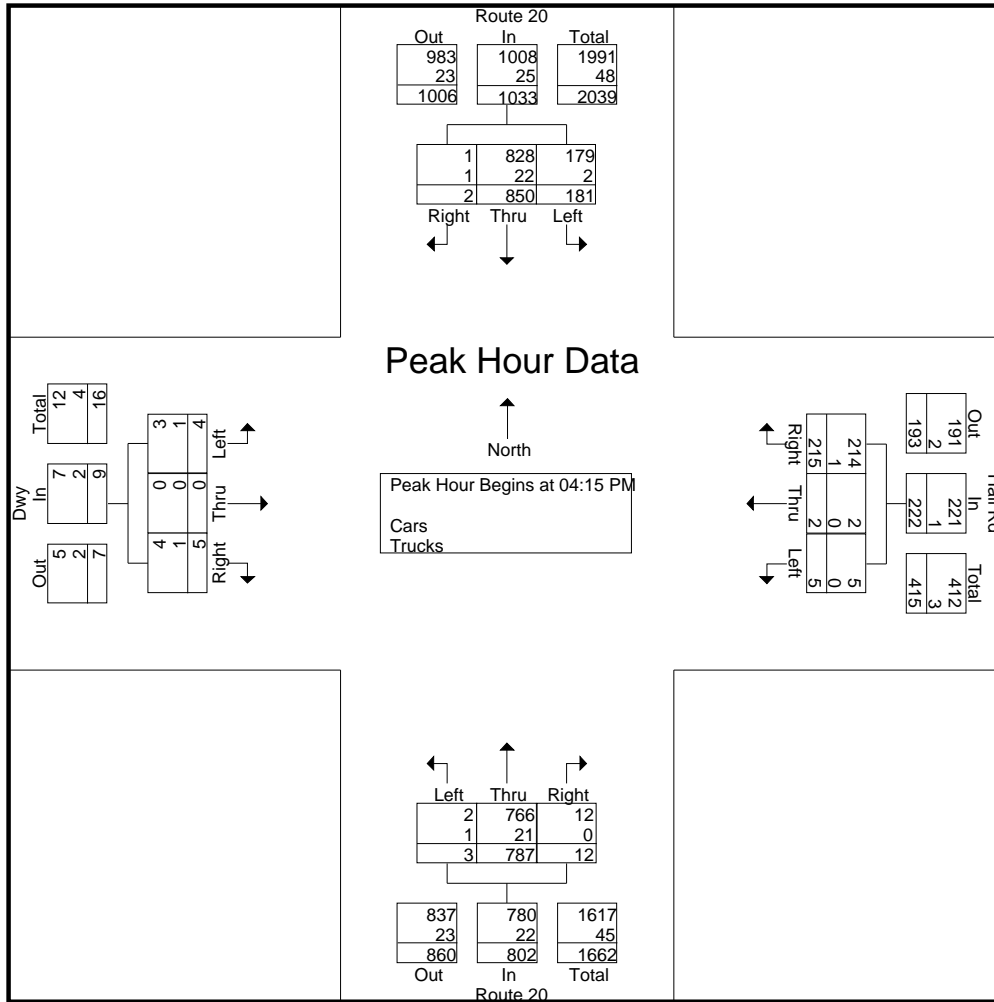
File Name : 87070001
 Site Code : 87070001
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	52	193	0	0	0	45	0	180	1	0	0	1	472
04:15 PM	51	219	1	0	0	65	0	205	3	0	0	2	546
04:30 PM	48	214	0	3	0	49	1	214	1	2	0	3	535
04:45 PM	45	185	0	0	2	47	1	199	2	1	0	0	482
Total	196	811	1	3	2	206	2	798	7	3	0	6	2035
05:00 PM	37	232	1	2	0	54	1	169	6	1	0	0	503
05:15 PM	48	226	0	0	1	46	0	175	2	0	0	0	498
05:30 PM	58	195	0	1	0	39	0	192	0	0	0	2	487
05:45 PM	46	193	0	1	0	39	0	154	2	0	0	2	437
Total	189	846	1	4	1	178	1	690	10	1	0	4	1925
Grand Total	385	1657	2	7	3	384	3	1488	17	4	0	10	3960
Apprch %	18.8	81.1	0.1	1.8	0.8	97.5	0.2	98.7	1.1	28.6	0	71.4	
Total %	9.7	41.8	0.1	0.2	0.1	9.7	0.1	37.6	0.4	0.1	0	0.3	
Cars	381	1611	1	6	3	382	2	1441	17	3	0	8	3855
% Cars	99	97.2	50	85.7	100	99.5	66.7	96.8	100	75	0	80	97.3
Trucks	4	46	1	1	0	2	1	47	0	1	0	2	105
% Trucks	1	2.8	50	14.3	0	0.5	33.3	3.2	0	25	0	20	2.7

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	51	219	1	271	0	0	65	65	0	205	3	208	0	0	2	2	546
04:30 PM	48	214	0	262	3	0	49	52	1	214	1	216	2	0	3	5	535
04:45 PM	45	185	0	230	0	2	47	49	1	199	2	202	1	0	0	1	482
05:00 PM	37	232	1	270	2	0	54	56	1	169	6	176	1	0	0	1	503
Total Volume	181	850	2	1033	5	2	215	222	3	787	12	802	4	0	5	9	2066
% App. Total	17.5	82.3	0.2		2.3	0.9	96.8		0.4	98.1	1.5		44.4	0	55.6		
PHF	.887	.916	.500	.953	.417	.250	.827	.854	.750	.919	.500	.928	.500	.000	.417	.450	.946
Cars	179	828	1	1008	5	2	214	221	2	766	12	780	3	0	4	7	2016
% Cars	98.9	97.4	50.0	97.6	100	100	99.5	99.5	66.7	97.3	100	97.3	75.0	0	80.0	77.8	97.6
Trucks	2	22	1	25	0	0	1	1	1	21	0	22	1	0	1	2	50
% Trucks	1.1	2.6	50.0	2.4	0	0	0.5	0.5	33.3	2.7	0	2.7	25.0	0	20.0	22.2	2.4

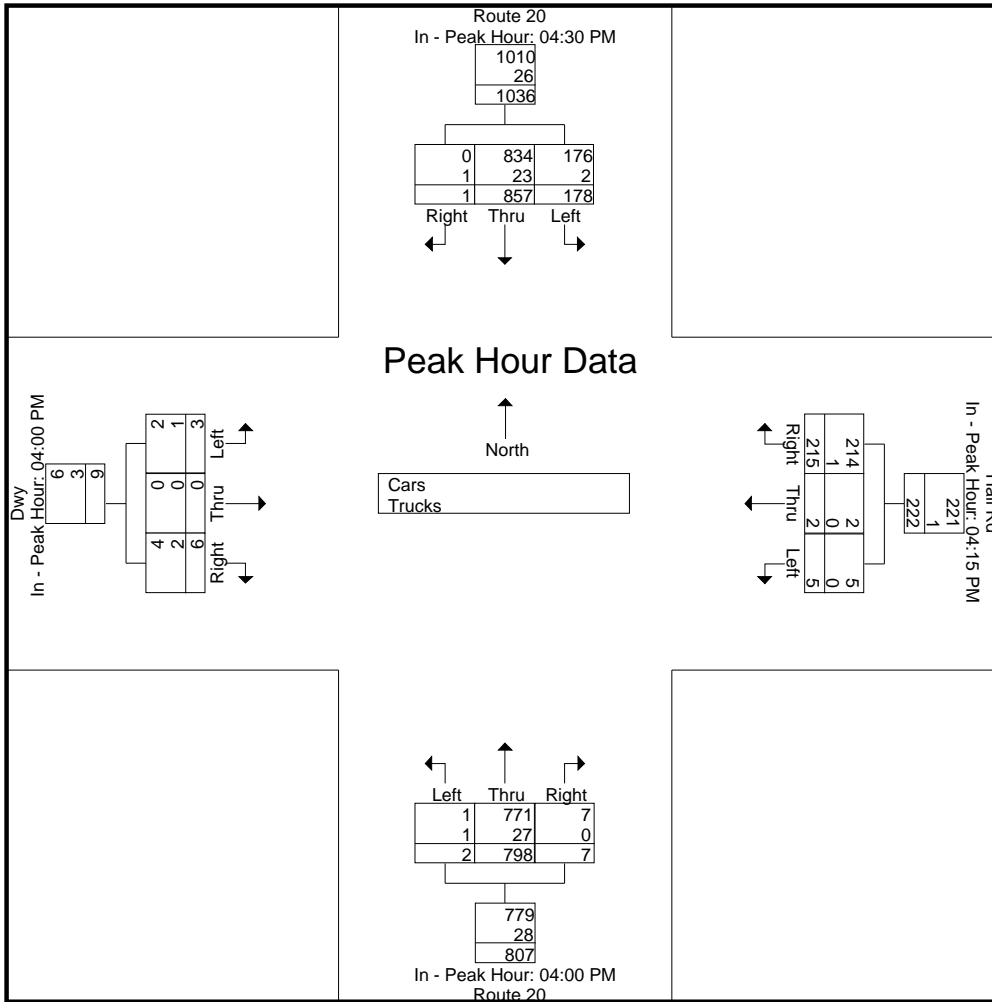
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	04:30 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	48	214	0	262	0	0	65	65	0	180	1	181	0	0	1	1
+15 mins.	45	185	0	230	3	0	49	52	0	205	3	208	0	0	2	2
+30 mins.	37	232	1	270	0	2	47	49	1	214	1	216	2	0	3	5
+45 mins.	48	226	0	274	2	0	54	56	1	199	2	202	1	0	0	1
Total Volume	178	857	1	1036	5	2	215	222	2	798	7	807	3	0	6	9
% App. Total	17.2	82.7	0.1		2.3	0.9	96.8		0.2	98.9	0.9		33.3	0	66.7	
PHF	.927	.923	.250	.945	.417	.250	.827	.854	.500	.932	.583	.934	.375	.000	.500	.450
Cars	176	834	0	1010	5	2	214	221	1	771	7	779	2	0	4	6
% Cars	98.9	97.3	0	97.5	100	100	99.5	99.5	50	96.6	100	96.5	66.7	0	66.7	66.7
Trucks	2	23	1	26	0	0	1	1	1	27	0	28	1	0	2	3
% Trucks	1.1	2.7	100	2.5	0	0	0.5	0.5	50	3.4	0	3.5	33.3	0	33.3	33.3

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070001
Site Code : 87070001
Start Date : 10/1/2020
Page No : 4

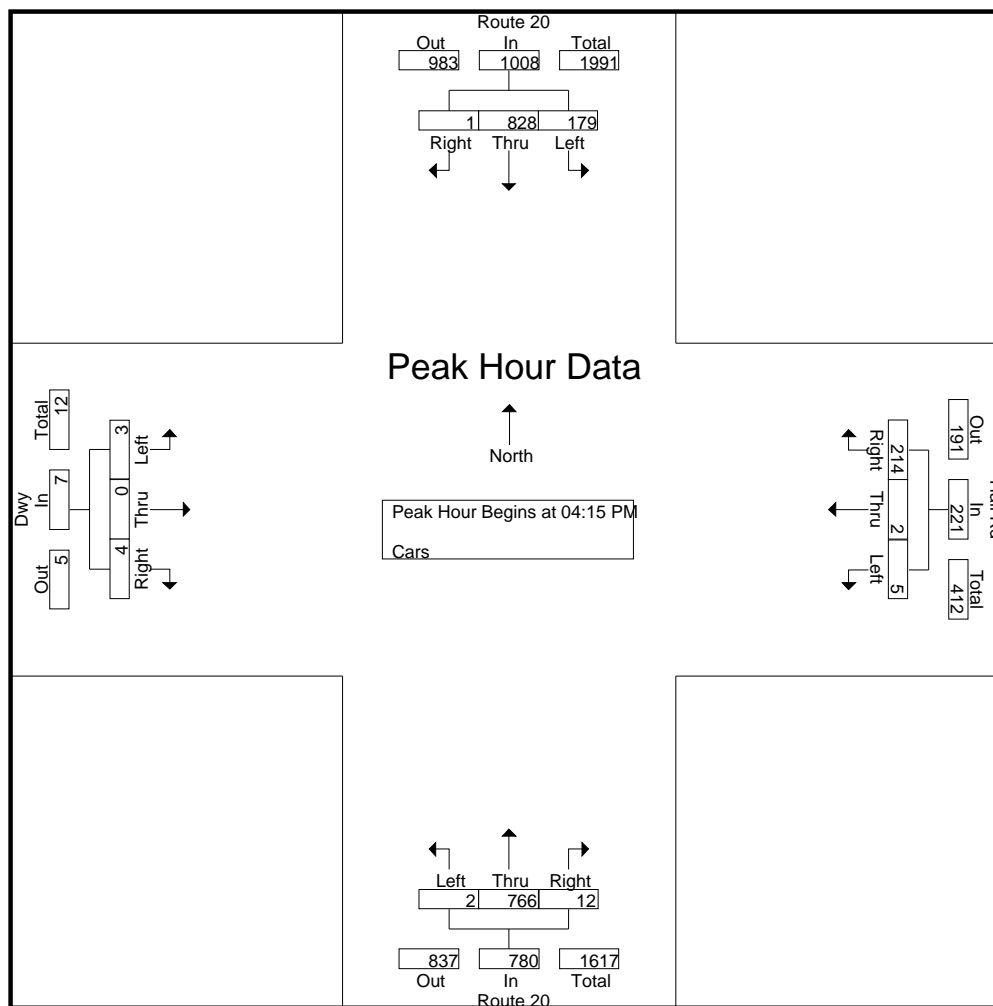
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Cars

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	51	187	0	0	0	44	0	169	1	0	0	0	452
04:15 PM	51	214	1	0	0	64	0	199	3	0	0	2	534
04:30 PM	46	210	0	3	0	49	1	207	1	2	0	2	521
04:45 PM	45	180	0	0	2	47	0	196	2	0	0	0	472
Total	193	791	1	3	2	204	1	771	7	2	0	4	1979
05:00 PM	37	224	0	2	0	54	1	164	6	1	0	0	489
05:15 PM	48	220	0	0	1	46	0	172	2	0	0	0	489
05:30 PM	57	188	0	0	0	39	0	184	0	0	0	2	470
05:45 PM	46	188	0	1	0	39	0	150	2	0	0	2	428
Total	188	820	0	3	1	178	1	670	10	1	0	4	1876
Grand Total	381	1611	1	6	3	382	2	1441	17	3	0	8	3855
Apprch %	19.1	80.8	0.1	1.5	0.8	97.7	0.1	98.7	1.2	27.3	0	72.7	
Total %	9.9	41.8	0	0.2	0.1	9.9	0.1	37.4	0.4	0.1	0	0.2	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	51	214	1	266	0	0	64	64	0	199	3	202	0	0	2	2	534
04:30 PM	46	210	0	256	3	0	49	52	1	207	1	209	2	0	2	4	521
04:45 PM	45	180	0	225	0	2	47	49	0	196	2	198	0	0	0	0	472
05:00 PM	37	224	0	261	2	0	54	56	1	164	6	171	1	0	0	1	489
Total Volume	179	828	1	1008	5	2	214	221	2	766	12	780	3	0	4	7	2016
% App. Total	17.8	82.1	0.1		2.3	0.9	96.8		0.3	98.2	1.5		42.9	0	57.1		
PHF	.877	.924	.250	.947	.417	.250	.836	.863	.500	.925	.500	.933	.375	.000	.500	.438	.944

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	04:30 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	46	210	0	256	0	0	64	64	0	199	3	202	0	0	2	2
+15 mins.	45	180	0	225	3	0	49	52	1	207	1	209	2	0	2	4
+30 mins.	37	224	0	261	0	2	47	49	0	196	2	198	0	0	0	0
+45 mins.	48	220	0	268	2	0	54	56	1	164	6	171	1	0	0	1
Total Volume	176	834	0	1010	5	2	214	221	2	766	12	780	3	0	4	7
% App. Total	17.4	82.6	0		2.3	0.9	96.8		0.3	98.2	1.5		42.9	0	57.1	
PHF	.917	.931	.000	.942	.417	.250	.836	.863	.500	.925	.500	.933	.375	.000	.500	.438

Accurate Counts

978-664-2565

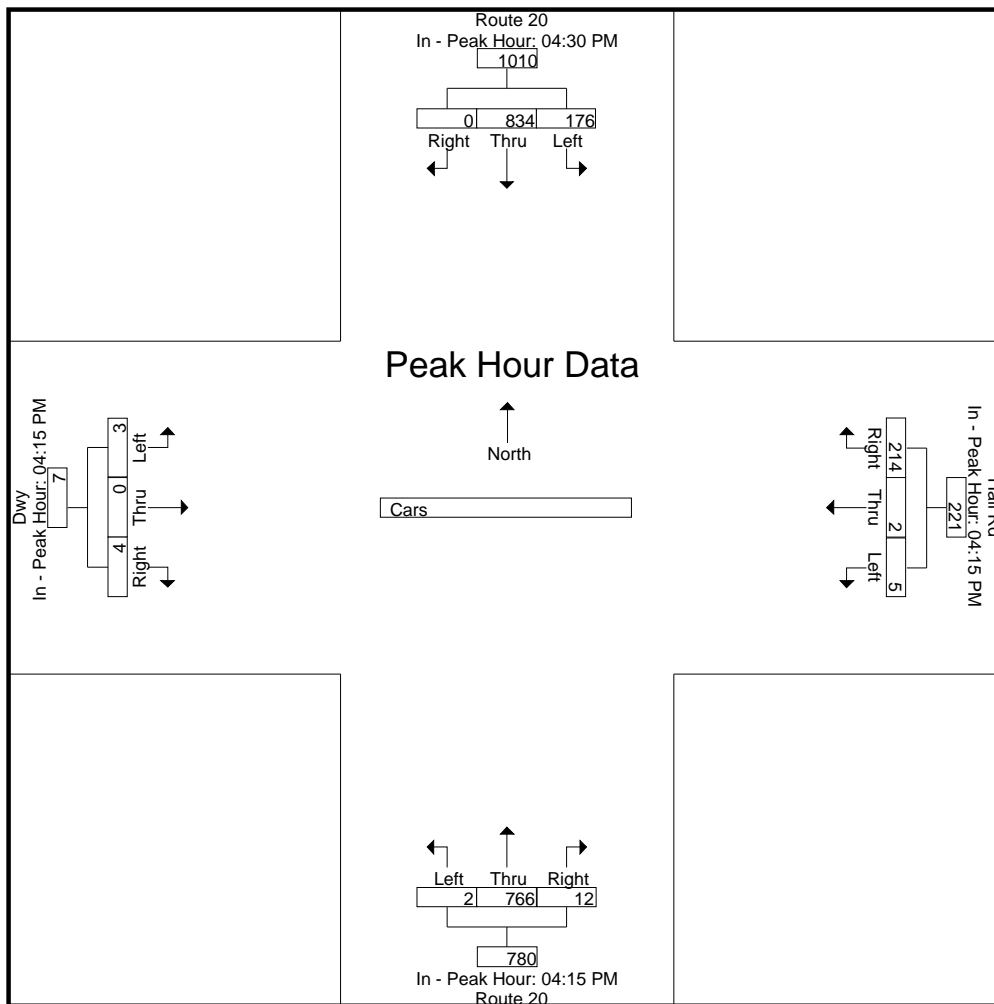
File Name : 87070001

Site Code : 87070001

Start Date : 10/1/2020

Page No : 6

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

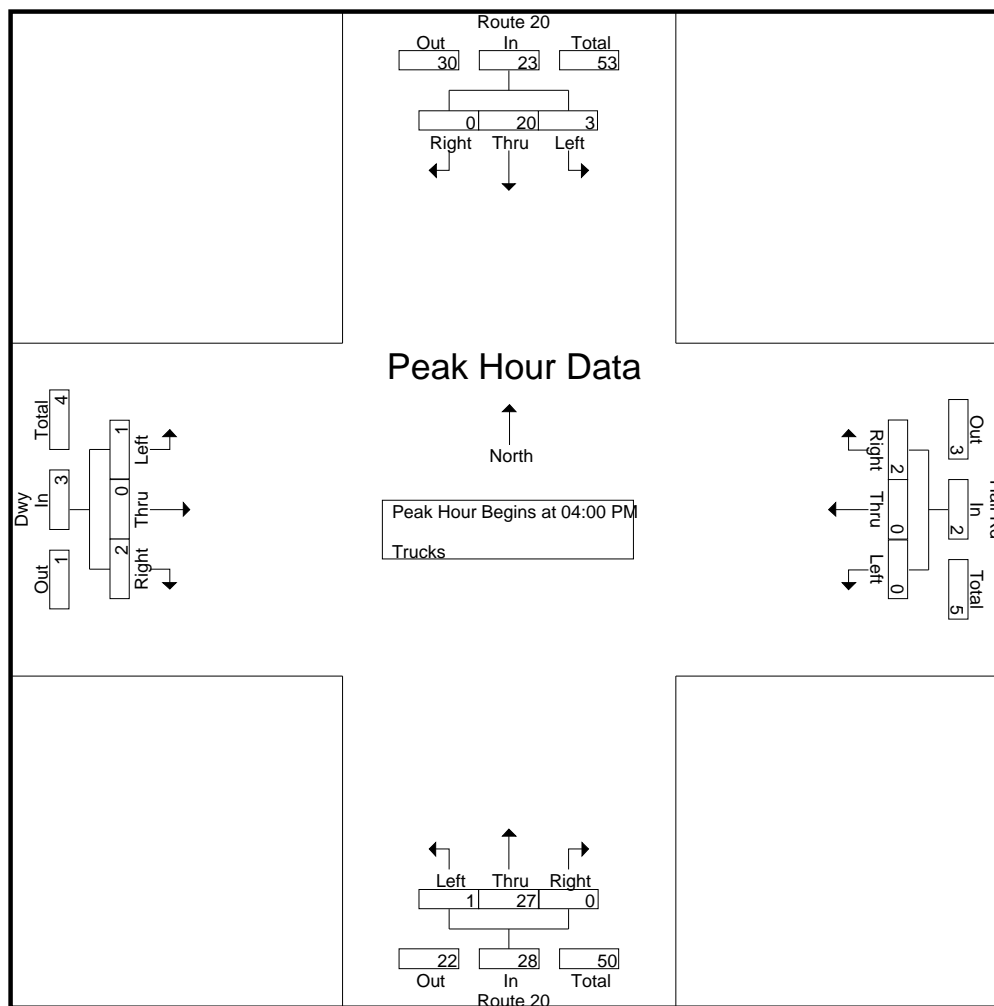
File Name : 87070001
 Site Code : 87070001
 Start Date : 10/1/2020
 Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	1	6	0	0	0	1	0	11	0	0	0	1	20
04:15 PM	0	5	0	0	0	1	0	6	0	0	0	0	12
04:30 PM	2	4	0	0	0	0	0	7	0	0	0	1	14
04:45 PM	0	5	0	0	0	0	1	3	0	1	0	0	10
Total	3	20	0	0	0	2	1	27	0	1	0	2	56
05:00 PM	0	8	1	0	0	0	0	5	0	0	0	0	14
05:15 PM	0	6	0	0	0	0	0	3	0	0	0	0	9
05:30 PM	1	7	0	1	0	0	0	8	0	0	0	0	17
05:45 PM	0	5	0	0	0	0	0	4	0	0	0	0	9
Total	1	26	1	1	0	0	0	20	0	0	0	0	49
Grand Total	4	46	1	1	0	2	1	47	0	1	0	2	105
Apprch %	7.8	90.2	2	33.3	0	66.7	2.1	97.9	0	33.3	0	66.7	
Total %	3.8	43.8	1	1	0	1.9	1	44.8	0	1	0	1.9	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	6	0	7	0	0	1	1	0	11	0	11	0	0	1	1	20
04:15 PM	0	5	0	5	0	0	1	1	0	6	0	6	0	0	0	0	12
04:30 PM	2	4	0	6	0	0	0	0	0	7	0	7	0	0	1	1	14
04:45 PM	0	5	0	5	0	0	0	0	1	3	0	4	1	0	0	1	10
Total Volume	3	20	0	23	0	0	2	2	1	27	0	28	1	0	2	3	56
% App. Total	13	87	0	100	0	0	100	100	3.6	96.4	0	100	33.3	0	66.7	100	
PHF	.375	.833	.000	.821	.000	.000	.500	.500	.250	.614	.000	.636	.250	.000	.500	.750	.700

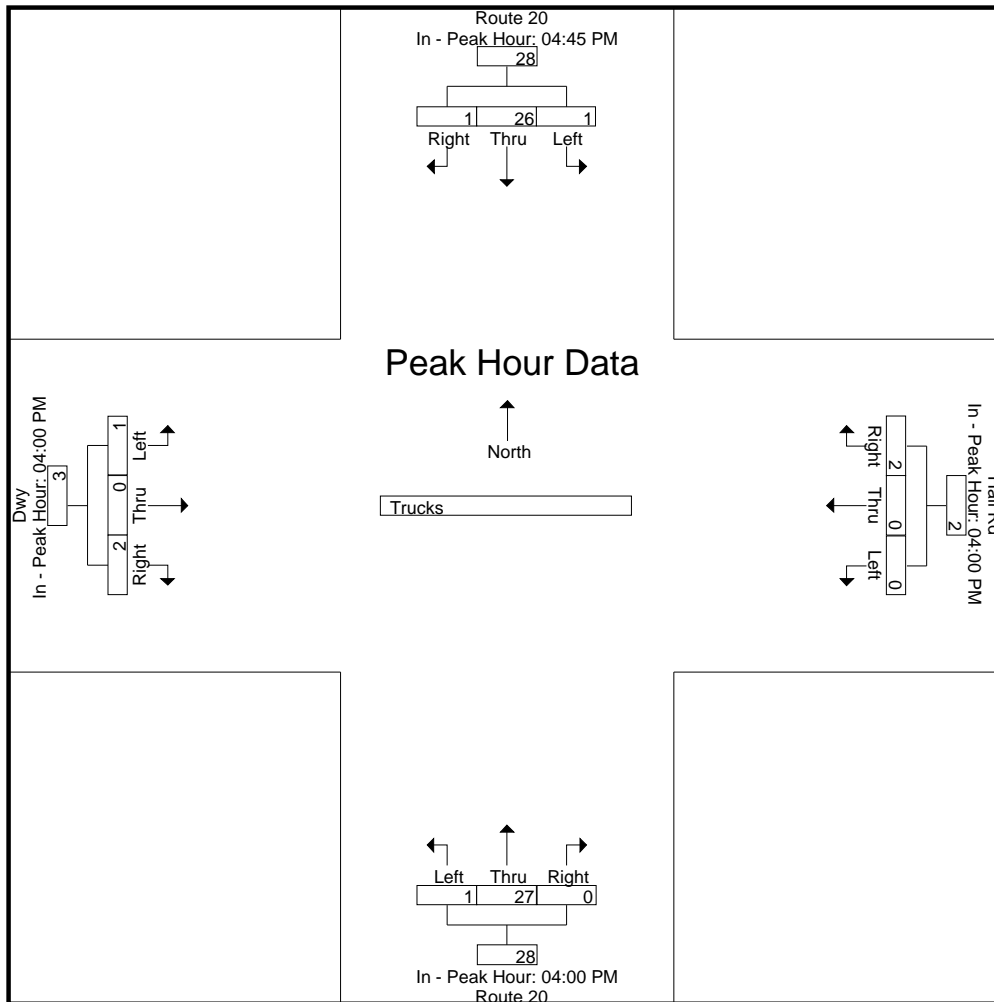
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	04:45 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	5	0	5	0	0	1	1	0	11	0	11	0	0	1	1
+15 mins.	0	8	1	9	0	0	1	1	0	6	0	6	0	0	0	0
+30 mins.	0	6	0	6	0	0	0	0	0	7	0	7	0	0	1	1
+45 mins.	1	7	0	8	0	0	0	0	1	3	0	4	1	0	0	1
Total Volume	1	26	1	28	0	0	2	2	1	27	0	28	1	0	2	3
% App. Total	3.6	92.9	3.6		0	0	100		3.6	96.4	0		33.3	0	66.7	
PHF	.250	.813	.250	.778	.000	.000	.500	.500	.250	.614	.000	.636	.250	.000	.500	.750

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070001
Site Code : 87070001
Start Date : 10/1/2020
Page No : 10

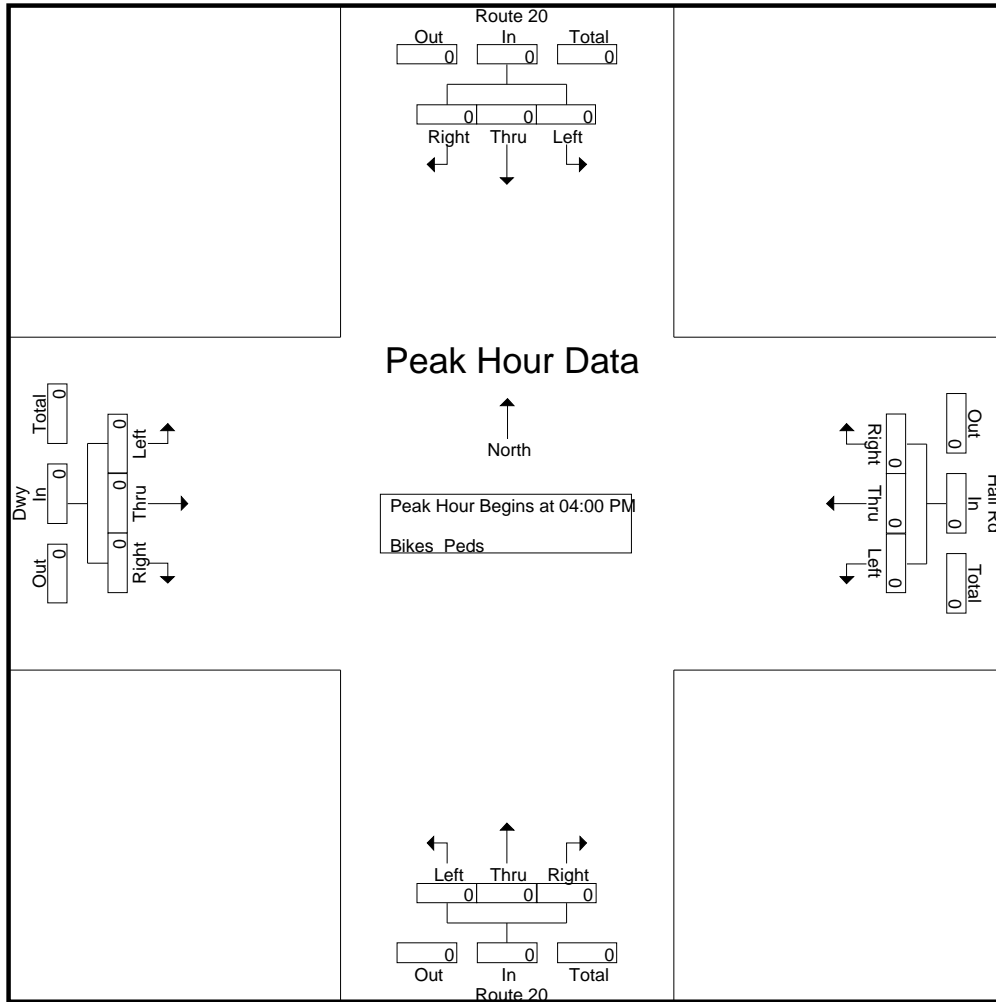
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Exclu. Total	Inclu. Total	Int. Total			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds						
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0							
Total %																	0	0				

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total				
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 04:00 PM																				
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0					
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

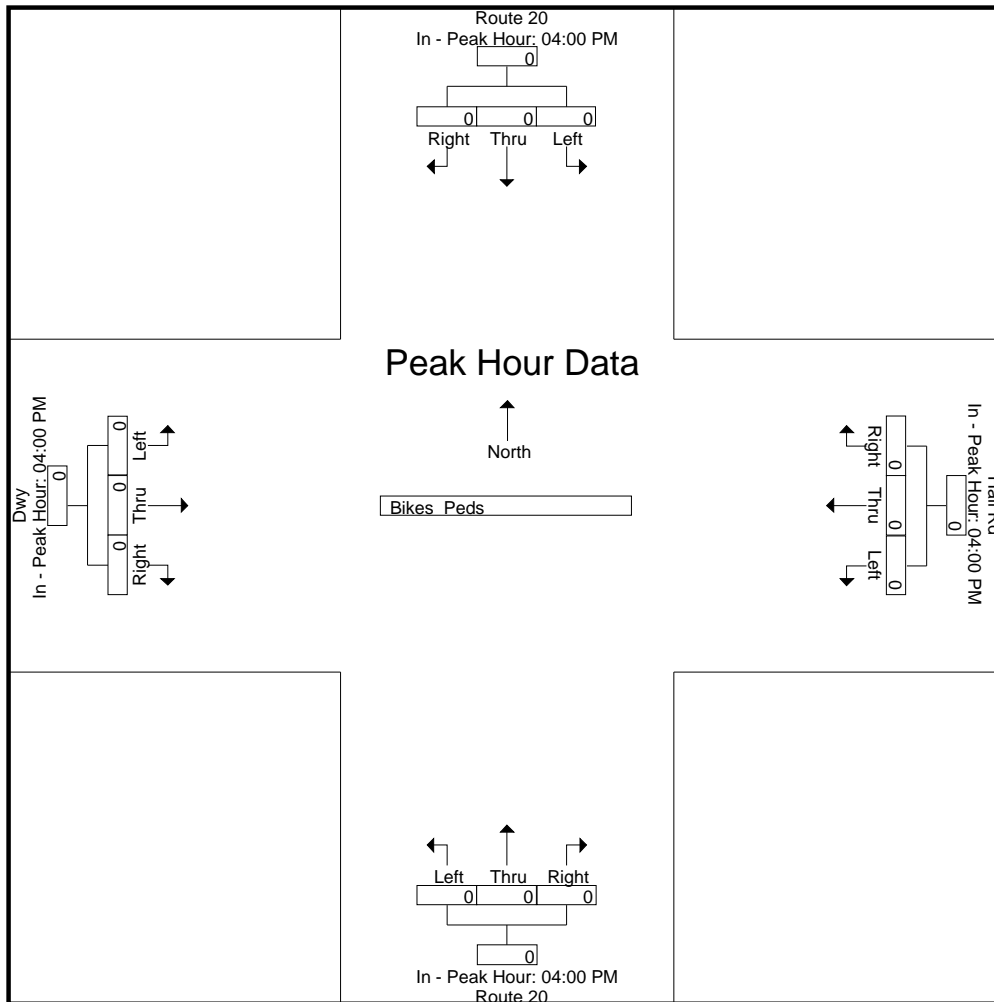
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

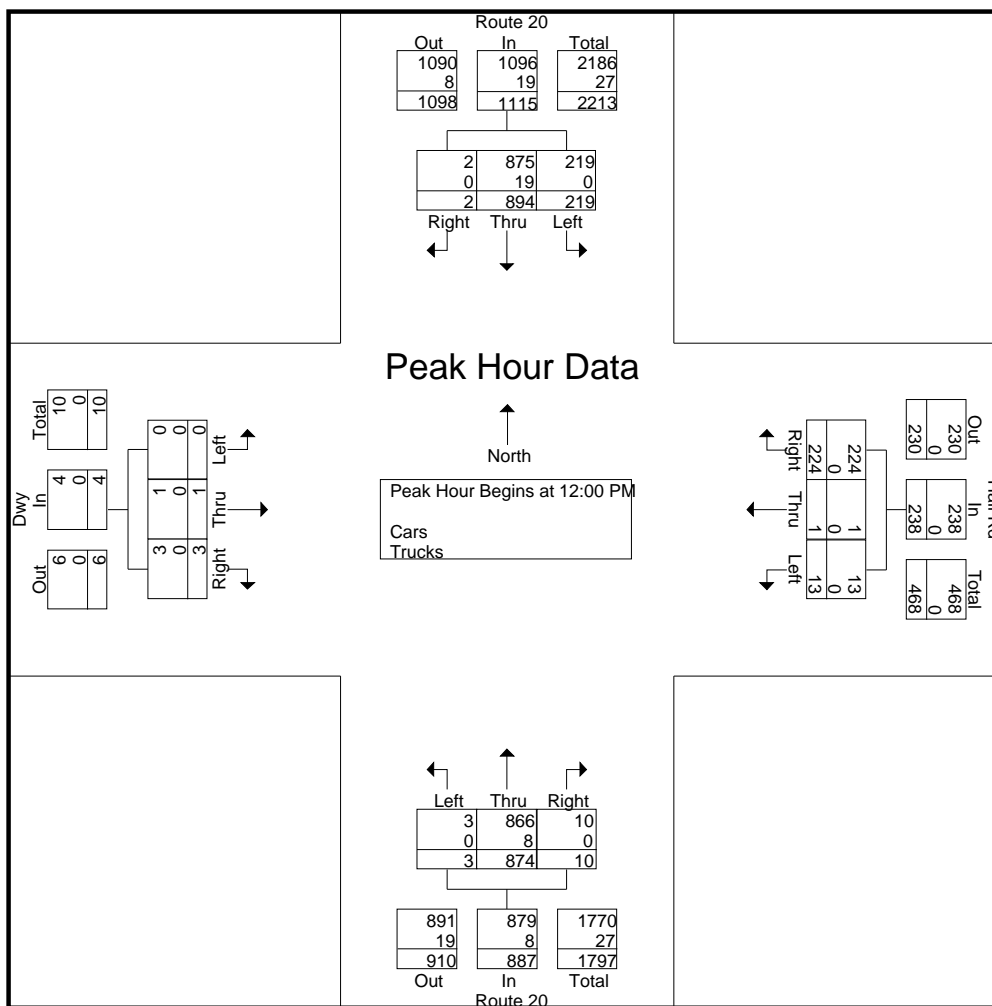
File Name : 870700S1
 Site Code : 87070001
 Start Date : 10/3/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	47	181	0	0	1	43	0	202	3	0	1	0	478
11:15 AM	46	204	1	4	0	67	0	195	1	0	0	0	518
11:30 AM	50	205	0	5	0	59	0	211	2	1	0	0	533
11:45 AM	56	206	1	8	0	71	2	217	3	0	1	2	567
Total	199	796	2	17	1	240	2	825	9	1	2	2	2096
12:00 PM	48	237	1	5	0	54	0	214	7	0	0	1	567
12:15 PM	50	166	0	1	1	61	0	217	1	0	1	0	498
12:30 PM	58	243	0	4	0	57	1	233	1	0	0	1	598
12:45 PM	63	248	1	3	0	52	2	210	1	0	0	1	581
Total	219	894	2	13	1	224	3	874	10	0	1	3	2244
01:00 PM	56	210	0	0	0	49	0	191	6	0	0	1	513
01:15 PM	56	247	0	0	0	36	0	204	4	0	0	1	548
01:30 PM	57	226	1	4	0	64	0	177	2	0	0	1	532
01:45 PM	44	233	0	4	0	59	0	212	8	0	0	1	561
Total	213	916	1	8	0	208	0	784	20	0	0	4	2154
Grand Total	631	2606	5	38	2	672	5	2483	39	1	3	9	6494
Apprch %	19.5	80.4	0.2	5.3	0.3	94.4	0.2	98.3	1.5	7.7	23.1	69.2	
Total %	9.7	40.1	0.1	0.6	0	10.3	0.1	38.2	0.6	0	0	0.1	
Cars	631	2562	5	37	2	672	5	2456	39	1	3	9	6422
% Cars	100	98.3	100	97.4	100	100	100	98.9	100	100	100	100	98.9
Trucks	0	44	0	1	0	0	0	27	0	0	0	0	72
% Trucks	0	1.7	0	2.6	0	0	0	1.1	0	0	0	0	1.1

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	48	237	1	286	5	0	54	59	0	214	7	221	0	0	1	1	567
12:15 PM	50	166	0	216	1	1	61	63	0	217	1	218	0	1	0	1	498
12:30 PM	58	243	0	301	4	0	57	61	1	233	1	235	0	0	1	1	598
12:45 PM	63	248	1	312	3	0	52	55	2	210	1	213	0	0	1	1	581
Total Volume	219	894	2	1115	13	1	224	238	3	874	10	887	0	1	3	4	2244
% App. Total	19.6	80.2	0.2		5.5	0.4	94.1		0.3	98.5	1.1		0	25	75		
PHF	.869	.901	.500	.893	.650	.250	.918	.944	.375	.938	.357	.944	.000	.250	.750	1.00	.938
Cars	219	875	2	1096	13	1	224	238	3	866	10	879	0	1	3	4	2217
% Cars	100	97.9	100	98.3	100	100	100	100	100	99.1	100	99.1	0	100	100	100	98.8
Trucks	0	19	0	19	0	0	0	0	0	8	0	8	0	0	0	0	27
% Trucks	0	2.1	0	1.7	0	0	0	0	0	0.9	0	0.9	0	0	0	0	1.2

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM				11:15 AM				11:45 AM				11:30 AM			
+0 mins.	58	243	0	301	4	0	67	71	2	217	3	222	1	0	0	1
+15 mins.	63	248	1	312	5	0	59	64	0	214	7	221	0	1	2	3
+30 mins.	56	210	0	266	8	0	71	79	0	217	1	218	0	0	1	1
+45 mins.	56	247	0	303	5	0	54	59	1	233	1	235	0	1	0	1
Total Volume	233	948	1	1182	22	0	251	273	3	881	12	896	1	2	3	6
% App. Total	19.7	80.2	0.1		8.1	0	91.9		0.3	98.3	1.3		16.7	33.3	50	
PHF	.925	.956	.250	.947	.688	.000	.884	.864	.375	.945	.429	.953	.250	.500	.375	.500
Cars	233	935	1	1169	21	0	251	272	3	873	12	888	1	2	3	6
% Cars	100	98.6	100	98.9	95.5	0	100	99.6	100	99.1	100	99.1	100	100	100	100
Trucks	0	13	0	13	1	0	0	1	0	8	0	8	0	0	0	0
% Trucks	0	1.4	0	1.1	4.5	0	0	0.4	0	0.9	0	0.9	0	0	0	0

Accurate Counts

978-664-2565

File Name : 870700S1

Site Code : 87070001

Start Date : 10/3/2020

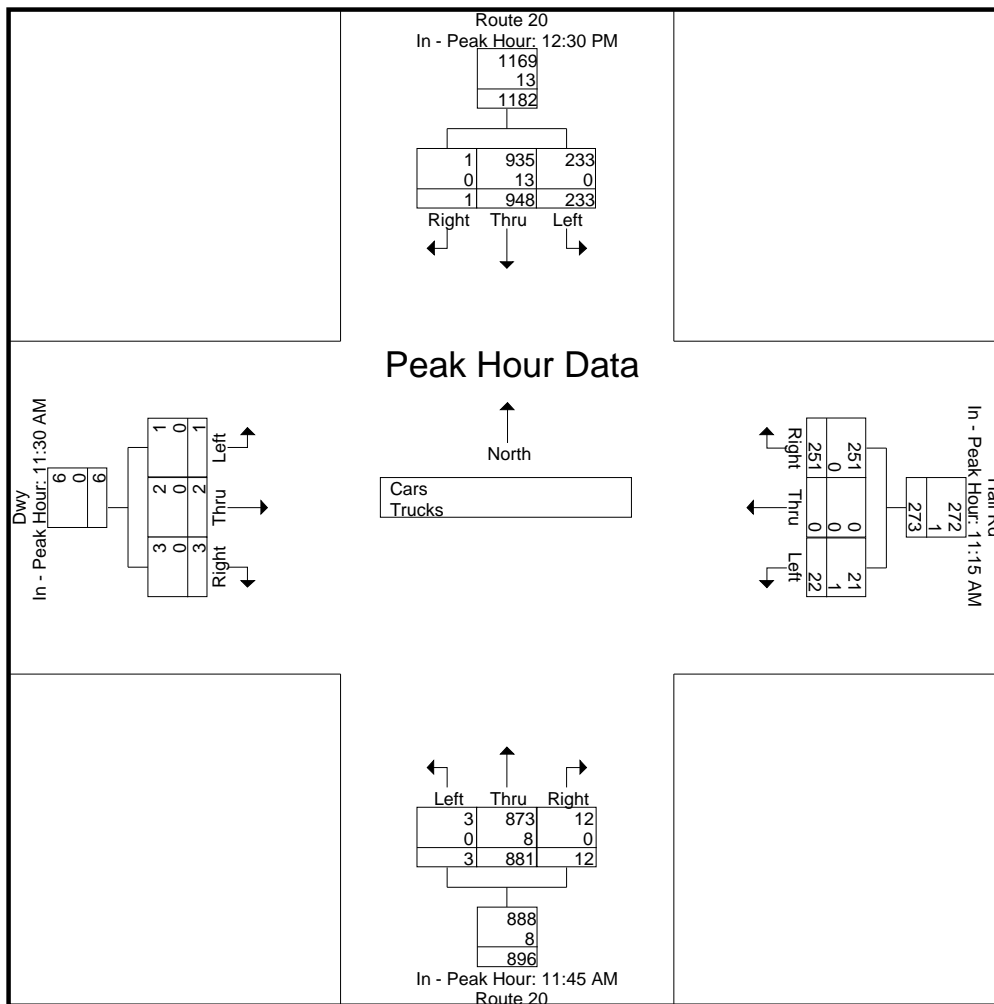
Page No : 3

N/S Street : Route 20

E/W Street : Hall Road / Driveway

City/State : Sturbridge, MA

Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

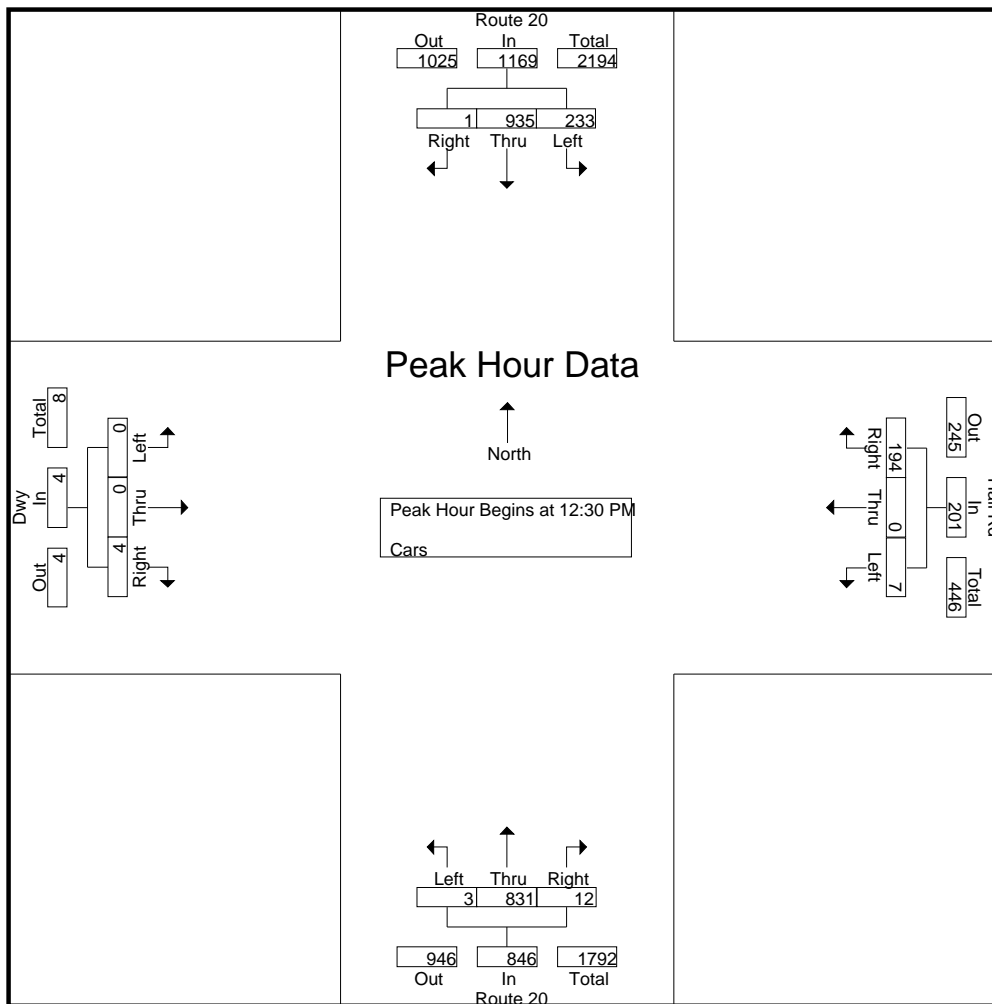
File Name : 870700S1
 Site Code : 87070001
 Start Date : 10/3/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	47	179	0	0	1	43	0	201	3	0	1	0	475
11:15 AM	46	197	1	3	0	67	0	192	1	0	0	0	507
11:30 AM	50	202	0	5	0	59	0	208	2	1	0	0	527
11:45 AM	56	201	1	8	0	71	2	215	3	0	1	2	560
Total	199	779	2	16	1	240	2	816	9	1	2	2	2069
12:00 PM	48	233	1	5	0	54	0	212	7	0	0	1	561
12:15 PM	50	161	0	1	1	61	0	214	1	0	1	0	490
12:30 PM	58	239	0	4	0	57	1	232	1	0	0	1	593
12:45 PM	63	242	1	3	0	52	2	208	1	0	0	1	573
Total	219	875	2	13	1	224	3	866	10	0	1	3	2217
01:00 PM	56	208	0	0	0	49	0	189	6	0	0	1	509
01:15 PM	56	246	0	0	0	36	0	202	4	0	0	1	545
01:30 PM	57	225	1	4	0	64	0	171	2	0	0	1	525
01:45 PM	44	229	0	4	0	59	0	212	8	0	0	1	557
Total	213	908	1	8	0	208	0	774	20	0	0	4	2136
Grand Total	631	2562	5	37	2	672	5	2456	39	1	3	9	6422
Apprch %	19.7	80.1	0.2	5.2	0.3	94.5	0.2	98.2	1.6	7.7	23.1	69.2	
Total %	9.8	39.9	0.1	0.6	0	10.5	0.1	38.2	0.6	0	0	0.1	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	58	239	0	297	4	0	57	61	1	232	1	234	0	0	1	1	593
12:45 PM	63	242	1	306	3	0	52	55	2	208	1	211	0	0	1	1	573
01:00 PM	56	208	0	264	0	0	49	49	0	189	6	195	0	0	1	1	509
01:15 PM	56	246	0	302	0	0	36	36	0	202	4	206	0	0	1	1	545
Total Volume	233	935	1	1169	7	0	194	201	3	831	12	846	0	0	4	4	2220
% App. Total	19.9	80	0.1		3.5	0	96.5		0.4	98.2	1.4		0	0	100		
PHF	.925	.950	.250	.955	.438	.000	.851	.824	.375	.895	.500	.904	.000	.000	1.00	1.00	.936

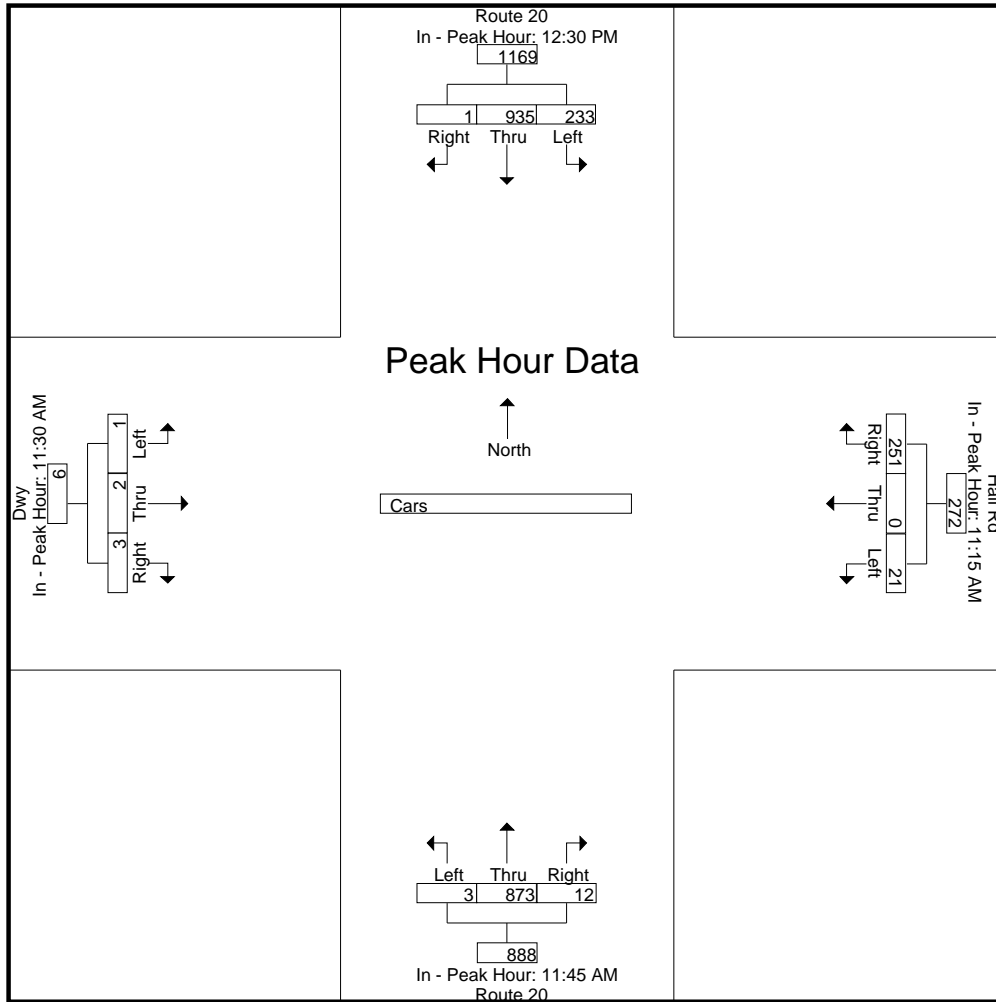
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM				11:15 AM				11:45 AM				11:30 AM			
+0 mins.	58	239	0	297	3	0	67	70	2	215	3	220	1	0	0	1
+15 mins.	63	242	1	306	5	0	59	64	0	212	7	219	0	1	2	3
+30 mins.	56	208	0	264	8	0	71	79	0	214	1	215	0	0	1	1
+45 mins.	56	246	0	302	5	0	54	59	1	232	1	234	0	1	0	1
Total Volume	233	935	1	1169	21	0	251	272	3	873	12	888	1	2	3	6
% App. Total	19.9	80	0.1		7.7	0	92.3		0.3	98.3	1.4		16.7	33.3	50	
PHF	.925	.950	.250	.955	.656	.000	.884	.861	.375	.941	.429	.949	.250	.500	.375	.500

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Hall Road / Driveway
 City/State : Sturbridge, MA
 Weather : Clear

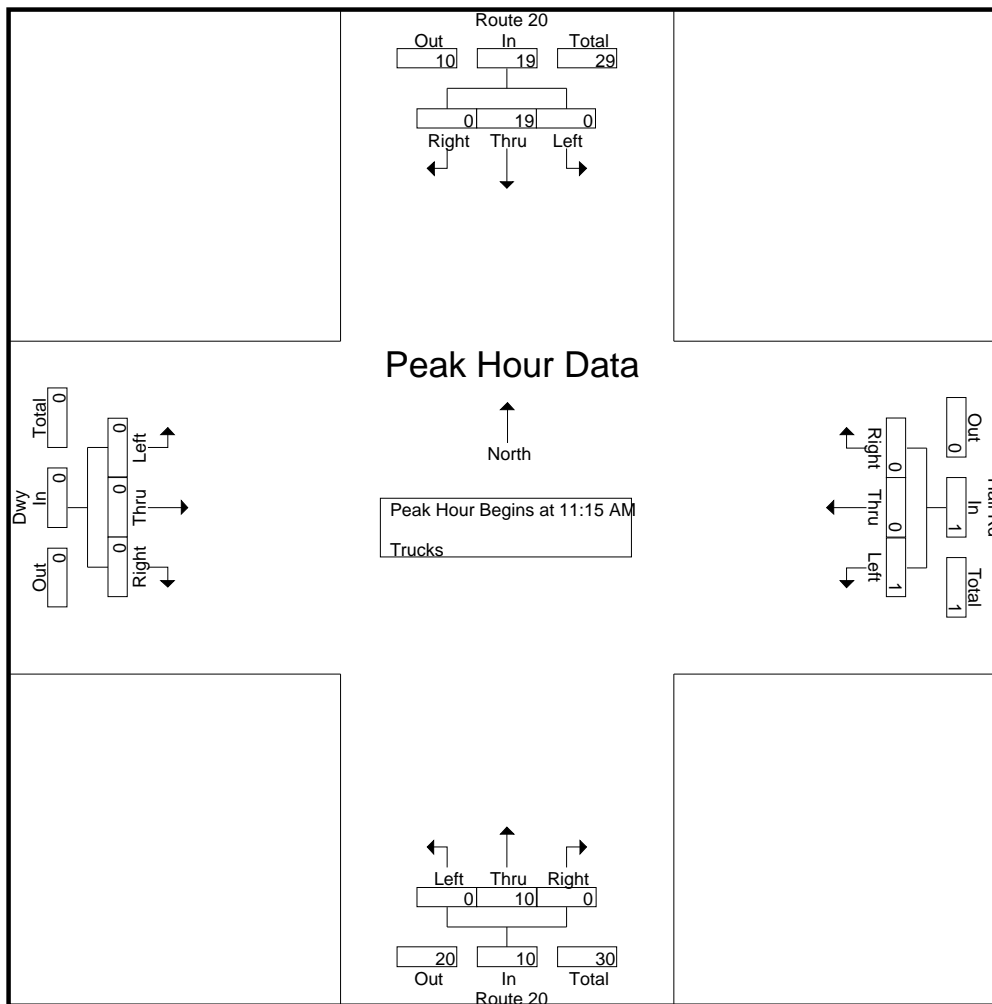
File Name : 870700S1
 Site Code : 87070001
 Start Date : 10/3/2020
 Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North			Hall Rd From East			Route 20 From South			Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	2	0	0	0	0	0	1	0	0	0	0	3
11:15 AM	0	7	0	1	0	0	0	3	0	0	0	0	11
11:30 AM	0	3	0	0	0	0	0	3	0	0	0	0	6
11:45 AM	0	5	0	0	0	0	0	2	0	0	0	0	7
Total	0	17	0	1	0	0	0	9	0	0	0	0	27
12:00 PM	0	4	0	0	0	0	0	2	0	0	0	0	6
12:15 PM	0	5	0	0	0	0	0	3	0	0	0	0	8
12:30 PM	0	4	0	0	0	0	0	1	0	0	0	0	5
12:45 PM	0	6	0	0	0	0	0	2	0	0	0	0	8
Total	0	19	0	0	0	0	0	8	0	0	0	0	27
01:00 PM	0	2	0	0	0	0	0	2	0	0	0	0	4
01:15 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
01:30 PM	0	1	0	0	0	0	0	6	0	0	0	0	7
01:45 PM	0	4	0	0	0	0	0	0	0	0	0	0	4
Total	0	8	0	0	0	0	0	10	0	0	0	0	18
Grand Total	0	44	0	1	0	0	0	27	0	0	0	0	72
Apprch %	0	100	0	100	0	0	0	100	0	0	0	0	
Total %	0	61.1	0	1.4	0	0	0	37.5	0	0	0	0	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	7	0	7	1	0	0	1	0	3	0	3	0	0	0	0	11
11:30 AM	0	3	0	3	0	0	0	0	0	3	0	3	0	0	0	0	6
11:45 AM	0	5	0	5	0	0	0	0	0	2	0	2	0	0	0	0	7
12:00 PM	0	4	0	4	0	0	0	0	0	2	0	2	0	0	0	0	6
Total Volume	0	19	0	19	1	0	0	1	0	10	0	10	0	0	0	0	30
% App. Total	0	100	0	100	100	0	0	100	0	100	0	100	0	0	0	0	
PHF	.000	.679	.000	.679	.250	.000	.000	.250	.000	.833	.000	.833	.000	.000	.000	.000	.682

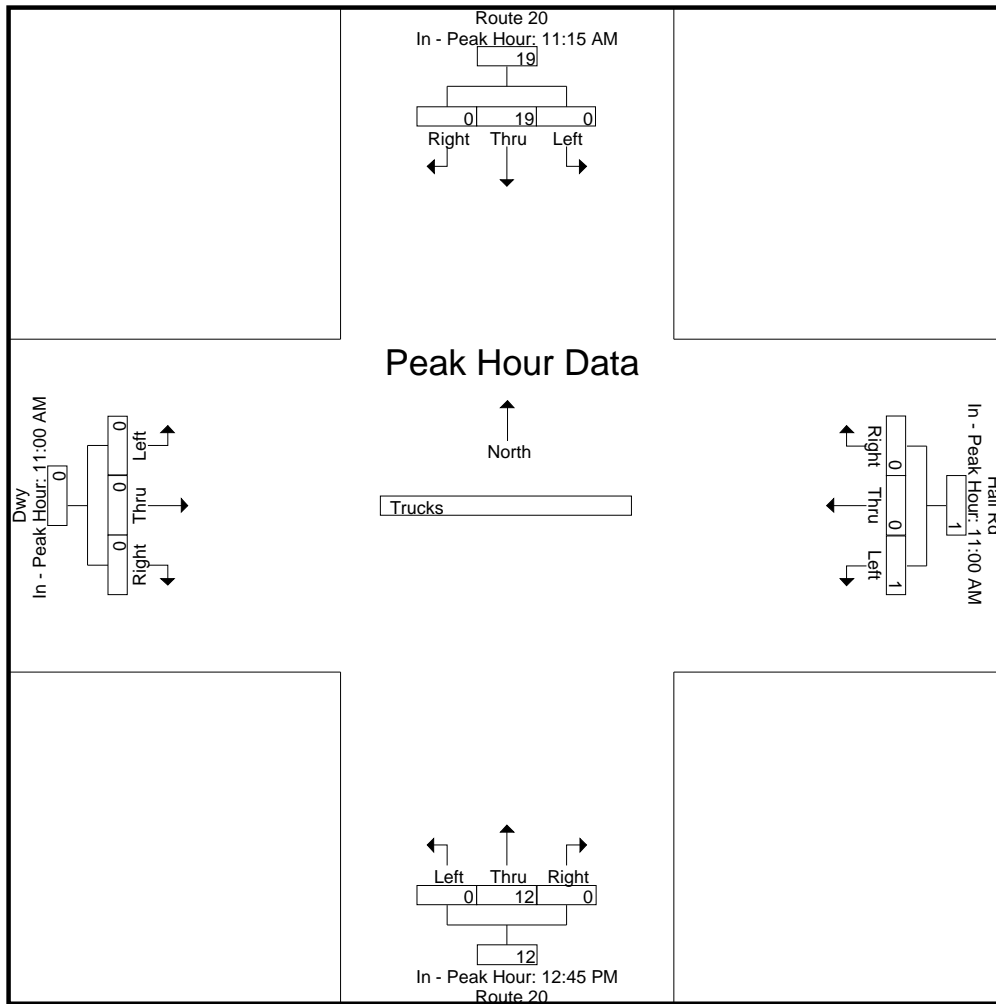
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

	11:15 AM				11:00 AM				12:45 PM				11:00 AM			
+0 mins.	0	7	0	7	0	0	0	0	0	2	0	2	0	0	0	0
+15 mins.	0	3	0	3	1	0	0	1	0	2	0	2	0	0	0	0
+30 mins.	0	5	0	5	0	0	0	0	0	2	0	2	0	0	0	0
+45 mins.	0	4	0	4	0	0	0	0	0	6	0	6	0	0	0	0
Total Volume	0	19	0	19	1	0	0	1	0	12	0	12	0	0	0	0
% App. Total	0	100	0		100	0	0		0	100	0		0	0	0	
PHF	.000	.679	.000	.679	.250	.000	.000	.250	.000	.500	.000	.500	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear

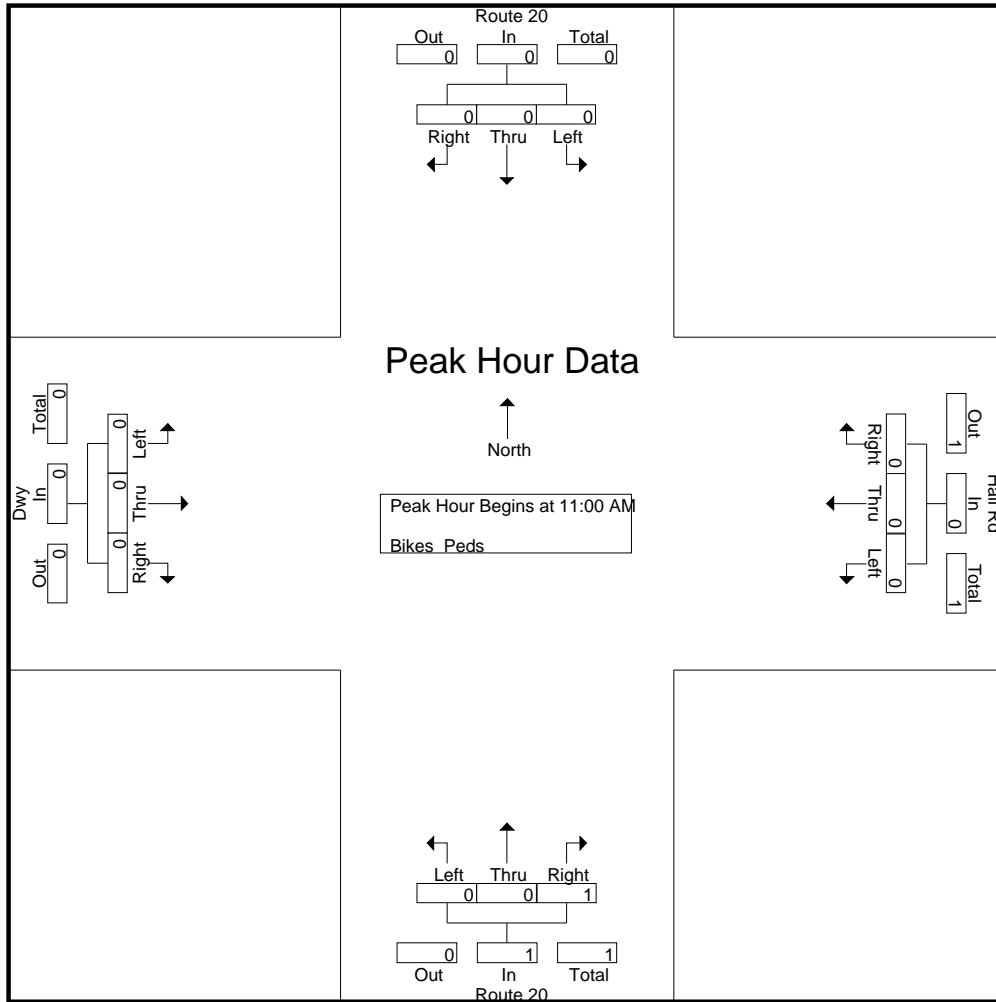
File Name : 870700S1
Site Code : 87070001
Start Date : 10/3/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	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
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	1	2
Apprch %	0	0	0		0	0	0		0	0	100		0	0	0				
Total %	0	0	0		0	0	0		0	0	100		0	0	0		50	50	

Start Time	Route 20 From North				Hall Rd From East				Route 20 From South				Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250

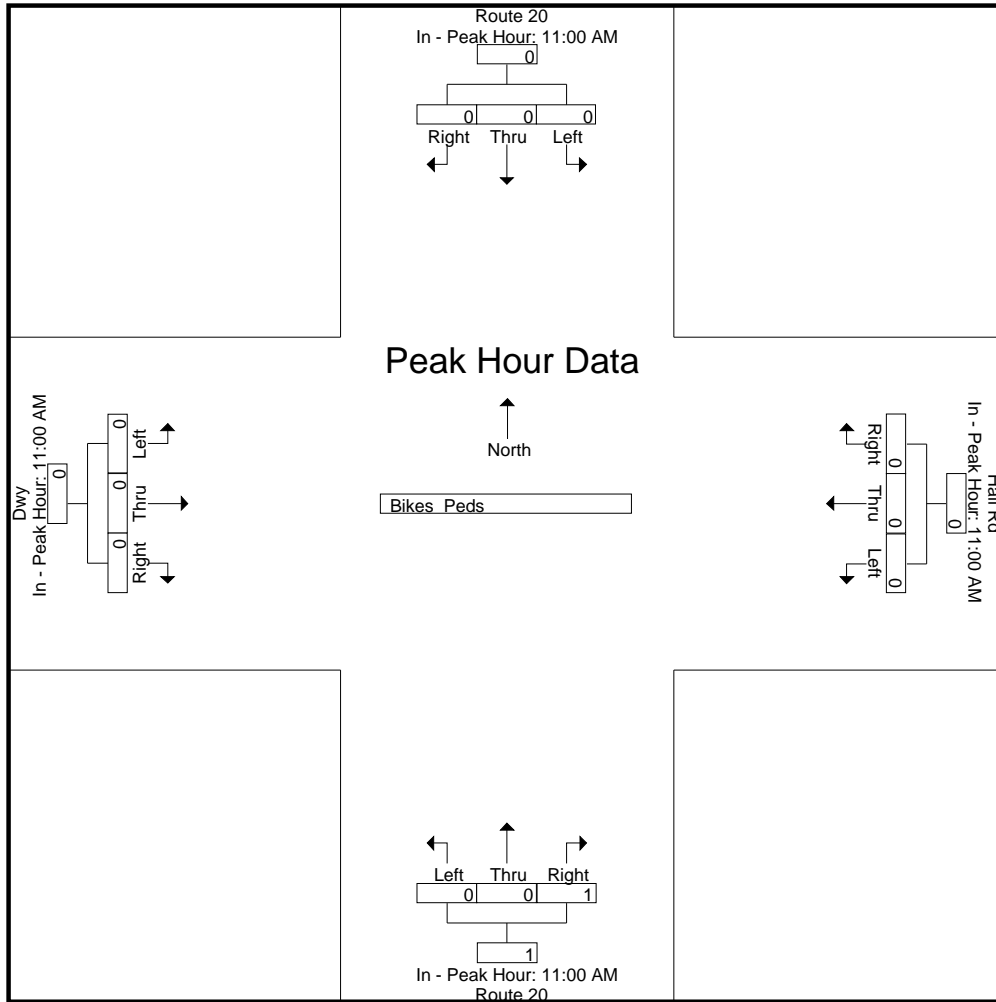
N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : Hall Road / Driveway
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

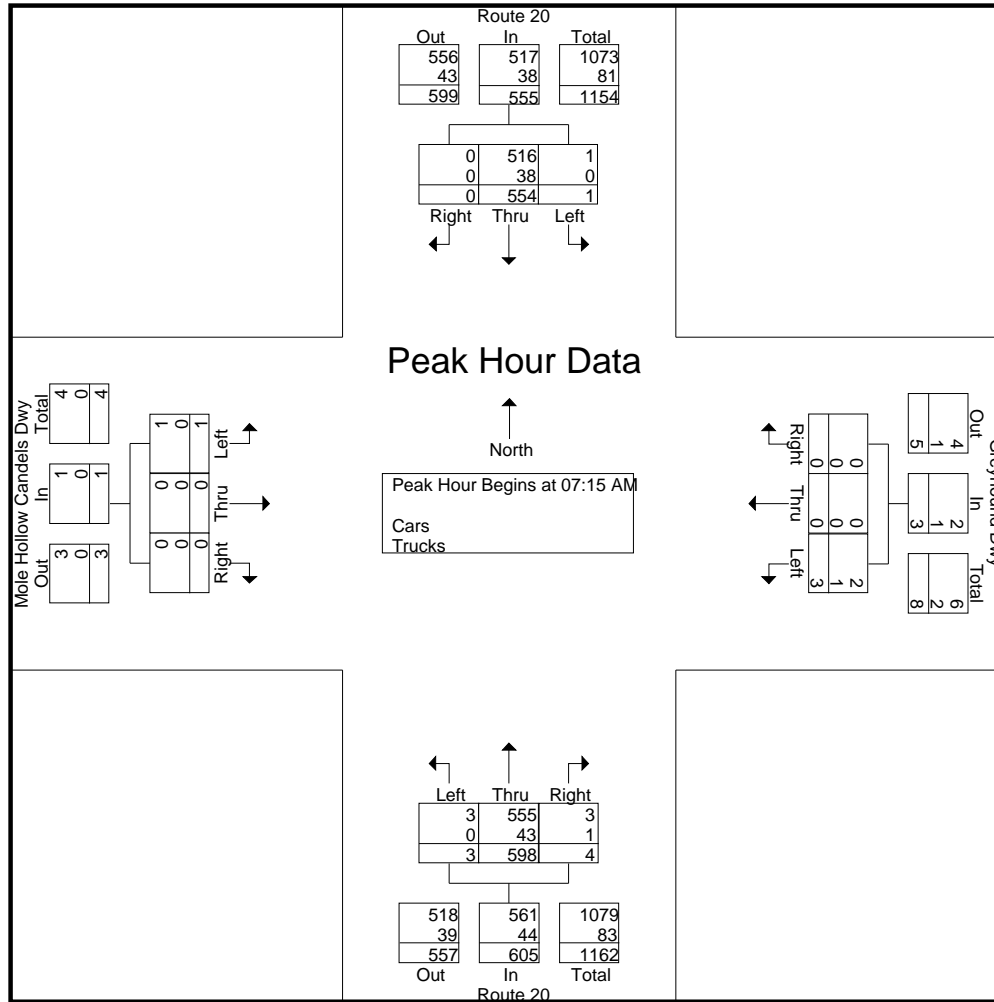
File Name : 87070002
 Site Code : 87070002
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	104	0	1	0	0	0	123	0	0	0	0	229
07:15 AM	0	175	0	0	0	0	0	153	2	0	0	0	330
07:30 AM	1	137	0	0	0	0	0	149	1	1	0	0	289
07:45 AM	0	131	0	0	0	0	1	152	1	0	0	0	285
Total	2	547	0	1	0	0	1	577	4	1	0	0	1133
08:00 AM	0	111	0	3	0	0	2	144	0	0	0	0	260
08:15 AM	0	150	0	0	0	0	0	144	0	0	0	1	295
08:30 AM	0	103	2	1	0	0	0	177	0	0	0	0	283
08:45 AM	0	118	1	0	0	0	2	195	2	0	0	0	318
Total	0	482	3	4	0	0	4	660	2	0	0	1	1156
Grand Total	2	1029	3	5	0	0	5	1237	6	1	0	1	2289
Apprch %	0.2	99.5	0.3	100	0	0	0.4	99.1	0.5	50	0	50	
Total %	0.1	45	0.1	0.2	0	0	0.2	54	0.3	0	0	0	
Cars	2	952	3	4	0	0	5	1138	5	1	0	1	2111
% Cars	100	92.5	100	80	0	0	100	92	83.3	100	0	100	92.2
Trucks	0	77	0	1	0	0	0	99	1	0	0	0	178
% Trucks	0	7.5	0	20	0	0	0	8	16.7	0	0	0	7.8

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	175	0	175	0	0	0	0	0	153	2	155	0	0	0	0	330
07:30 AM	1	137	0	138	0	0	0	0	0	149	1	150	1	0	0	0	289
07:45 AM	0	131	0	131	0	0	0	0	1	152	1	154	0	0	0	0	285
08:00 AM	0	111	0	111	3	0	0	3	2	144	0	146	0	0	0	0	260
Total Volume	1	554	0	555	3	0	0	3	3	598	4	605	1	0	0	1	1164
% App. Total	0.2	99.8	0		100	0	0		0.5	98.8	0.7		100	0	0		
PHF	.250	.791	.000	.793	.250	.000	.000	.250	.375	.977	.500	.976	.250	.000	.000	.250	.882
Cars	1	516	0	517	2	0	0	2	3	555	3	561	1	0	0	1	1081
% Cars	100	93.1	0	93.2	66.7	0	0	66.7	100	92.8	75.0	92.7	100	0	0	100	92.9
Trucks	0	38	0	38	1	0	0	1	0	43	1	44	0	0	0	0	83
% Trucks	0	6.9	0	6.8	33.3	0	0	33.3	0	7.2	25.0	7.3	0	0	0	0	7.1

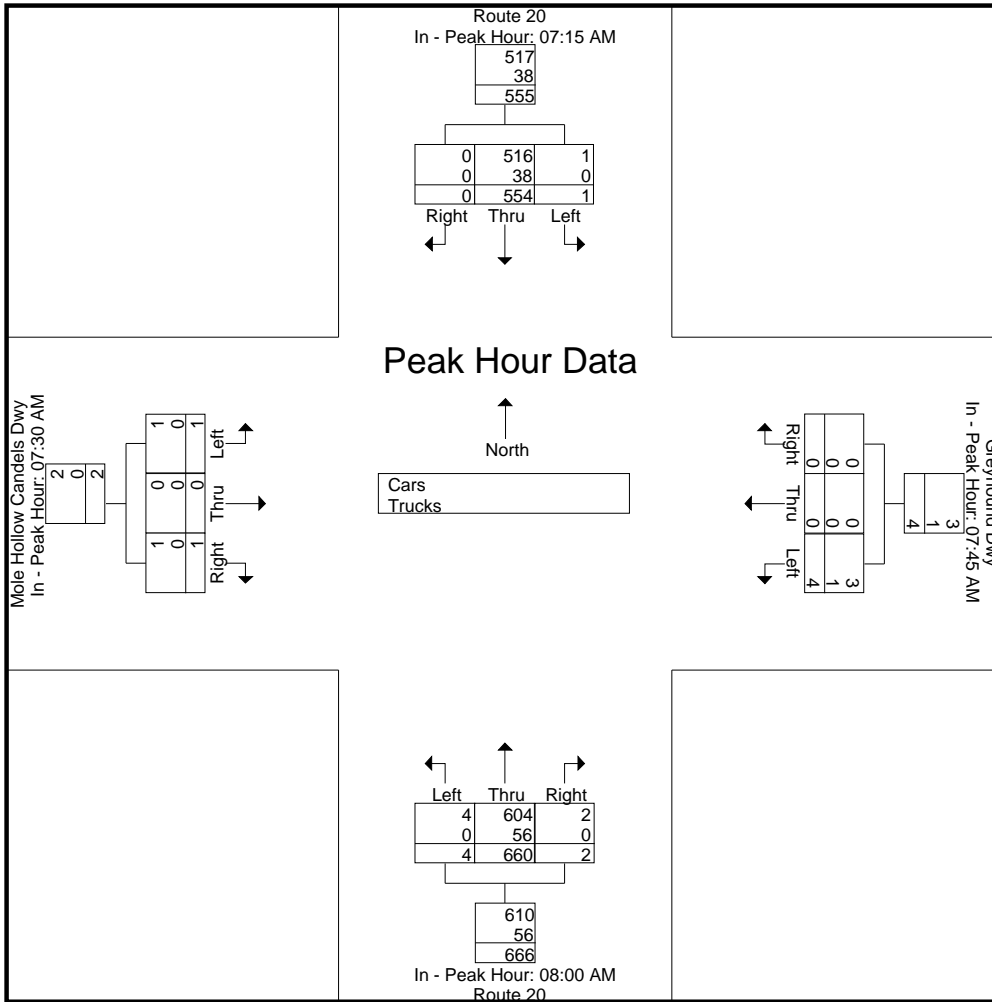
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	07:15 AM				07:45 AM				08:00 AM				07:30 AM			
+0 mins.	0	175	0	175	0	0	0	0	2	144	0	146	1	0	0	1
+15 mins.	1	137	0	138	3	0	0	3	0	144	0	144	0	0	0	0
+30 mins.	0	131	0	131	0	0	0	0	0	177	0	177	0	0	0	0
+45 mins.	0	111	0	111	1	0	0	1	2	195	2	199	0	0	1	1
Total Volume	1	554	0	555	4	0	0	4	4	660	2	666	1	0	1	2
% App. Total	0.2	99.8	0		100	0	0		0.6	99.1	0.3		50	0	50	
PHF	.250	.791	.000	.793	.333	.000	.000	.333	.500	.846	.250	.837	.250	.000	.250	.500
Cars	1	516	0	517	3	0	0	3	4	604	2	610	1	0	1	2
% Cars	100	93.1	0	93.2	75	0	0	75	100	91.5	100	91.6	100	0	100	100
Trucks	0	38	0	38	1	0	0	1	0	56	0	56	0	0	0	0
% Trucks	0	6.9	0	6.8	25	0	0	25	0	8.5	0	8.4	0	0	0	0

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

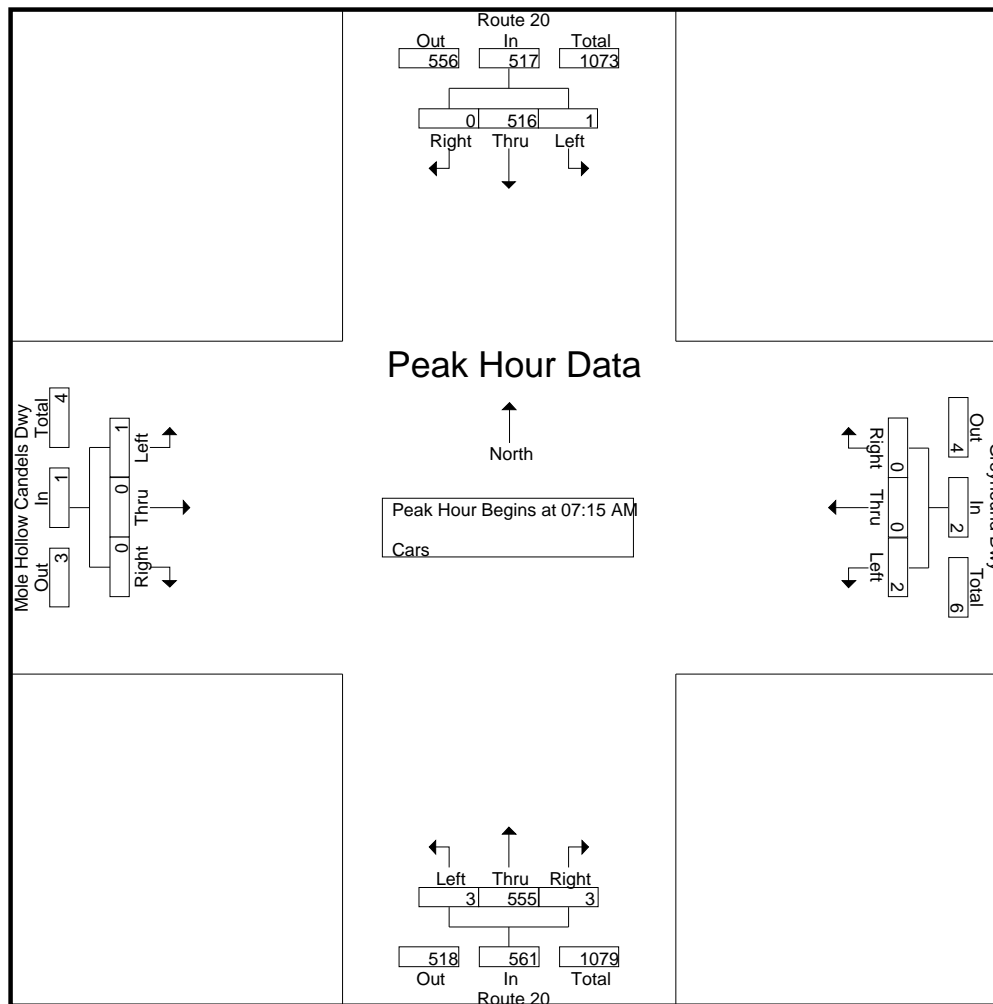
File Name : 87070002
 Site Code : 87070002
 Start Date : 10/1/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	98	0	1	0	0	0	115	0	0	0	0	215
07:15 AM	0	168	0	0	0	0	0	138	2	0	0	0	308
07:30 AM	1	127	0	0	0	0	0	138	0	1	0	0	267
07:45 AM	0	118	0	0	0	0	1	143	1	0	0	0	263
Total	2	511	0	1	0	0	1	534	3	1	0	0	1053
08:00 AM	0	103	0	2	0	0	2	136	0	0	0	0	243
08:15 AM	0	138	0	0	0	0	0	133	0	0	0	1	272
08:30 AM	0	93	2	1	0	0	0	158	0	0	0	0	254
08:45 AM	0	107	1	0	0	0	2	177	2	0	0	0	289
Total	0	441	3	3	0	0	4	604	2	0	0	1	1058
Grand Total	2	952	3	4	0	0	5	1138	5	1	0	1	2111
Apprch %	0.2	99.5	0.3	100	0	0	0.4	99.1	0.4	50	0	50	
Total %	0.1	45.1	0.1	0.2	0	0	0.2	53.9	0.2	0	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	168	0	168	0	0	0	0	0	138	2	140	0	0	0	0	308
07:30 AM	1	127	0	128	0	0	0	0	0	138	0	138	1	0	0	0	1
07:45 AM	0	118	0	118	0	0	0	0	1	143	1	145	0	0	0	0	263
08:00 AM	0	103	0	103	2	0	0	2	2	136	0	138	0	0	0	0	243
Total Volume	1	516	0	517	2	0	0	2	3	555	3	561	1	0	0	1	1081
% App. Total	0.2	99.8	0	100	100	0	0	100	0.5	98.9	0.5	99.8	100	0	0	100	
PHF	.250	.768	.000	.769	.250	.000	.000	.250	.375	.970	.375	.967	.250	.000	.000	.250	.877

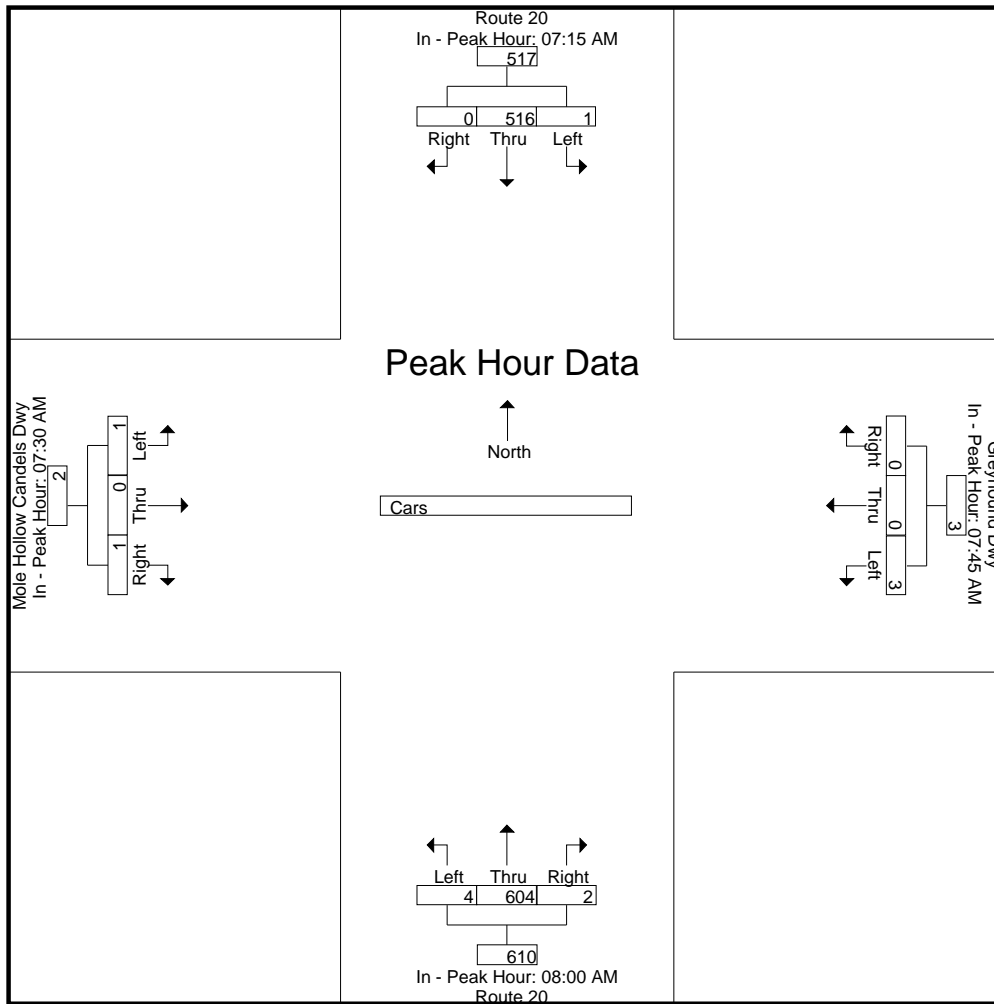
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	07:15 AM				07:45 AM				08:00 AM				07:30 AM			
+0 mins.	0	168	0	168	0	0	0	0	2	136	0	138	1	0	0	1
+15 mins.	1	127	0	128	2	0	0	2	0	133	0	133	0	0	0	0
+30 mins.	0	118	0	118	0	0	0	0	0	158	0	158	0	0	0	0
+45 mins.	0	103	0	103	1	0	0	1	2	177	2	181	0	0	1	1
Total Volume	1	516	0	517	3	0	0	3	4	604	2	610	1	0	1	2
% App. Total	0.2	99.8	0		100	0	0		0.7	99	0.3		50	0	50	
PHF	.250	.768	.000	.769	.375	.000	.000	.375	.500	.853	.250	.843	.250	.000	.250	.500

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

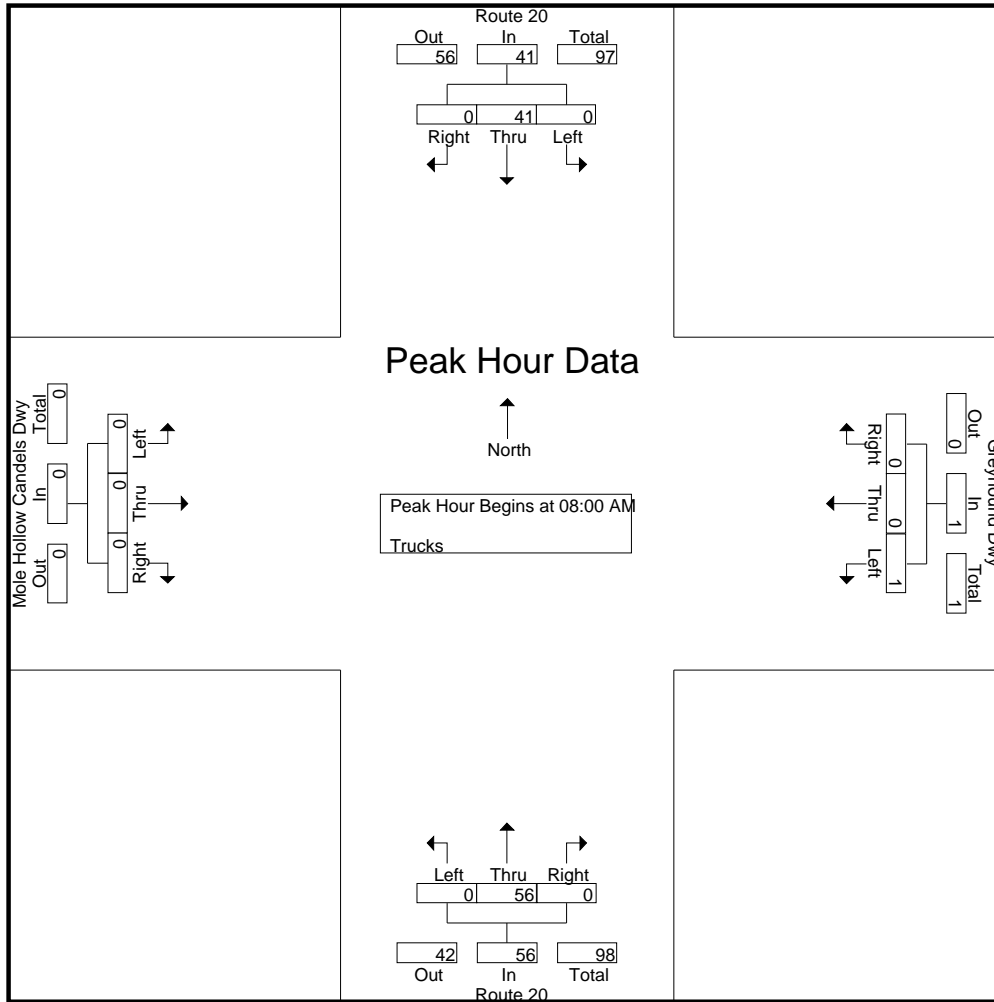
File Name : 87070002
Site Code : 87070002
Start Date : 10/1/2020
Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	6	0	0	0	0	0	8	0	0	0	0	14
07:15 AM	0	7	0	0	0	0	0	15	0	0	0	0	22
07:30 AM	0	10	0	0	0	0	0	11	1	0	0	0	22
07:45 AM	0	13	0	0	0	0	0	9	0	0	0	0	22
Total	0	36	0	0	0	0	0	43	1	0	0	0	80
08:00 AM	0	8	0	1	0	0	0	8	0	0	0	0	17
08:15 AM	0	12	0	0	0	0	0	11	0	0	0	0	23
08:30 AM	0	10	0	0	0	0	0	19	0	0	0	0	29
08:45 AM	0	11	0	0	0	0	0	18	0	0	0	0	29
Total	0	41	0	1	0	0	0	56	0	0	0	0	98
Grand Total	0	77	0	1	0	0	0	99	1	0	0	0	178
Apprch %	0	100	0	100	0	0	0	99	1	0	0	0	
Total %	0	43.3	0	0.6	0	0	0	55.6	0.6	0	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	8	0	8	1	0	0	1	0	8	0	8	0	0	0	0	17
08:15 AM	0	12	0	12	0	0	0	0	0	11	0	11	0	0	0	0	23
08:30 AM	0	10	0	10	0	0	0	0	0	19	0	19	0	0	0	0	29
08:45 AM	0	11	0	11	0	0	0	0	0	18	0	18	0	0	0	0	29
Total Volume	0	41	0	41	1	0	0	1	0	56	0	56	0	0	0	0	98
% App. Total	0	100	0		100	0	0		0	100	0		0	0	0		
PHF	.000	.854	.000	.854	.250	.000	.000	.250	.000	.737	.000	.737	.000	.000	.000	.000	.845

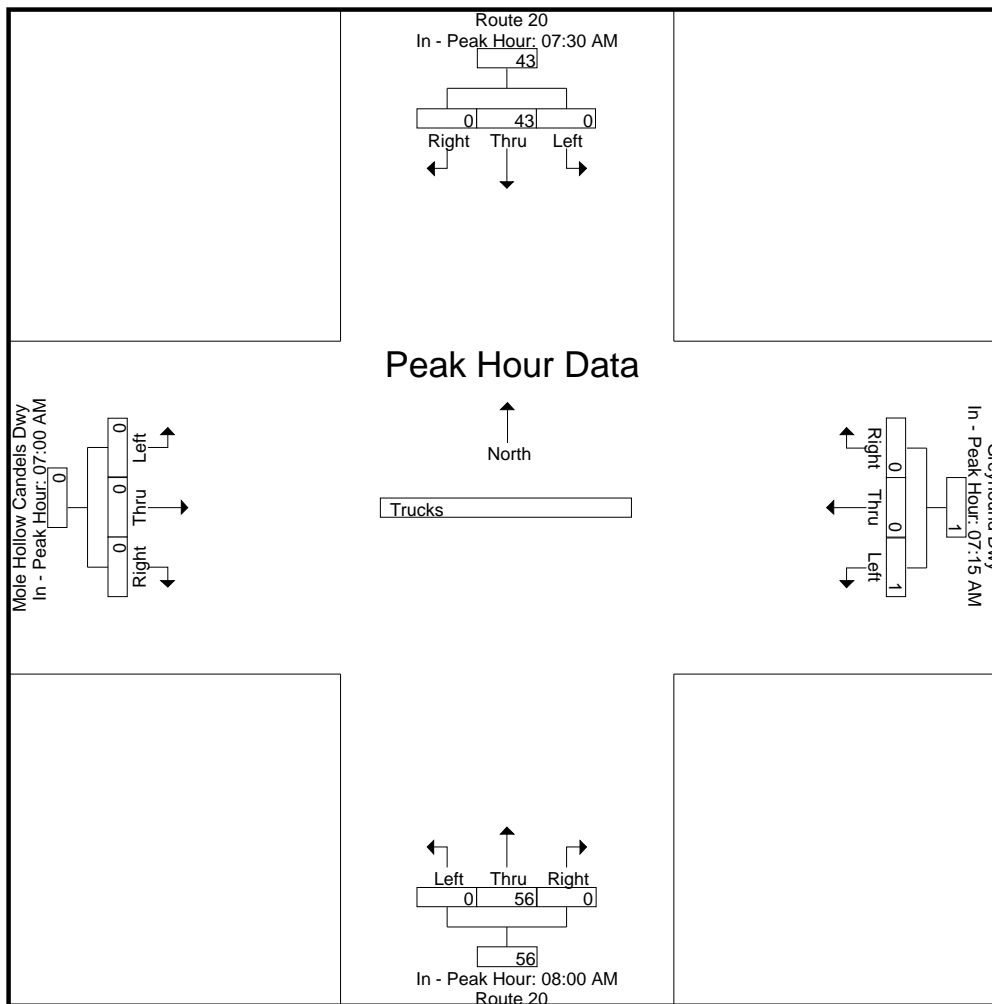
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	07:30 AM				07:15 AM				08:00 AM				07:00 AM			
+0 mins.	0	10	0	10	0	0	0	0	0	8	0	8	0	0	0	0
+15 mins.	0	13	0	13	0	0	0	0	0	11	0	11	0	0	0	0
+30 mins.	0	8	0	8	0	0	0	0	0	19	0	19	0	0	0	0
+45 mins.	0	12	0	12	1	0	0	1	0	18	0	18	0	0	0	0
Total Volume	0	43	0	43	1	0	0	1	0	56	0	56	0	0	0	0
% App. Total	0	100	0		100	0	0		0	100	0		0	0	0	
PHF	.000	.827	.000	.827	.250	.000	.000	.250	.000	.737	.000	.737	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 10/1/2020
Page No : 10

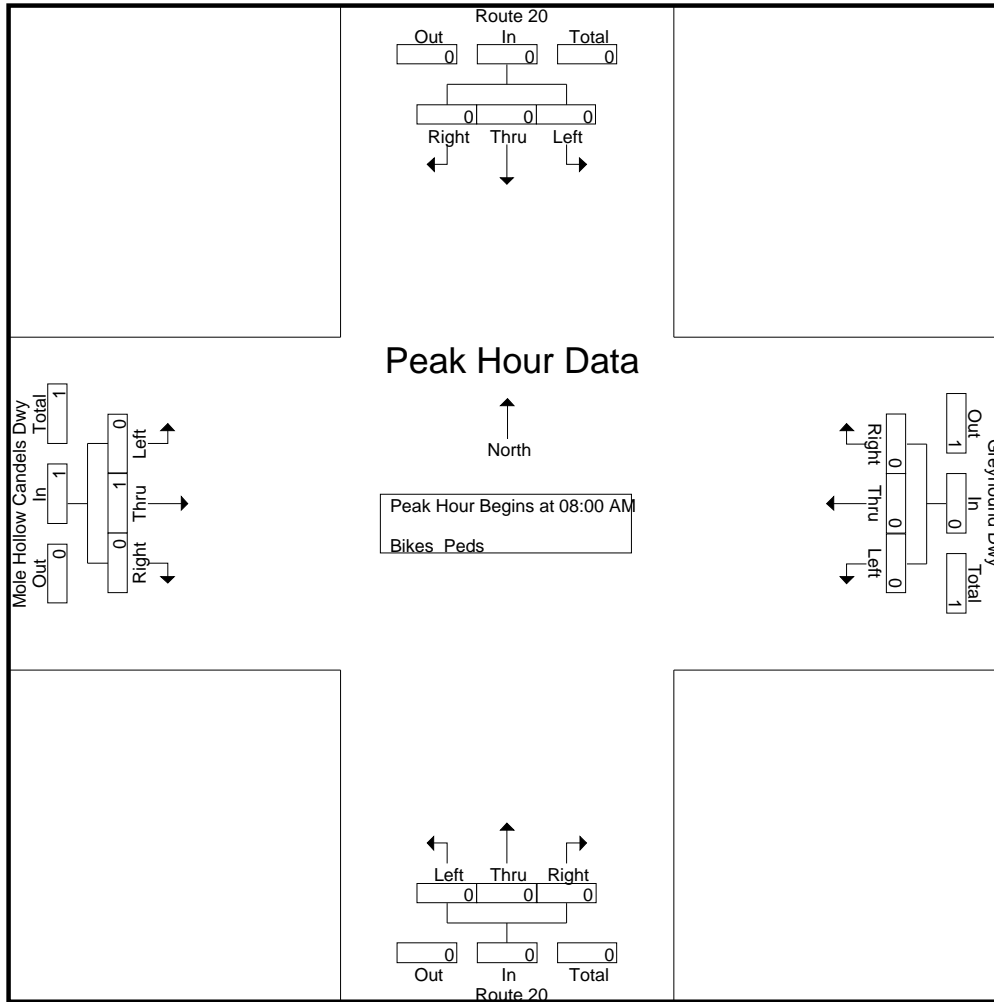
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0				
Total %	0	0	0		0	0	0		0	0	0		0	100	0			100	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:00 AM																		
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0			
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250	.250

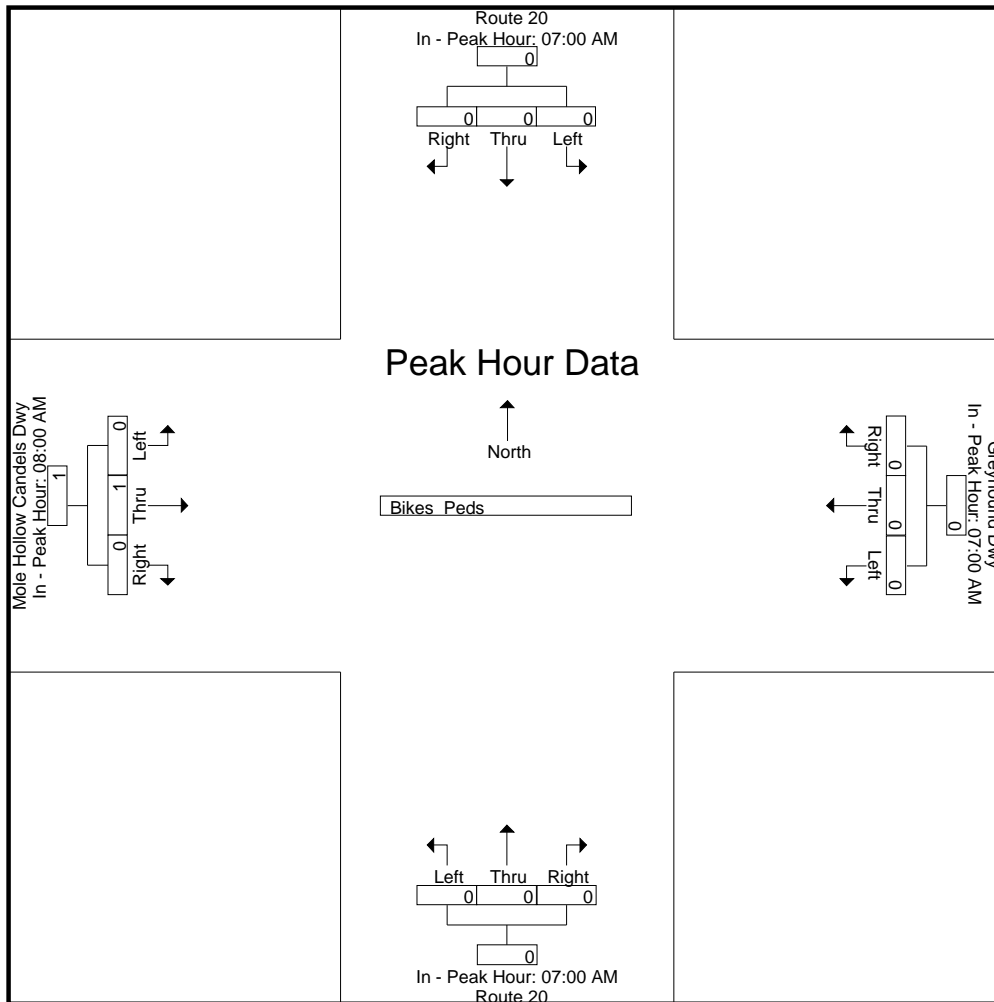
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	07:00 AM				07:00 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

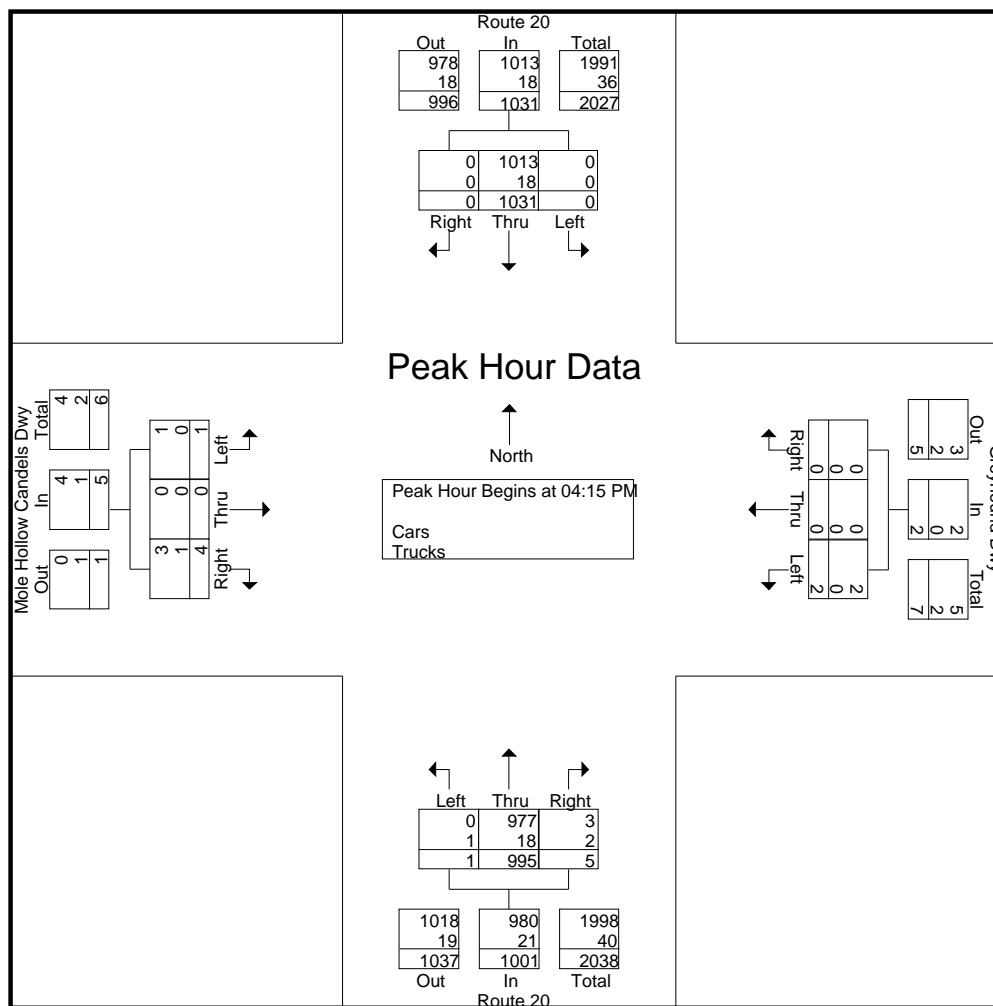
File Name : 87070002
 Site Code : 87070002
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	242	0	2	0	0	1	223	2	1	0	1	472
04:15 PM	0	271	0	0	0	0	1	263	0	0	0	0	535
04:30 PM	0	263	0	1	0	0	0	268	3	0	0	2	537
04:45 PM	0	227	0	0	0	0	0	240	1	0	0	0	468
Total	0	1003	0	3	0	0	2	994	6	1	0	3	2012
05:00 PM	0	270	0	1	0	0	0	224	1	1	0	2	499
05:15 PM	1	270	1	0	0	0	0	220	1	0	0	5	498
05:30 PM	0	243	0	0	0	0	0	227	0	0	0	2	472
05:45 PM	0	233	0	1	0	0	0	194	2	0	0	2	432
Total	1	1016	1	2	0	0	0	865	4	1	0	11	1901
Grand Total	1	2019	1	5	0	0	2	1859	10	2	0	14	3913
Apprch %	0	99.9	0	100	0	0	0.1	99.4	0.5	12.5	0	87.5	
Total %	0	51.6	0	0.1	0	0	0.1	47.5	0.3	0.1	0	0.4	
Cars	0	1976	1	5	0	0	1	1817	8	2	0	12	3822
% Cars	0	97.9	100	100	0	0	50	97.7	80	100	0	85.7	97.7
Trucks	1	43	0	0	0	0	1	42	2	0	0	2	91
% Trucks	100	2.1	0	0	0	0	50	2.3	20	0	0	14.3	2.3

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	271	0	271	0	0	0	0	1	263	0	264	0	0	0	0	535
04:30 PM	0	263	0	263	1	0	0	1	0	268	3	271	0	0	2	2	537
04:45 PM	0	227	0	227	0	0	0	0	0	240	1	241	0	0	0	0	468
05:00 PM	0	270	0	270	1	0	0	1	0	224	1	225	1	0	2	3	499
Total Volume	0	1031	0	1031	2	0	0	2	1	995	5	1001	1	0	4	5	2039
% App. Total	0	100	0		100	0	0		0.1	99.4	0.5		20	0	80		
PHF	.000	.951	.000	.951	.500	.000	.000	.500	.250	.928	.417	.923	.250	.000	.500	.417	.949
Cars	0	1013	0	1013	2	0	0	2	0	977	3	980	1	0	3	4	1999
% Cars	0	98.3	0	98.3	100	0	0	100	0	98.2	60.0	97.9	100	0	75.0	80.0	98.0
Trucks	0	18	0	18	0	0	0	0	1	18	2	21	0	0	1	1	40
% Trucks	0	1.7	0	1.7	0	0	0	0	100	1.8	40.0	2.1	0	0	25.0	20.0	2.0

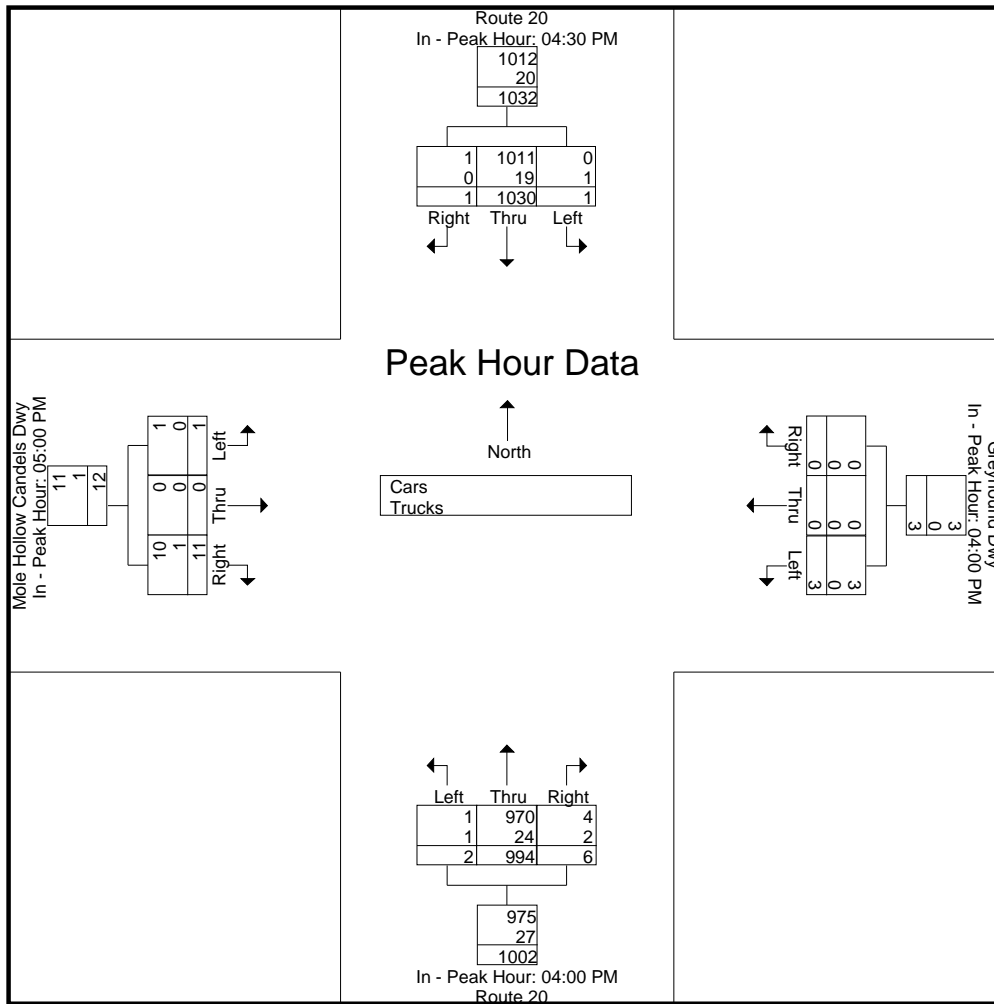
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	04:30 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	0	263	0	263	2	0	0	2	1	223	2	226	1	0	2	3
+15 mins.	0	227	0	227	0	0	0	0	1	263	0	264	0	0	5	5
+30 mins.	0	270	0	270	1	0	0	1	0	268	3	271	0	0	2	2
+45 mins.	1	270	1	272	0	0	0	0	0	240	1	241	0	0	2	2
Total Volume	1	1030	1	1032	3	0	0	3	2	994	6	1002	1	0	11	12
% App. Total	0.1	99.8	0.1		100	0	0		0.2	99.2	0.6		8.3	0	91.7	
PHF	.250	.954	.250	.949	.375	.000	.000	.375	.500	.927	.500	.924	.250	.000	.550	.600
Cars	0	1011	1	1012	3	0	0	3	1	970	4	975	1	0	10	11
% Cars	0	98.2	100	98.1	100	0	0	100	50	97.6	66.7	97.3	100	0	90.9	91.7
Trucks	1	19	0	20	0	0	0	0	1	24	2	27	0	0	1	1
% Trucks	100	1.8	0	1.9	0	0	0	0	50	2.4	33.3	2.7	0	0	9.1	8.3

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

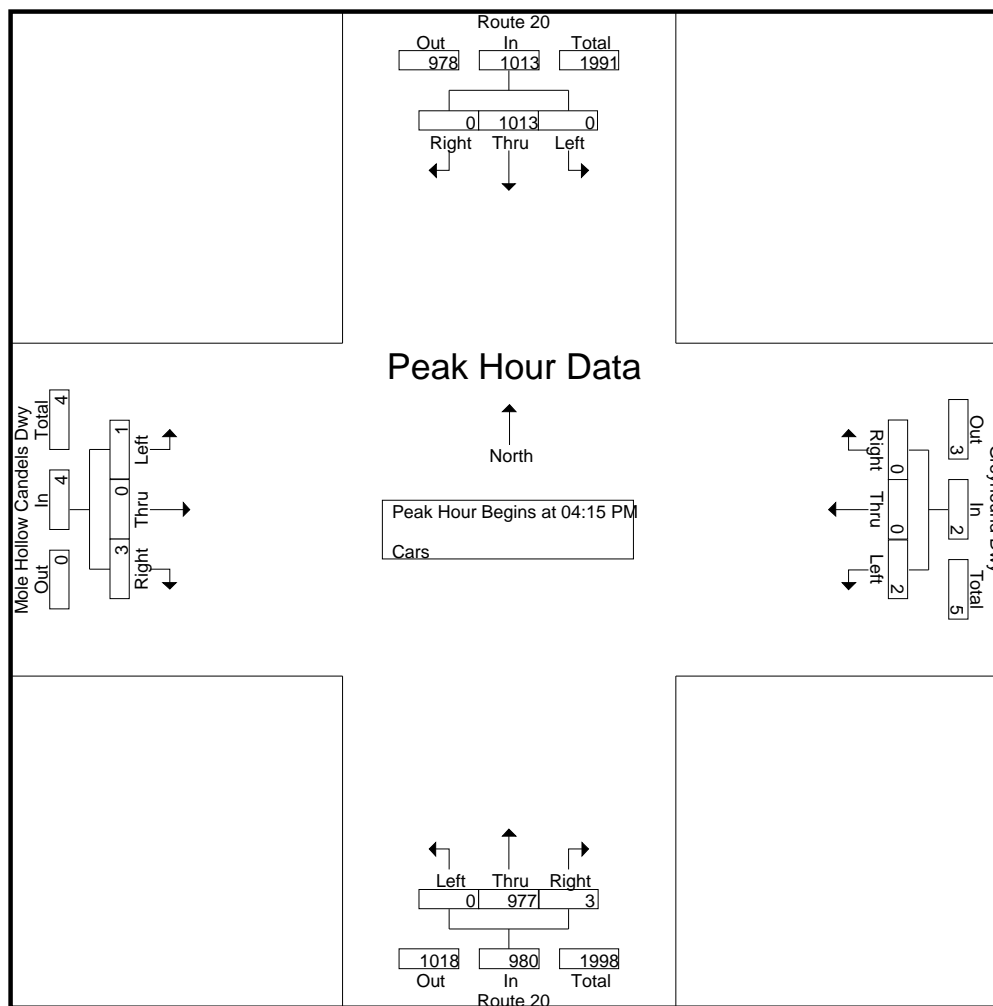
File Name : 87070002
Site Code : 87070002
Start Date : 10/1/2020
Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	235	0	2	0	0	1	212	2	1	0	1	454
04:15 PM	0	266	0	0	0	0	0	257	0	0	0	0	523
04:30 PM	0	261	0	1	0	0	0	263	1	0	0	1	527
04:45 PM	0	222	0	0	0	0	0	238	1	0	0	0	461
Total	0	984	0	3	0	0	1	970	4	1	0	2	1965
05:00 PM	0	264	0	1	0	0	0	219	1	1	0	2	488
05:15 PM	0	264	1	0	0	0	0	217	1	0	0	5	488
05:30 PM	0	236	0	0	0	0	0	221	0	0	0	1	458
05:45 PM	0	228	0	1	0	0	0	190	2	0	0	2	423
Total	0	992	1	2	0	0	0	847	4	1	0	10	1857
Grand Total	0	1976	1	5	0	0	1	1817	8	2	0	12	3822
Apprch %	0	99.9	0.1	100	0	0	0.1	99.5	0.4	14.3	0	85.7	
Total %	0	51.7	0	0.1	0	0	0	47.5	0.2	0.1	0	0.3	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	266	0	266	0	0	0	0	0	257	0	257	0	0	0	0	523
04:30 PM	0	261	0	261	1	0	0	1	0	263	1	264	0	0	1	1	527
04:45 PM	0	222	0	222	0	0	0	0	0	238	1	239	0	0	0	0	461
05:00 PM	0	264	0	264	1	0	0	1	0	219	1	220	1	0	2	3	488
Total Volume	0	1013	0	1013	2	0	0	2	0	977	3	980	1	0	3	4	1999
% App. Total	0	100	0	100	100	0	0	100	0	99.7	0.3	99.7	25	0	75	75	
PHF	.000	.952	.000	.952	.500	.000	.000	.500	.000	.929	.750	.928	.250	.000	.375	.333	.948

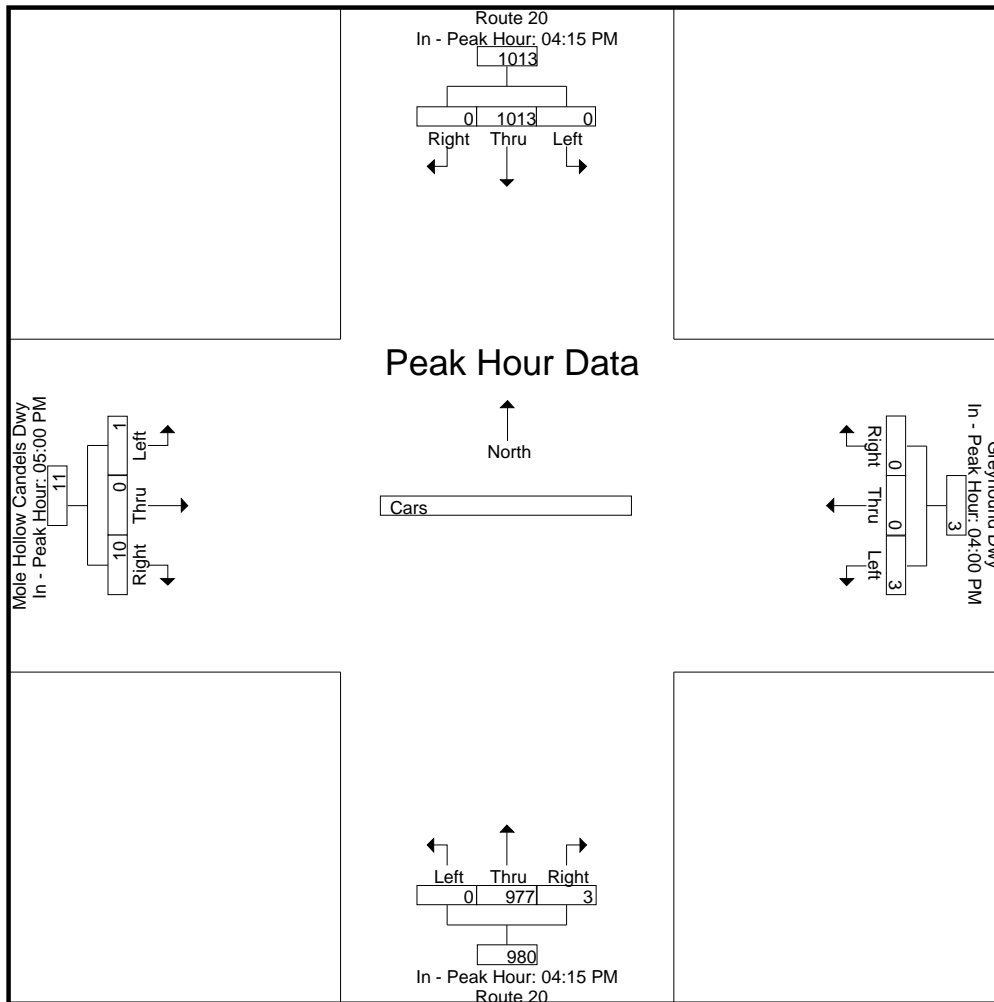
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	04:15 PM		04:00 PM				04:15 PM				05:00 PM					
+0 mins.	0	266	0	266	2	0	0	2	0	257	0	257	1	0	2	3
+15 mins.	0	261	0	261	0	0	0	0	0	263	1	264	0	0	5	5
+30 mins.	0	222	0	222	1	0	0	1	0	238	1	239	0	0	1	1
+45 mins.	0	264	0	264	0	0	0	0	0	219	1	220	0	0	2	2
Total Volume	0	1013	0	1013	3	0	0	3	0	977	3	980	1	0	10	11
% App. Total	0	100	0		100	0	0		0	99.7	0.3		9.1	0	90.9	
PHF	.000	.952	.000	.952	.375	.000	.000	.375	.000	.929	.750	.928	.250	.000	.500	.550

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 10/1/2020
Page No : 7

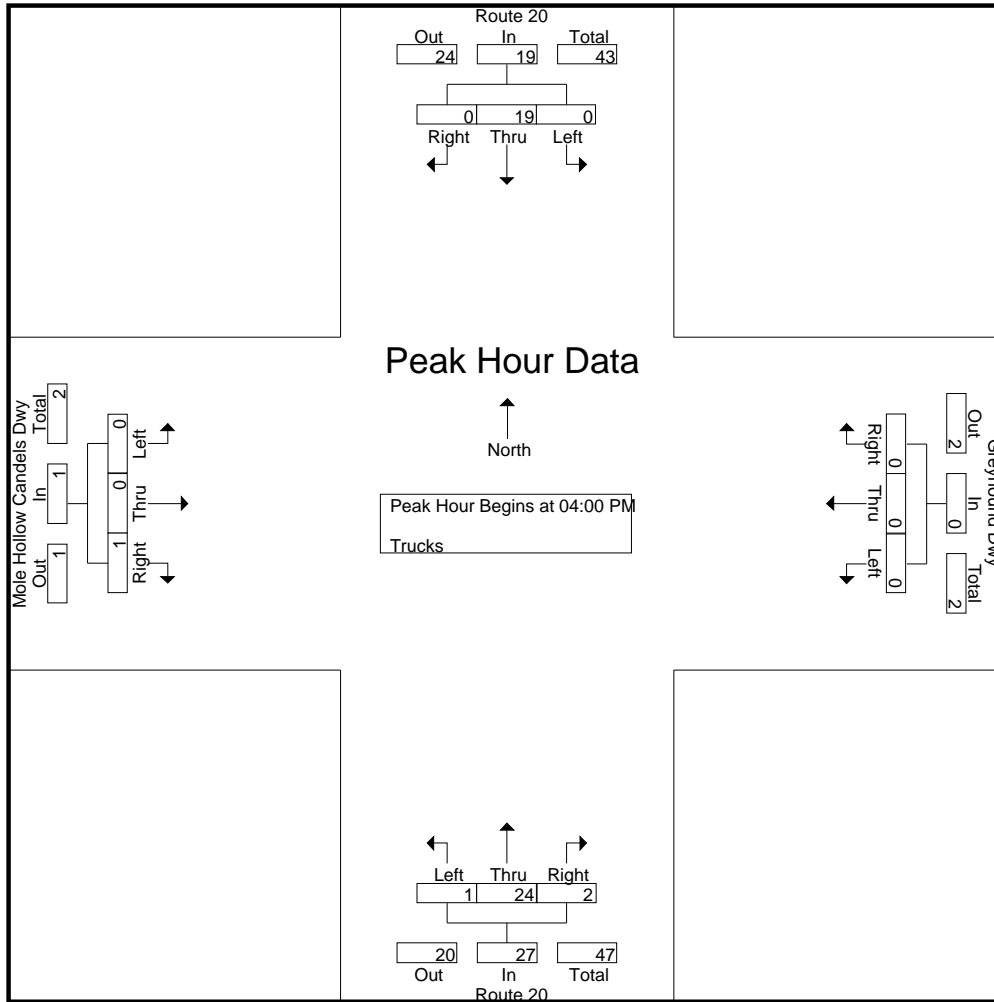
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candels Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	7	0	0	0	0	0	11	0	0	0	0	18
04:15 PM	0	5	0	0	0	0	1	6	0	0	0	0	12
04:30 PM	0	2	0	0	0	0	0	5	2	0	0	1	10
04:45 PM	0	5	0	0	0	0	0	2	0	0	0	0	7
Total	0	19	0	0	0	0	1	24	2	0	0	1	47
05:00 PM	0	6	0	0	0	0	0	5	0	0	0	0	11
05:15 PM	1	6	0	0	0	0	0	3	0	0	0	0	10
05:30 PM	0	7	0	0	0	0	0	6	0	0	0	1	14
05:45 PM	0	5	0	0	0	0	0	4	0	0	0	0	9
Total	1	24	0	0	0	0	0	18	0	0	0	1	44
Grand Total	1	43	0	0	0	0	1	42	2	0	0	2	91
Apprch %	2.3	97.7	0	0	0	0	2.2	93.3	4.4	0	0	100	
Total %	1.1	47.3	0	0	0	0	1.1	46.2	2.2	0	0	2.2	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:00 PM																		
04:00 PM	0	7	0	7	0	0	0	0	0	0	11	0	11	0	0	0	0	18
04:15 PM	0	5	0	5	0	0	0	0	0	1	6	0	7	0	0	0	0	12
04:30 PM	0	2	0	2	0	0	0	0	0	0	5	2	7	0	0	1	1	10
04:45 PM	0	5	0	5	0	0	0	0	0	0	2	0	2	0	0	0	0	7
Total Volume	0	19	0	19	0	0	0	0	0	1	24	2	27	0	0	1	1	47
% App. Total	0	100	0	100	0	0	0	0	0	3.7	88.9	7.4	100	0	0	100	0	100
PHF	.000	.679	.000	.679	.000	.000	.000	.000	.000	.250	.545	.250	.614	.000	.000	.250	.250	.653

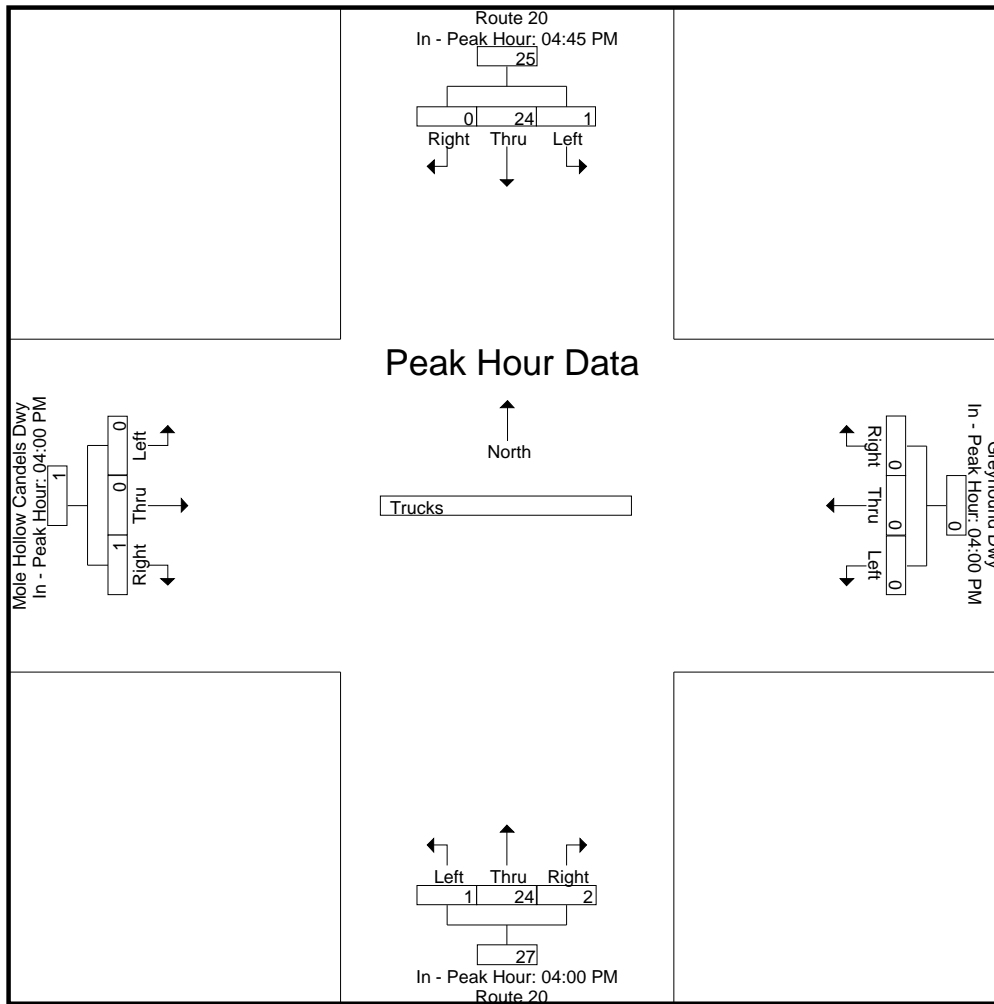
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	04:45 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	5	0	5	0	0	0	0	0	11	0	11	0	0	0	0
+15 mins.	0	6	0	6	0	0	0	0	1	6	0	7	0	0	0	0
+30 mins.	1	6	0	7	0	0	0	0	0	5	2	7	0	0	1	1
+45 mins.	0	7	0	7	0	0	0	0	0	2	0	2	0	0	0	0
Total Volume	1	24	0	25	0	0	0	0	1	24	2	27	0	0	1	1
% App. Total	4	96	0		0	0	0		3.7	88.9	7.4		0	0	100	
PHF	.250	.857	.000	.893	.000	.000	.000	.000	.250	.545	.250	.614	.000	.000	.250	.250

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 10/1/2020
Page No : 10

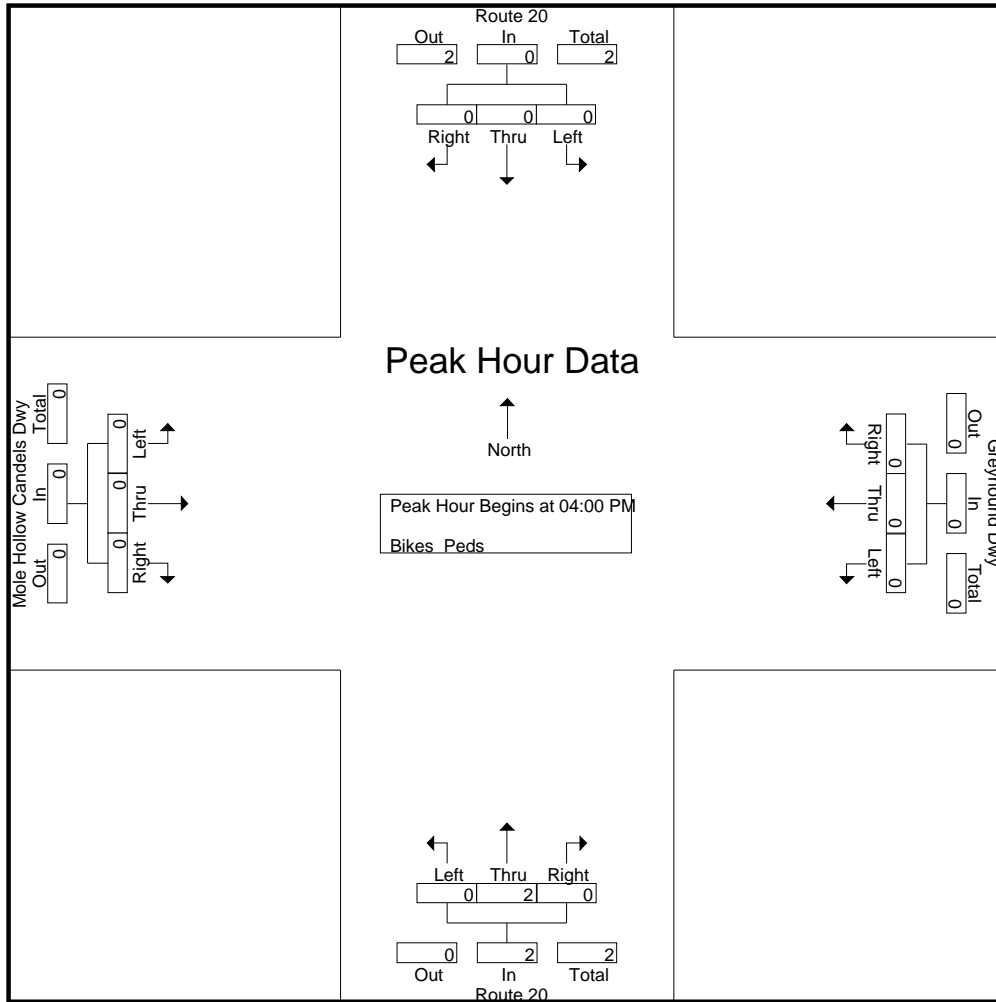
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
05:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	2
Grand Total	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2	2	4
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0				
Total %	0	0	0		0	0	0		0	100	0		0	0	0		50	50	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candels Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.500

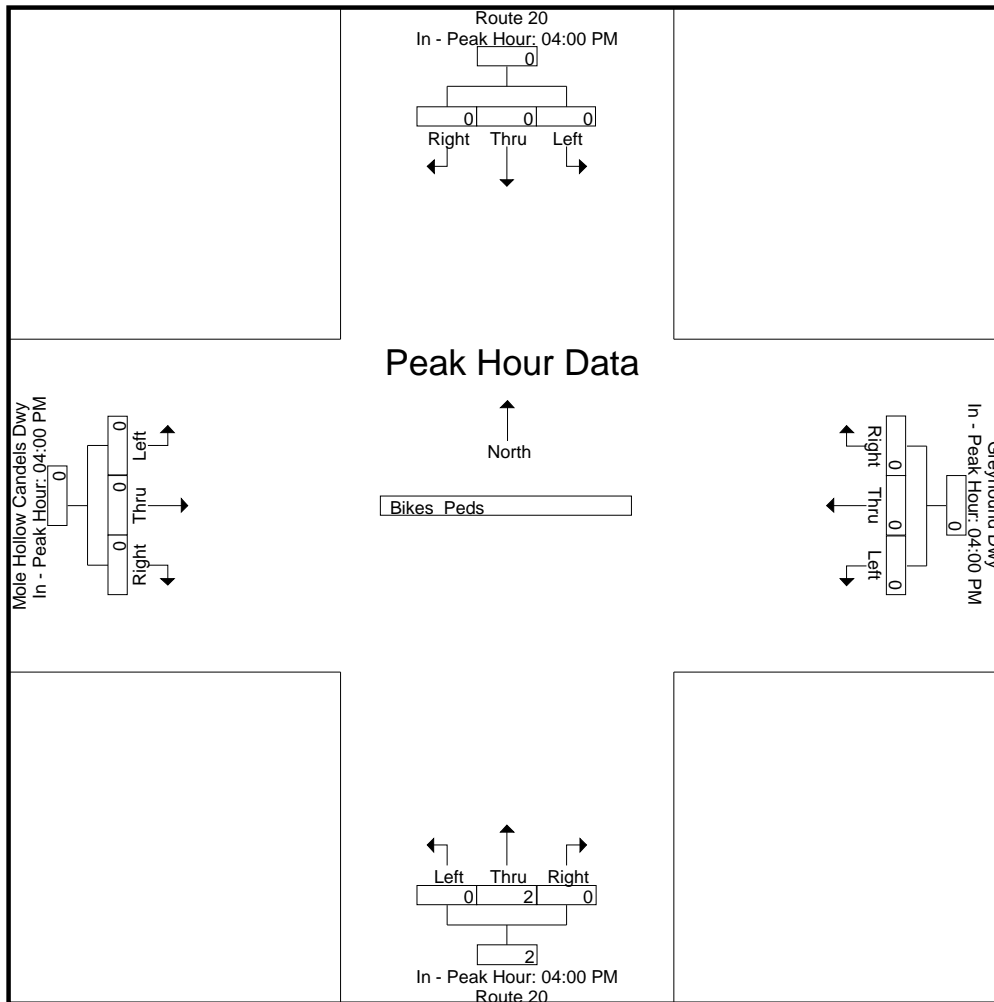
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

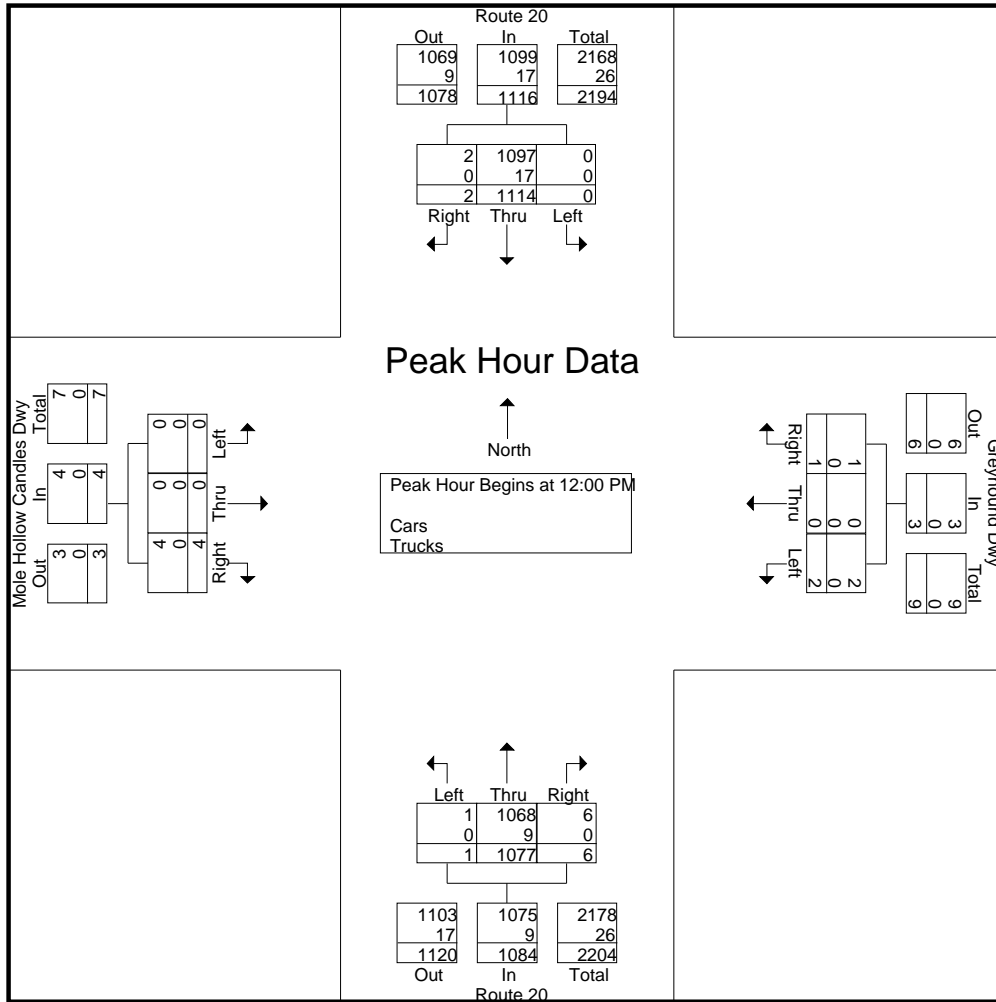
File Name : 870700S2
 Site Code : 87070002
 Start Date : 10/3/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candles Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	227	0	0	0	1	0	246	0	0	0	1	475
11:15 AM	0	246	0	0	0	0	0	261	2	0	0	1	510
11:30 AM	0	251	0	3	0	0	1	270	1	0	0	2	528
11:45 AM	0	265	1	0	0	0	0	290	2	0	0	0	558
Total	0	989	1	3	0	1	1	1067	5	0	0	4	2071
12:00 PM	0	285	1	0	0	0	1	264	1	0	0	2	554
12:15 PM	0	215	1	1	0	0	0	271	2	0	0	0	490
12:30 PM	0	300	0	0	0	0	0	286	0	0	0	1	587
12:45 PM	0	314	0	1	0	1	0	256	3	0	0	1	576
Total	0	1114	2	2	0	1	1	1077	6	0	0	4	2207
01:00 PM	0	266	0	0	0	0	0	235	0	0	0	0	501
01:15 PM	0	302	0	1	0	0	0	238	1	0	0	0	542
01:30 PM	0	284	0	0	0	1	0	240	2	0	0	1	528
01:45 PM	0	281	0	1	0	0	0	269	0	0	0	0	551
Total	0	1133	0	2	0	1	0	982	3	0	0	1	2122
Grand Total	0	3236	3	7	0	3	2	3126	14	0	0	9	6400
Apprch %	0	99.9	0.1	70	0	30	0.1	99.5	0.4	0	0	100	
Total %	0	50.6	0	0.1	0	0	0	48.8	0.2	0	0	0.1	
Cars	0	3200	3	7	0	3	2	3100	13	0	0	9	6337
% Cars	0	98.9	100	100	0	100	100	99.2	92.9	0	0	100	99
Trucks	0	36	0	0	0	0	0	26	1	0	0	0	63
% Trucks	0	1.1	0	0	0	0	0	0.8	7.1	0	0	0	1

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candles Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	285	1	286	0	0	0	0	1	264	1	266	0	0	2	2	554
12:15 PM	0	215	1	216	1	0	0	1	0	271	2	273	0	0	0	0	490
12:30 PM	0	300	0	300	0	0	0	0	0	286	0	286	0	0	1	1	587
12:45 PM	0	314	0	314	1	0	1	2	0	256	3	259	0	0	1	1	576
Total Volume	0	1114	2	1116	2	0	1	3	1	1077	6	1084	0	0	4	4	2207
% App. Total	0	99.8	0.2		66.7	0	33.3		0.1	99.4	0.6		0	0	100		
PHF	.000	.887	.500	.889	.500	.000	.250	.375	.250	.941	.500	.948	.000	.000	.500	.500	.940
Cars	0	1097	2	1099	2	0	1	3	1	1068	6	1075	0	0	4	4	2181
% Cars	0	98.5	100	98.5	100	0	100	100	100	99.2	100	99.2	0	0	100	100	98.8
Trucks	0	17	0	17	0	0	0	0	0	9	0	9	0	0	0	0	26
% Trucks	0	1.5	0	1.5	0	0	0	0	0	0.8	0	0.8	0	0	0	0	1.2

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM				11:00 AM				11:45 AM				11:15 AM			
+0 mins.	0	300	0	300	0	0	1	1	0	290	2	292	0	0	1	1
+15 mins.	0	314	0	314	0	0	0	0	1	264	1	266	0	0	2	2
+30 mins.	0	266	0	266	3	0	0	3	0	271	2	273	0	0	0	0
+45 mins.	0	302	0	302	0	0	0	0	0	286	0	286	0	0	2	2
Total Volume	0	1182	0	1182	3	0	1	4	1	1111	5	1117	0	0	5	5
% App. Total	0	100	0		75	0	25		0.1	99.5	0.4		0	0	100	
PHF	.000	.941	.000	.941	.250	.000	.250	.333	.250	.958	.625	.956	.000	.000	.625	.625
Cars	0	1172	0	1172	3	0	1	4	1	1103	4	1108	0	0	5	5
% Cars	0	99.2	0	99.2	100	0	100	100	100	99.3	80	99.2	0	0	100	100
Trucks	0	10	0	10	0	0	0	0	0	8	1	9	0	0	0	0
% Trucks	0	0.8	0	0.8	0	0	0	0	0	0.7	20	0.8	0	0	0	0

Accurate Counts

978-664-2565

File Name : 870700S2

Site Code : 87070002

Start Date : 10/3/2020

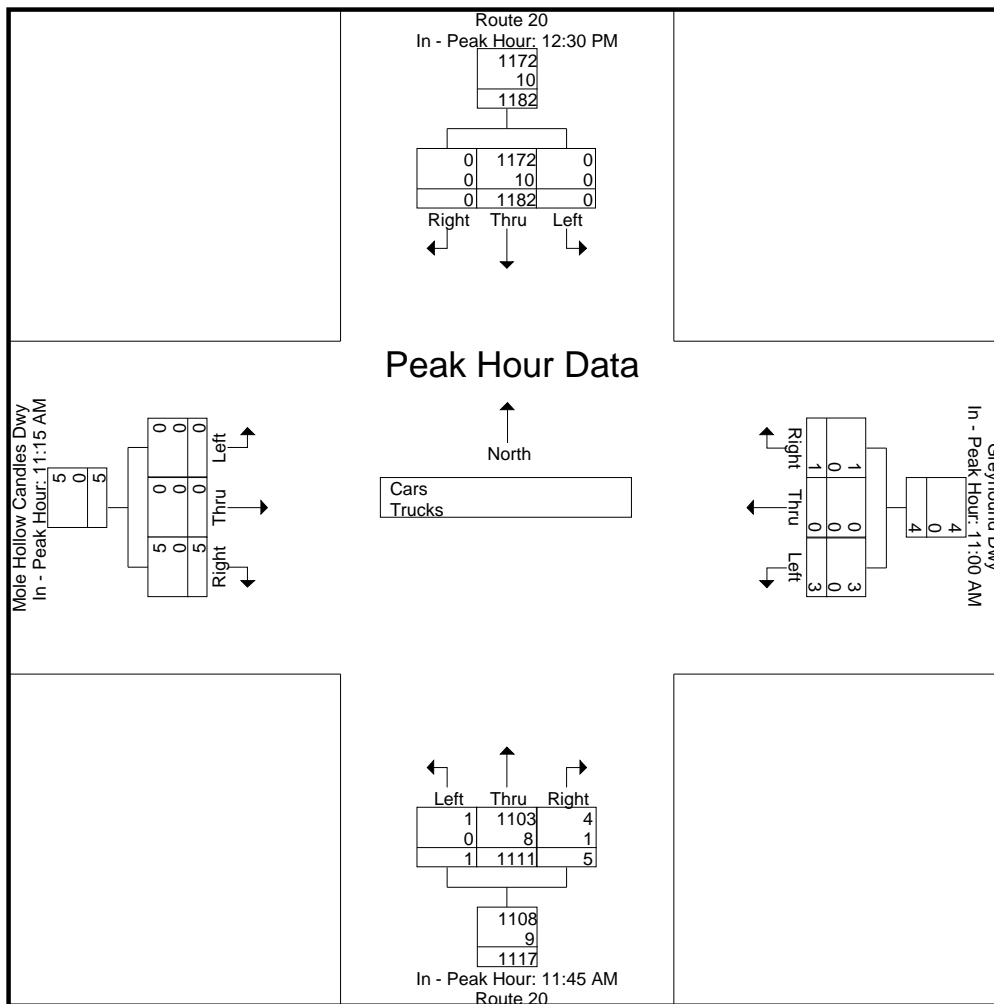
Page No : 3

N/S Street : Route 20

E/W Street : Greyhound Dwy/Mole Hollow

City/State : Sturbridge, MA

Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

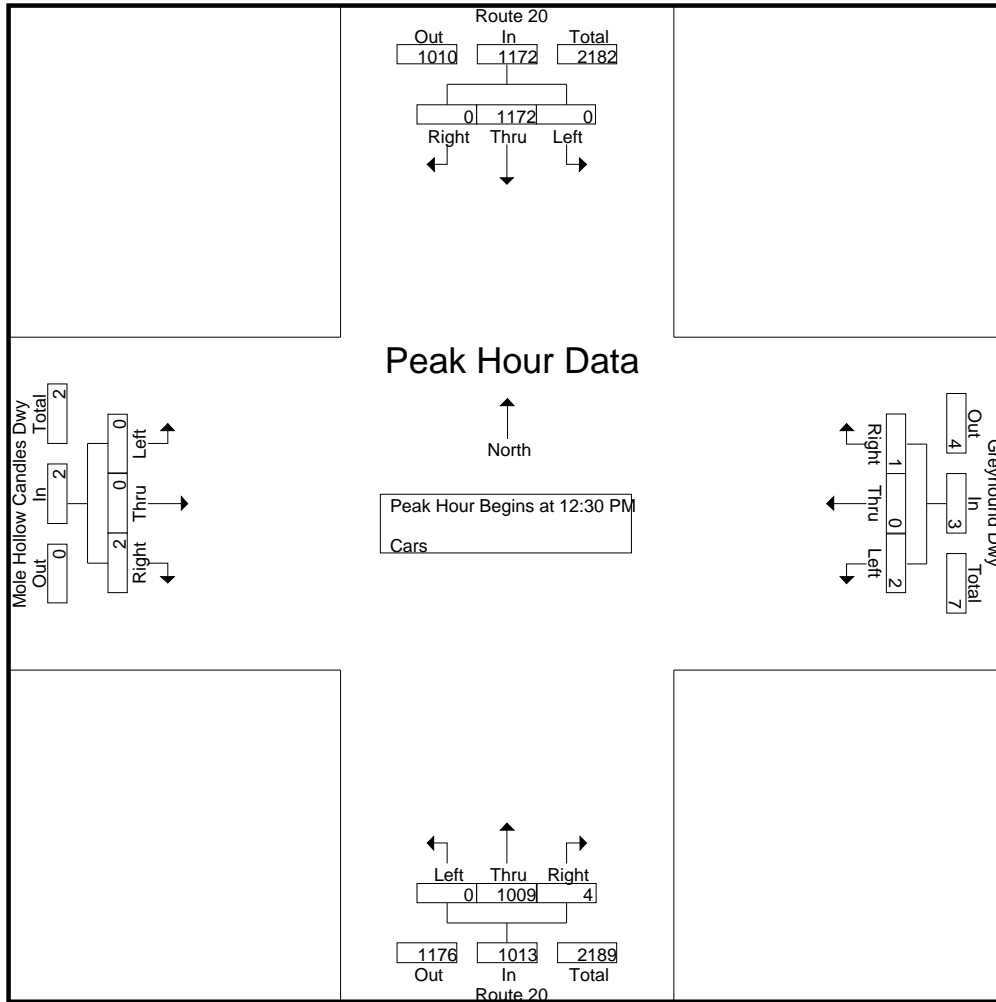
File Name : 870700S2
 Site Code : 87070002
 Start Date : 10/3/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candles Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	226	0	0	0	1	0	246	0	0	0	1	474
11:15 AM	0	240	0	0	0	0	0	257	2	0	0	1	500
11:30 AM	0	248	0	3	0	0	1	266	1	0	0	2	521
11:45 AM	0	262	1	0	0	0	0	289	1	0	0	0	553
Total	0	976	1	3	0	1	1	1058	4	0	0	4	2048
12:00 PM	0	282	1	0	0	0	1	262	1	0	0	2	549
12:15 PM	0	209	1	1	0	0	0	267	2	0	0	0	480
12:30 PM	0	297	0	0	0	0	0	285	0	0	0	1	583
12:45 PM	0	309	0	1	0	1	0	254	3	0	0	1	569
Total	0	1097	2	2	0	1	1	1068	6	0	0	4	2181
01:00 PM	0	265	0	0	0	0	0	234	0	0	0	0	499
01:15 PM	0	301	0	1	0	0	0	236	1	0	0	0	539
01:30 PM	0	283	0	0	0	1	0	236	2	0	0	1	523
01:45 PM	0	278	0	1	0	0	0	268	0	0	0	0	547
Total	0	1127	0	2	0	1	0	974	3	0	0	1	2108
Grand Total	0	3200	3	7	0	3	2	3100	13	0	0	9	6337
Apprch %	0	99.9	0.1	70	0	30	0.1	99.5	0.4	0	0	100	
Total %	0	50.5	0	0.1	0	0	0	48.9	0.2	0	0	0.1	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candles Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	0	297	0	297	0	0	0	0	0	285	0	285	0	0	1	1	583
12:45 PM	0	309	0	309	1	0	1	2	0	254	3	257	0	0	1	1	569
01:00 PM	0	265	0	265	0	0	0	0	0	234	0	234	0	0	0	0	499
01:15 PM	0	301	0	301	1	0	0	1	0	236	1	237	0	0	0	0	539
Total Volume	0	1172	0	1172	2	0	1	3	0	1009	4	1013	0	0	2	2	2190
% App. Total	0	100	0		66.7	0	33.3		0	99.6	0.4		0	0	100		
PHF	.000	.948	.000	.948	.500	.000	.250	.375	.000	.885	.333	.889	.000	.000	.500	.500	.939

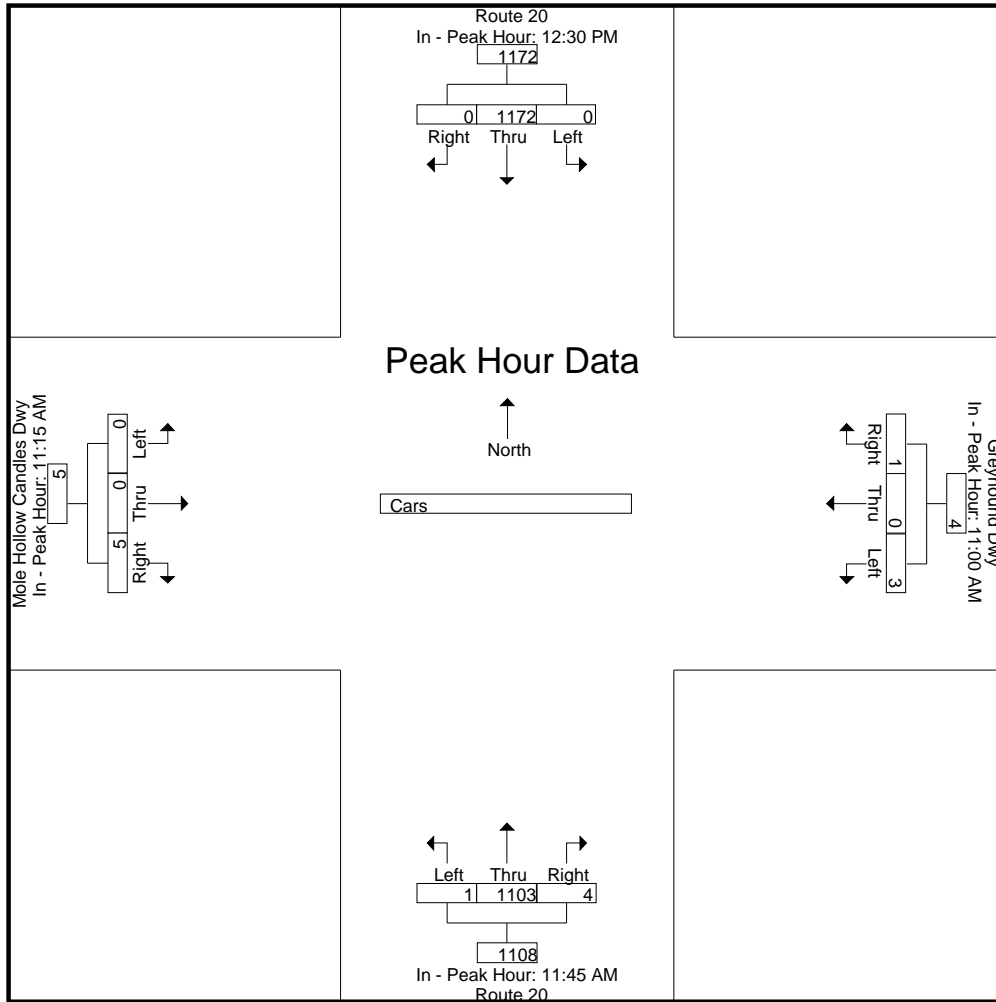
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM				11:00 AM				11:45 AM				11:15 AM			
+0 mins.	0	297	0	297	0	0	1	1	0	289	1	290	0	0	1	1
+15 mins.	0	309	0	309	0	0	0	0	1	262	1	264	0	0	2	2
+30 mins.	0	265	0	265	3	0	0	3	0	267	2	269	0	0	0	0
+45 mins.	0	301	0	301	0	0	0	0	0	285	0	285	0	0	2	2
Total Volume	0	1172	0	1172	3	0	1	4	1	1103	4	1108	0	0	5	5
% App. Total	0	100	0		75	0	25		0.1	99.5	0.4		0	0	100	
PHF	.000	.948	.000	.948	.250	.000	.250	.333	.250	.954	.500	.955	.000	.000	.625	.625

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy/Mole Hollow
 City/State : Sturbridge, MA
 Weather : Clear

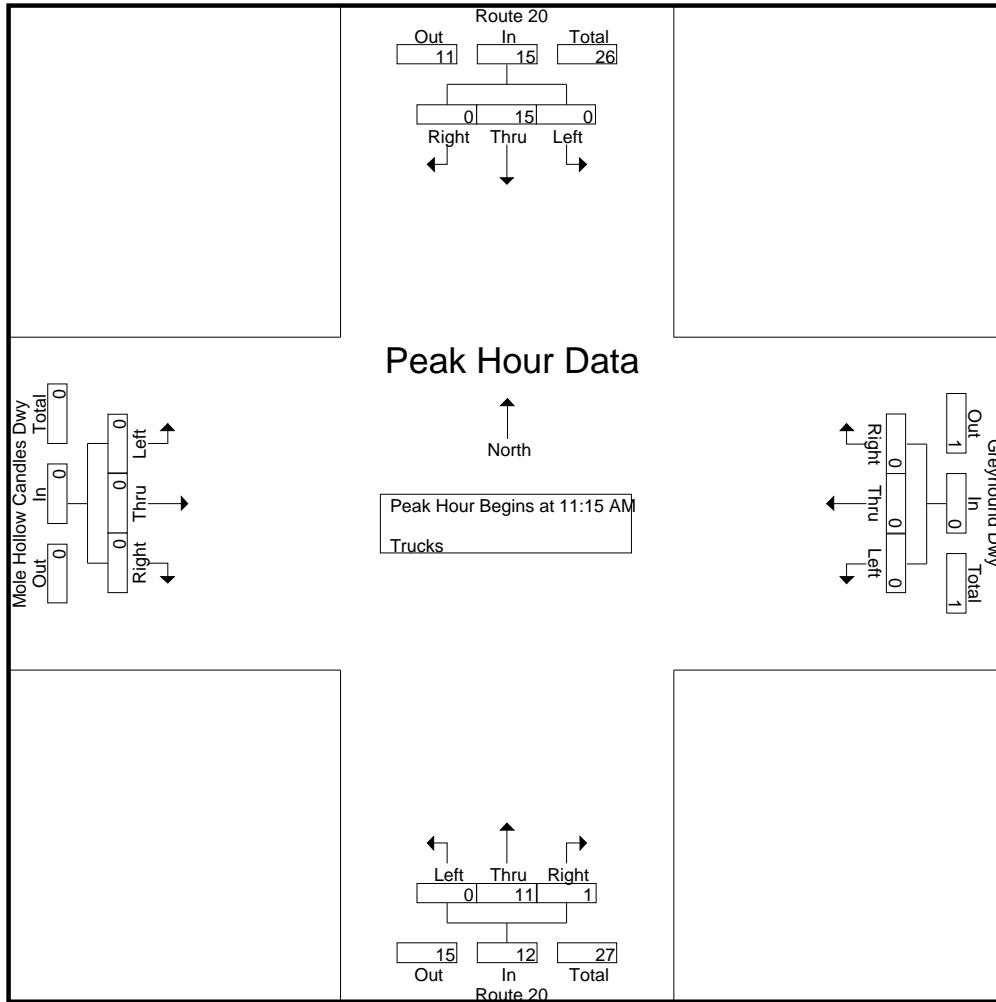
File Name : 870700S2
 Site Code : 87070002
 Start Date : 10/3/2020
 Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Mole Hollow Candles Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	6	0	0	0	0	0	4	0	0	0	0	10
11:30 AM	0	3	0	0	0	0	0	4	0	0	0	0	7
11:45 AM	0	3	0	0	0	0	0	1	1	0	0	0	5
Total	0	13	0	0	0	0	0	9	1	0	0	0	23
12:00 PM	0	3	0	0	0	0	0	2	0	0	0	0	5
12:15 PM	0	6	0	0	0	0	0	4	0	0	0	0	10
12:30 PM	0	3	0	0	0	0	0	1	0	0	0	0	4
12:45 PM	0	5	0	0	0	0	0	2	0	0	0	0	7
Total	0	17	0	0	0	0	0	9	0	0	0	0	26
01:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
01:15 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
01:30 PM	0	1	0	0	0	0	0	4	0	0	0	0	5
01:45 PM	0	3	0	0	0	0	0	1	0	0	0	0	4
Total	0	6	0	0	0	0	0	8	0	0	0	0	14
Grand Total	0	36	0	0	0	0	0	26	1	0	0	0	63
Apprch %	0	100	0	0	0	0	0	96.3	3.7	0	0	0	
Total %	0	57.1	0	0	0	0	0	41.3	1.6	0	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candles Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	6	0	6	0	0	0	0	0	4	0	4	0	0	0	0	10
11:30 AM	0	3	0	3	0	0	0	0	0	4	0	4	0	0	0	0	7
11:45 AM	0	3	0	3	0	0	0	0	0	1	1	2	0	0	0	0	5
12:00 PM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5
Total Volume	0	15	0	15	0	0	0	0	0	11	1	12	0	0	0	0	27
% App. Total	0	100	0		0	0	0		0	91.7	8.3		0	0	0		
PHF	.000	.625	.000	.625	.000	.000	.000	.000	.000	.688	.250	.750	.000	.000	.000	.000	.675

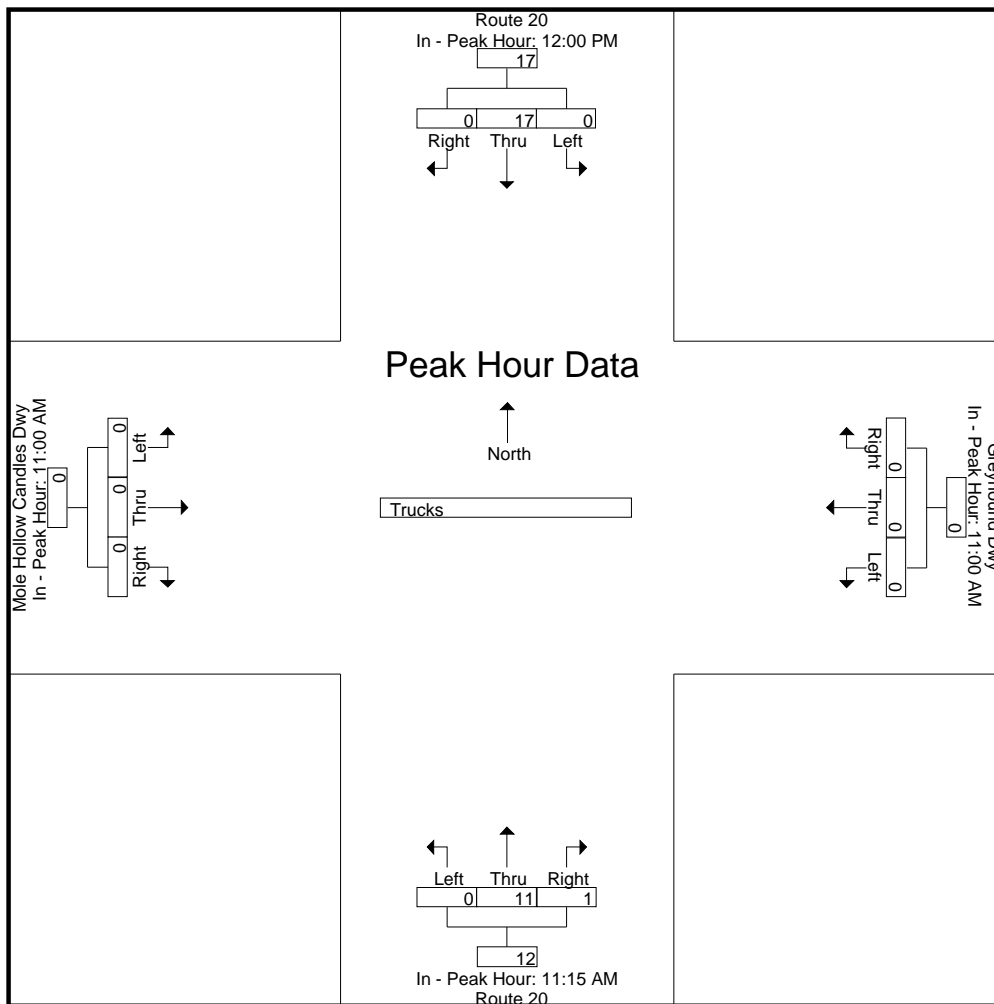
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	12:00 PM				11:00 AM				11:15 AM				11:00 AM			
+0 mins.	0	3	0	3	0	0	0	0	0	4	0	4	0	0	0	0
+15 mins.	0	6	0	6	0	0	0	0	0	4	0	4	0	0	0	0
+30 mins.	0	3	0	3	0	0	0	0	0	1	1	2	0	0	0	0
+45 mins.	0	5	0	5	0	0	0	0	0	2	0	2	0	0	0	0
Total Volume	0	17	0	17	0	0	0	0	0	11	1	12	0	0	0	0
% App. Total	0	100	0		0	0	0		0	91.7	8.3		0	0	0	
PHF	.000	.708	.000	.708	.000	.000	.000	.000	.000	.688	.250	.750	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear

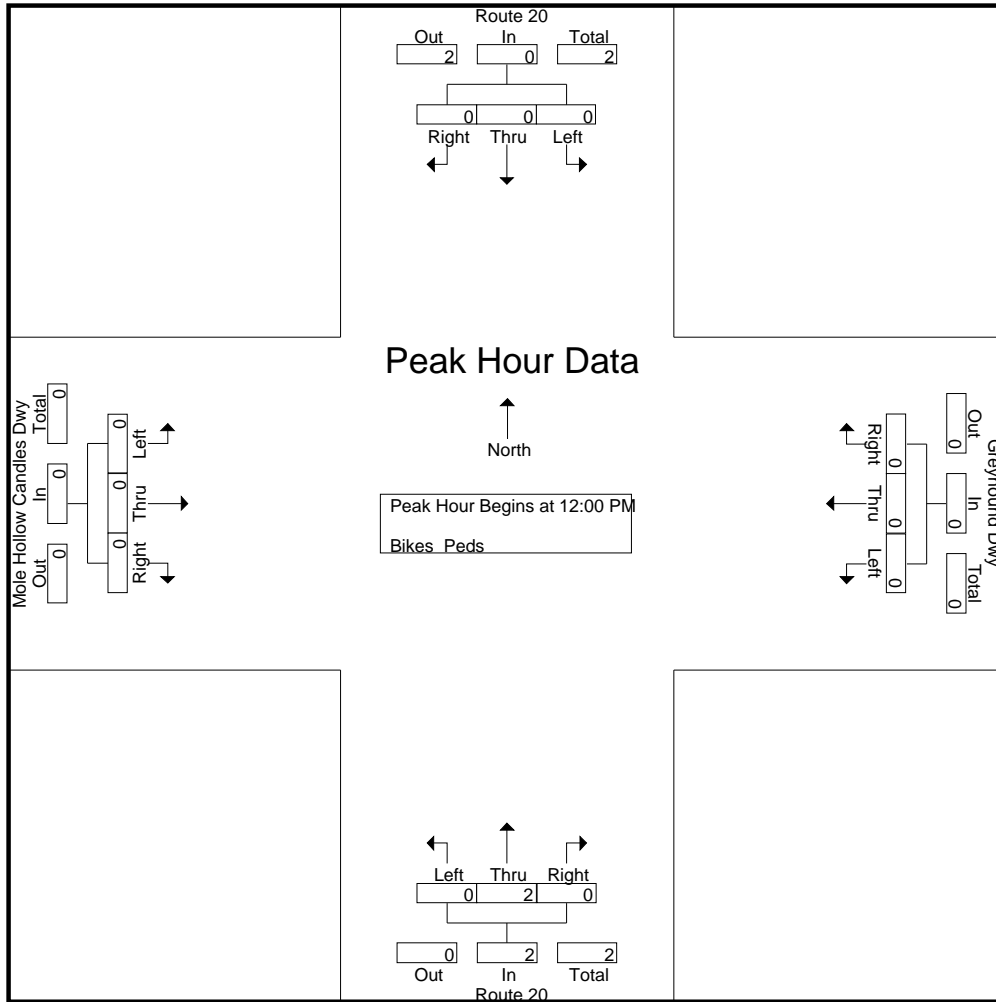
File Name : 870700S2
Site Code : 87070002
Start Date : 10/3/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candles Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	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
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
01:45 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	1	1	0	1
Grand Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	1	2	3
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0				
Total %	0	0	0		0	0	0		0	100	0		0	0	0		33.3	66.7	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Mole Hollow Candles Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
12:30 PM	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	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.500

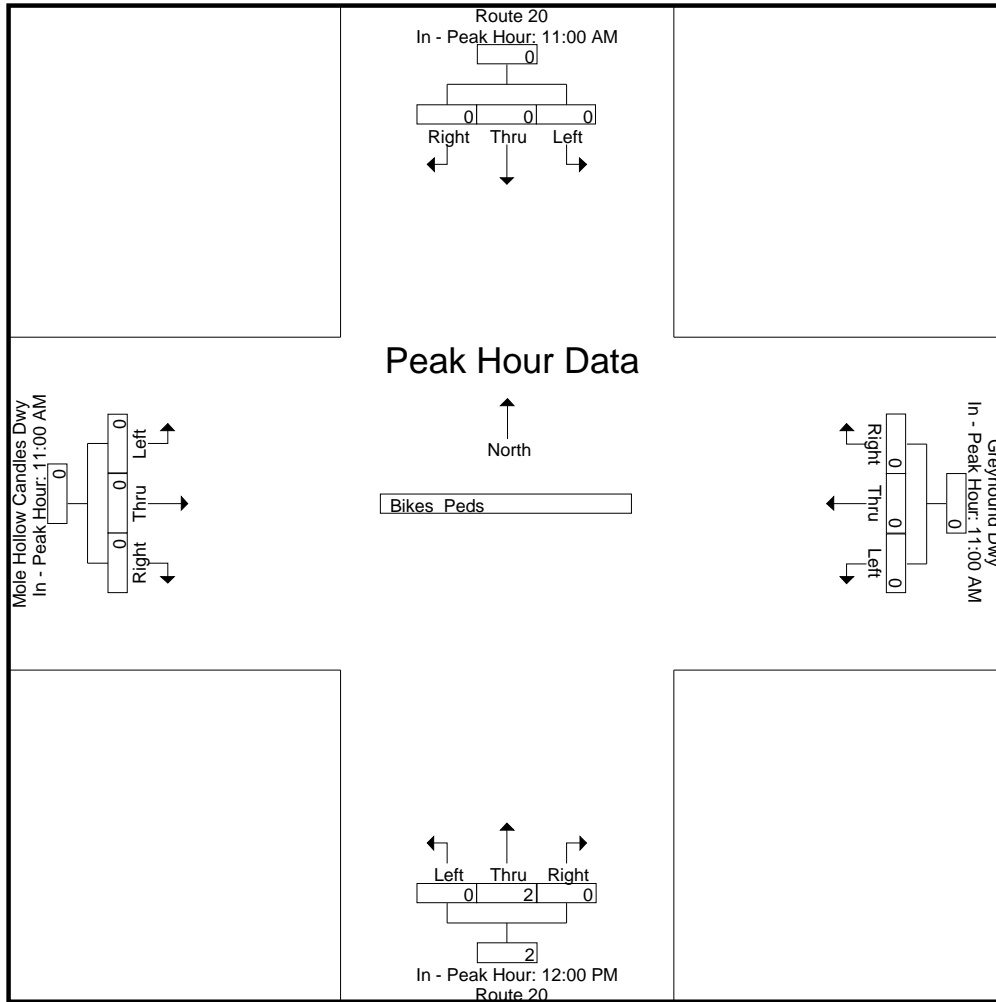
N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



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

	11:00 AM				11:00 AM				12:00 PM				11:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000

N/S Street : Route 20
E/W Street : Greyhound Dwy/Mole Hollow
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : The Center at Hobbs Brook
 City/State : Sturbridge, MA
 Weather : Clear

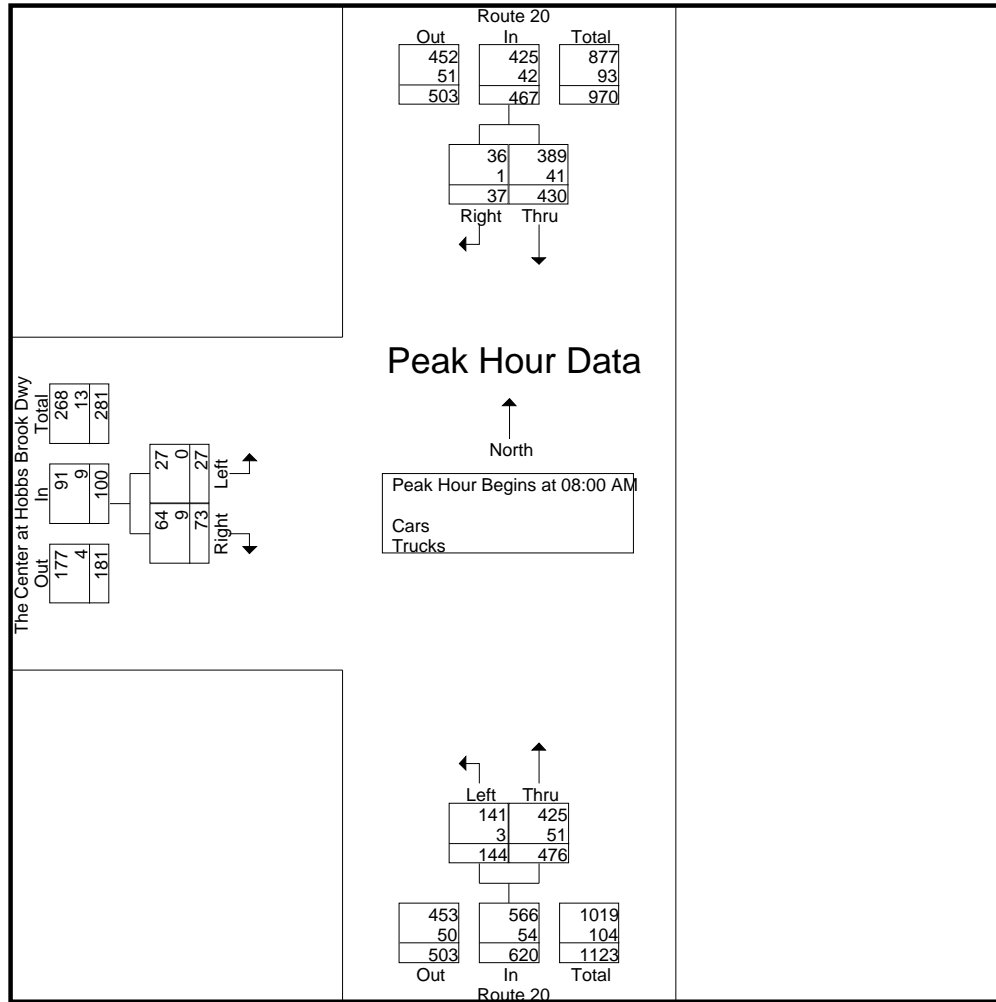
File Name : 87070003
 Site Code : 87070003
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	105	10	9	104	2	6	236
07:15 AM	154	6	19	117	5	8	309
07:30 AM	125	9	19	115	3	12	283
07:45 AM	120	4	20	127	14	9	294
Total	504	29	67	463	24	35	1122
08:00 AM	109	7	22	109	5	9	261
08:15 AM	135	7	27	114	5	19	307
08:30 AM	92	9	37	129	5	21	293
08:45 AM	94	14	58	124	12	24	326
Total	430	37	144	476	27	73	1187
Grand Total	934	66	211	939	51	108	2309
Apprch %	93.4	6.6	18.3	81.7	32.1	67.9	
Total %	40.5	2.9	9.1	40.7	2.2	4.7	
Cars	865	63	205	846	51	93	2123
% Cars	92.6	95.5	97.2	90.1	100	86.1	91.9
Trucks	69	3	6	93	0	15	186
% Trucks	7.4	4.5	2.8	9.9	0	13.9	8.1

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	109	7	116	22	109	131	5	9	14	261
08:15 AM	135	7	142	27	114	141	5	19	24	307
08:30 AM	92	9	101	37	129	166	5	21	26	293
08:45 AM	94	14	108	58	124	182	12	24	36	326
Total Volume	430	37	467	144	476	620	27	73	100	1187
% App. Total	92.1	7.9		23.2	76.8		27	73		
PHF	.796	.661	.822	.621	.922	.852	.563	.760	.694	.910
Cars	389	36	425	141	425	566	27	64	91	1082
% Cars	90.5	97.3	91.0	97.9	89.3	91.3	100	87.7	91.0	91.2
Trucks	41	1	42	3	51	54	0	9	9	105
% Trucks	9.5	2.7	9.0	2.1	10.7	8.7	0	12.3	9.0	8.8

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	07:15 AM			08:00 AM			08:00 AM		
+0 mins.	154	6	160	22	109	131	5	9	14
+15 mins.	125	9	134	27	114	141	5	19	24
+30 mins.	120	4	124	37	129	166	5	21	26
+45 mins.	109	7	116	58	124	182	12	24	36
Total Volume	508	26	534	144	476	620	27	73	100
% App. Total	95.1	4.9		23.2	76.8		27	73	
PHF	.825	.722	.834	.621	.922	.852	.563	.760	.694
Cars	475	24	499	141	425	566	27	64	91
% Cars	93.5	92.3	93.4	97.9	89.3	91.3	100	87.7	91
Trucks	33	2	35	3	51	54	0	9	9
% Trucks	6.5	7.7	6.6	2.1	10.7	8.7	0	12.3	9

Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

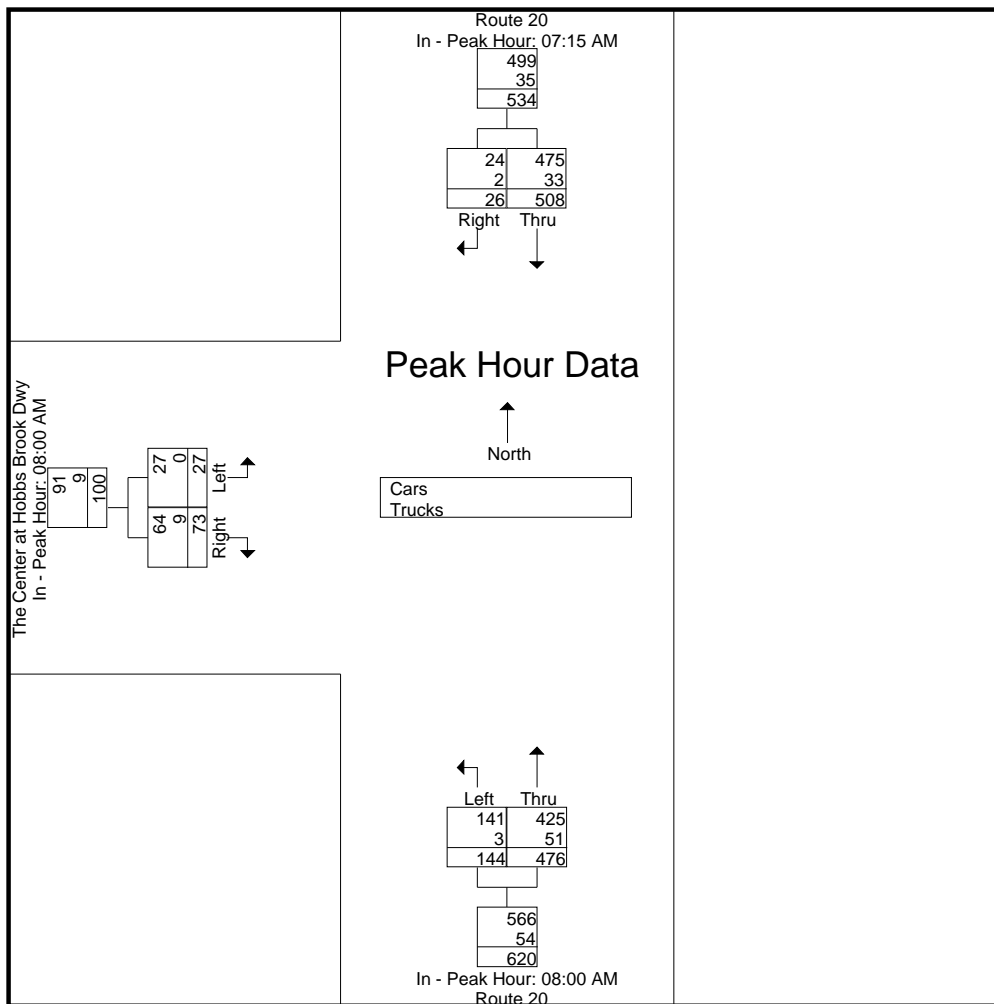
Page No : 3

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

Weather : Clear



Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

Page No : 4

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

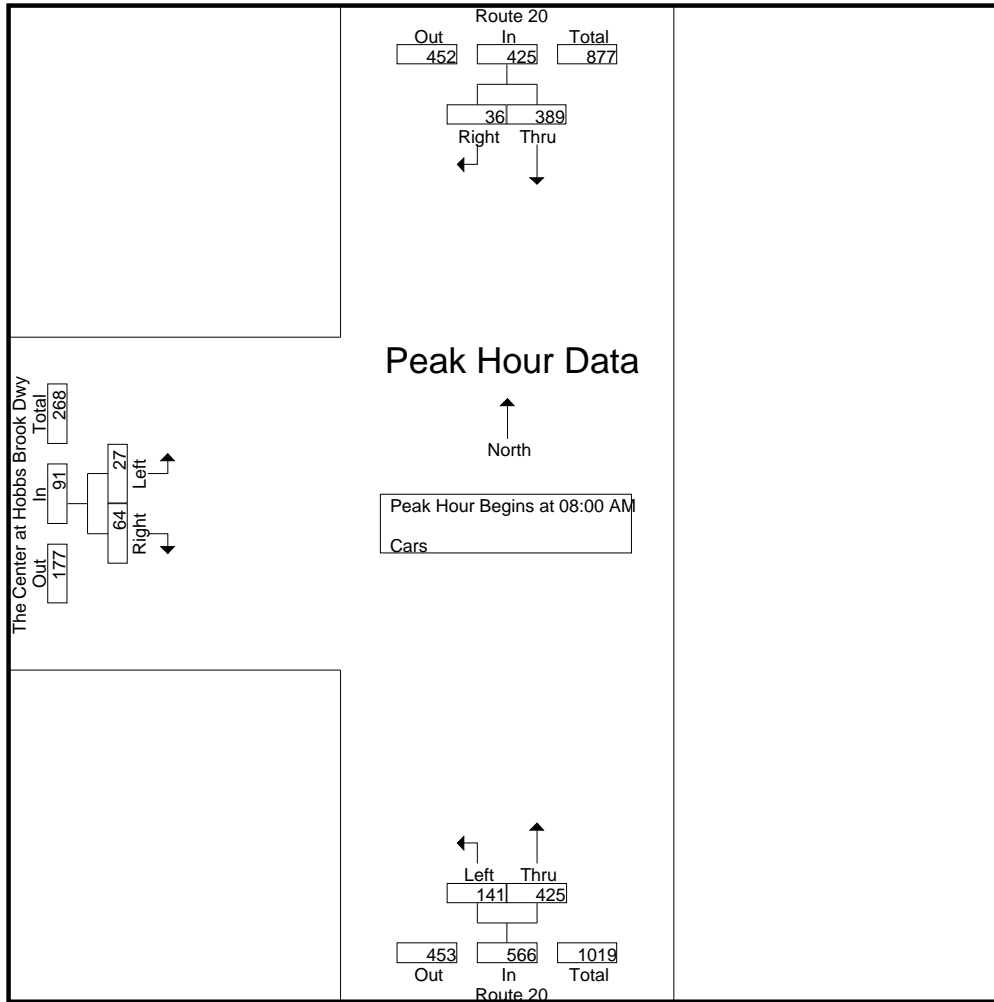
Weather : Clear

Groups Printed- Cars

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
07:00 AM	102	10	9	94	2	4	221
07:15 AM	146	6	17	106	5	8	288
07:30 AM	117	7	18	105	3	11	261
07:45 AM	111	4	20	116	14	6	271
Total	476	27	64	421	24	29	1041
08:00 AM	101	7	22	101	5	8	244
08:15 AM	121	6	26	103	5	16	277
08:30 AM	81	9	37	113	5	19	264
08:45 AM	86	14	56	108	12	21	297
Total	389	36	141	425	27	64	1082
Grand Total	865	63	205	846	51	93	2123
Apprch %	93.2	6.8	19.5	80.5	35.4	64.6	
Total %	40.7	3	9.7	39.8	2.4	4.4	

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	101	7	108	22	101	123	5	8	13	244
08:15 AM	121	6	127	26	103	129	5	16	21	277
08:30 AM	81	9	90	37	113	150	5	19	24	264
08:45 AM	86	14	100	56	108	164	12	21	33	297
Total Volume	389	36	425	141	425	566	27	64	91	1082
% App. Total	91.5	8.5		24.9	75.1		29.7	70.3		
PHF	.804	.643	.837	.629	.940	.863	.563	.762	.689	.911

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	07:00 AM			08:00 AM			08:00 AM		
+0 mins.	102	10	112	22	101	123	5	8	13
+15 mins.	146	6	152	26	103	129	5	16	21
+30 mins.	117	7	124	37	113	150	5	19	24
+45 mins.	111	4	115	56	108	164	12	21	33
Total Volume	476	27	503	141	425	566	27	64	91
% App. Total	94.6	5.4		24.9	75.1		29.7	70.3	
PHF	.815	.675	.827	.629	.940	.863	.563	.762	.689

Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

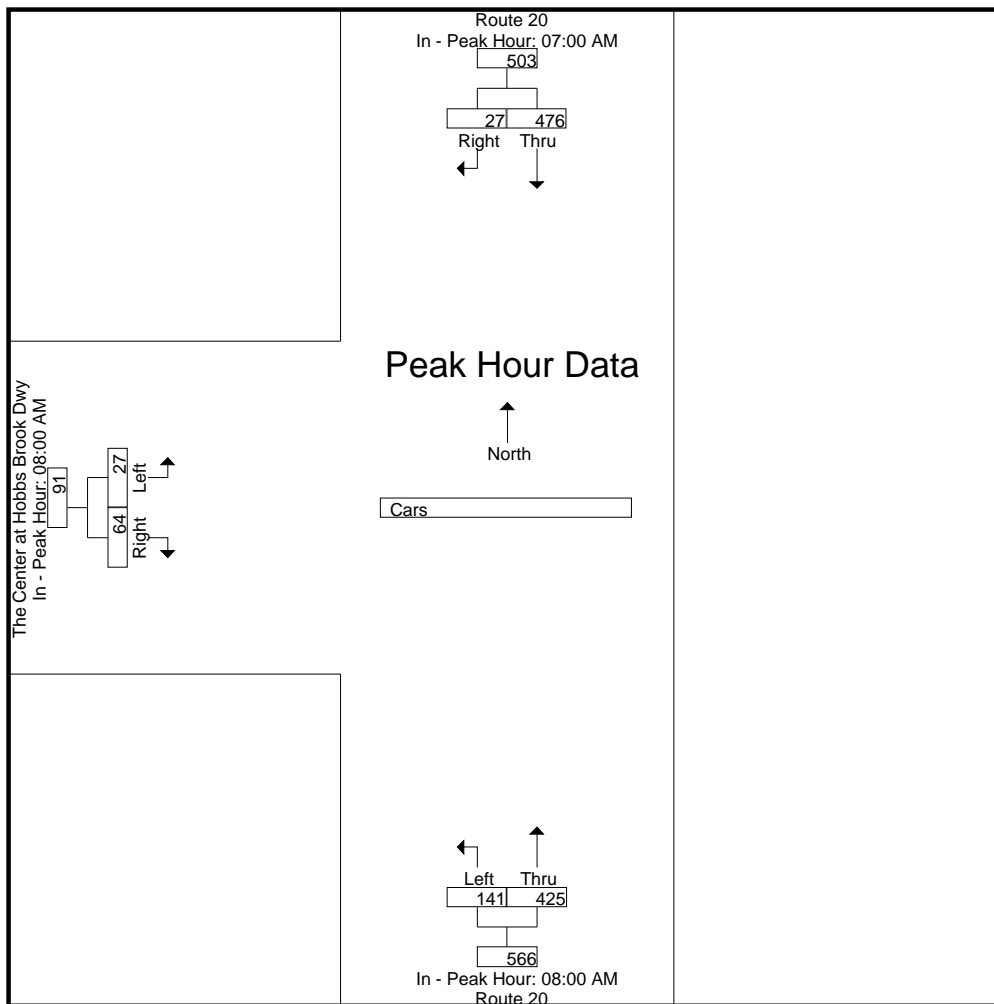
Page No : 6

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070003
Site Code : 87070003
Start Date : 10/1/2020
Page No : 7

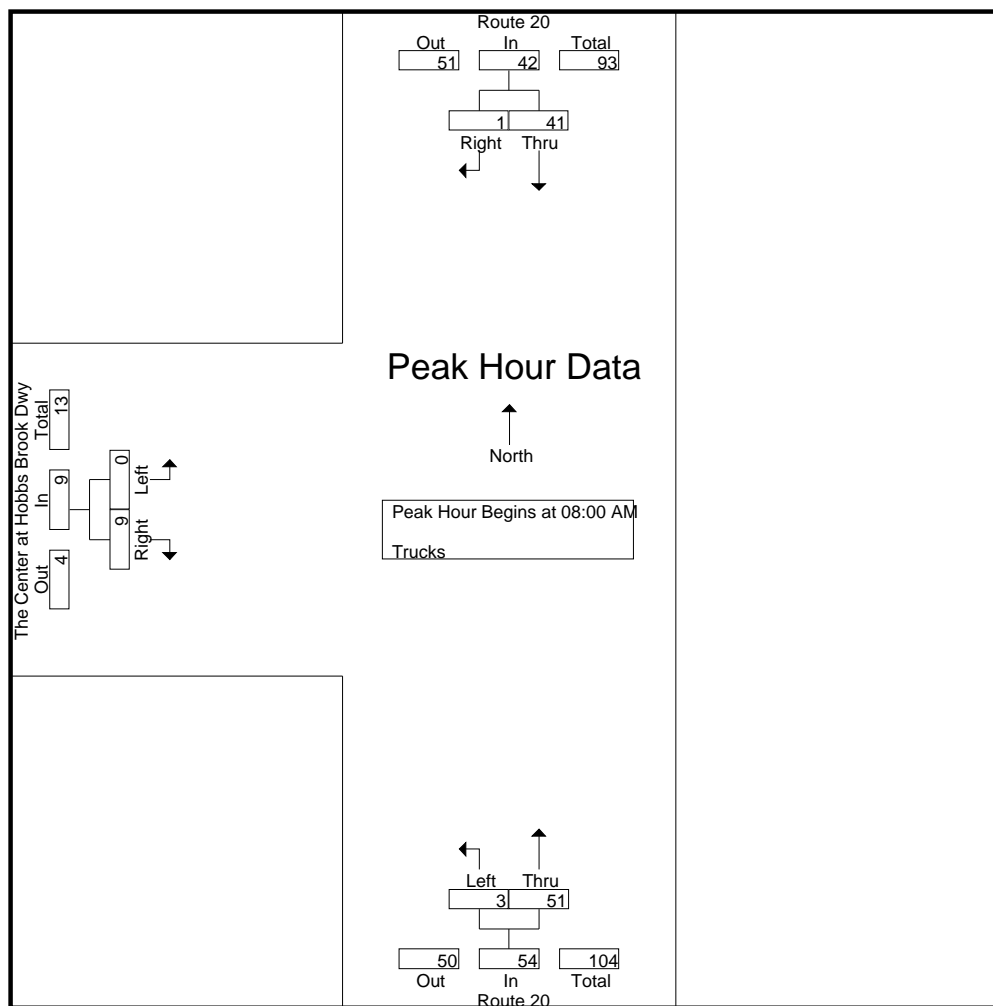
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Trucks

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right		
07:00 AM	3	0	0	10	0	2	15	
07:15 AM	8	0	2	11	0	0	21	
07:30 AM	8	2	1	10	0	1	22	
07:45 AM	9	0	0	11	0	3	23	
Total	28	2	3	42	0	6	81	
08:00 AM	8	0	0	8	0	1	17	
08:15 AM	14	1	1	11	0	3	30	
08:30 AM	11	0	0	16	0	2	29	
08:45 AM	8	0	2	16	0	3	29	
Total	41	1	3	51	0	9	105	
Grand Total	69	3	6	93	0	15	186	
Apprch %	95.8	4.2	6.1	93.9	0	100		
Total %	37.1	1.6	3.2	50	0	8.1		

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	8	0	8	0	8	8	0	1	1	17
08:15 AM	14	1	15	1	11	12	0	3	3	30
08:30 AM	11	0	11	0	16	16	0	2	2	29
08:45 AM	8	0	8	2	16	18	0	3	3	29
Total Volume	41	1	42	3	51	54	0	9	9	105
% App. Total	97.6	2.4		5.6	94.4		0	100		
PHF	.732	.250	.700	.375	.797	.750	.000	.750	.750	.875

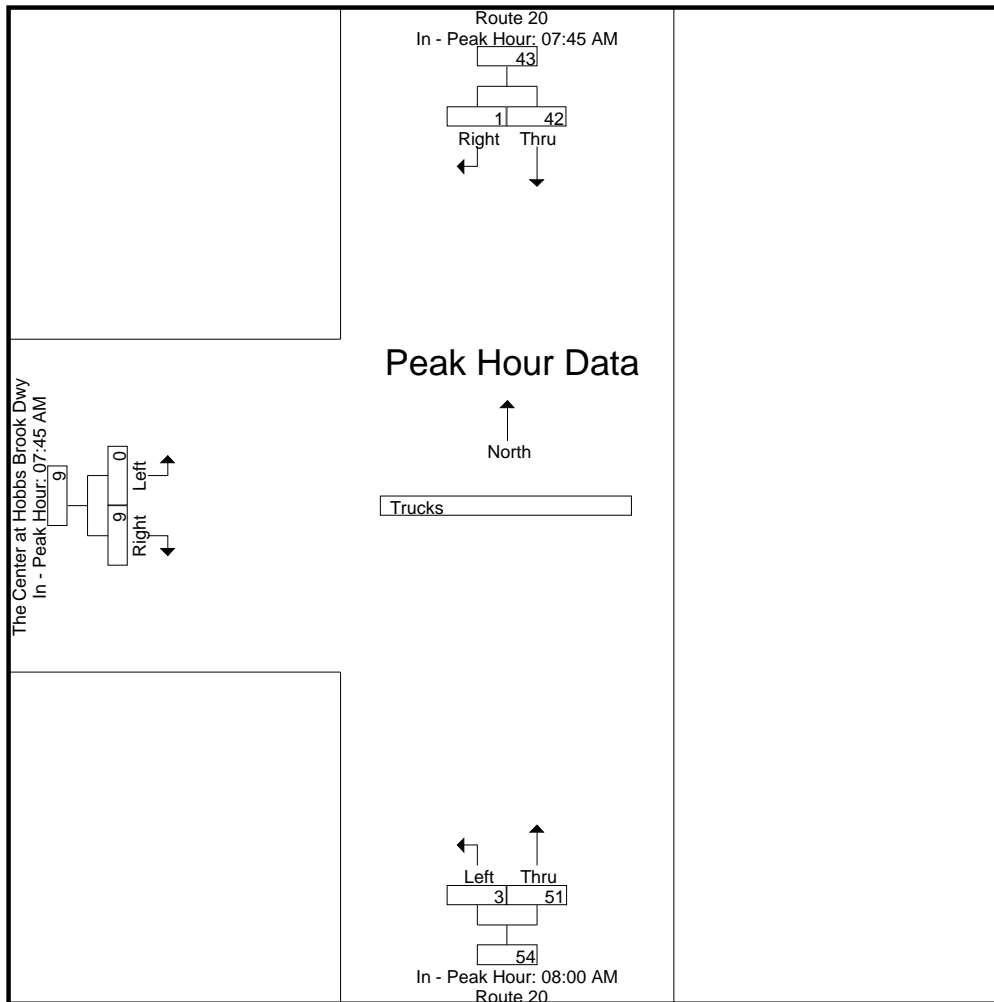
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



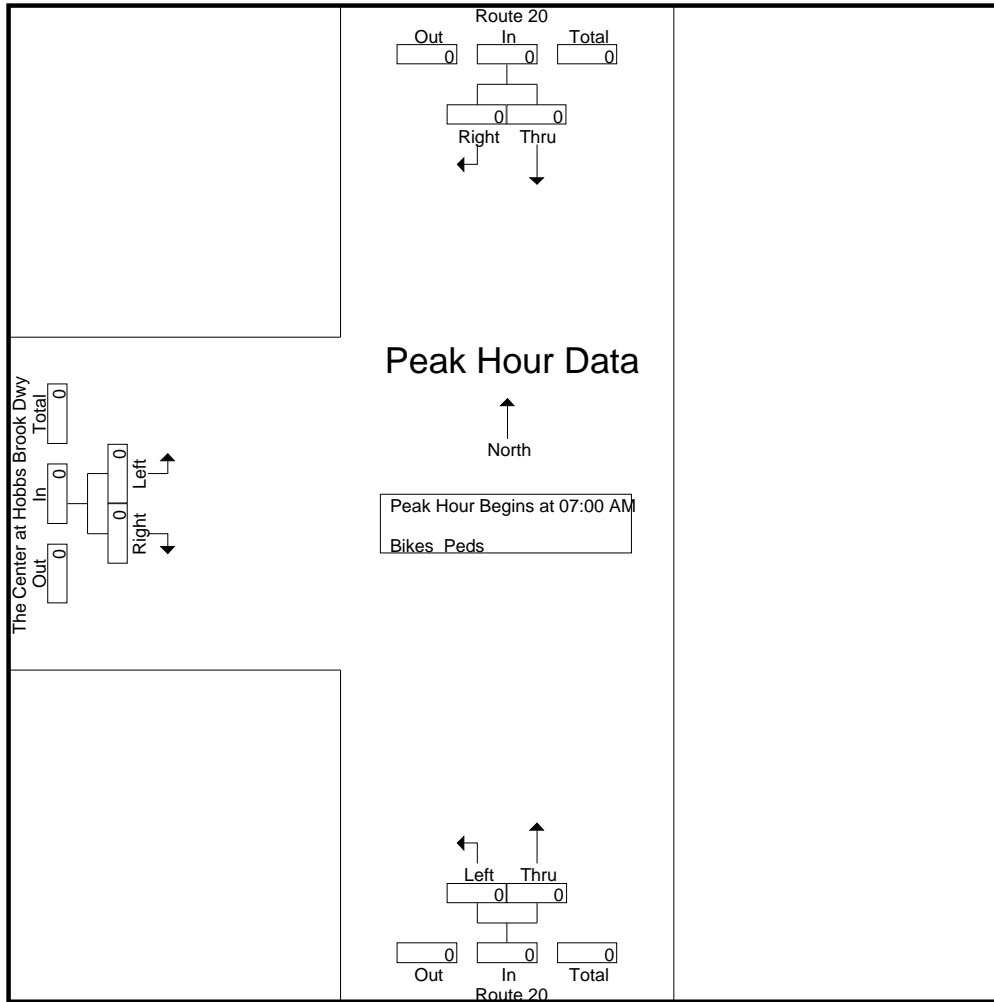
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:45 AM		
+0 mins.	9	0	9	0	8	8	0	3	3
+15 mins.	8	0	8	1	11	12	0	1	1
+30 mins.	14	1	15	0	16	16	0	3	3
+45 mins.	11	0	11	2	16	18	0	2	2
Total Volume	42	1	43	3	51	54	0	9	9
% App. Total	97.7	2.3		5.6	94.4		0	100	
PHF	.750	.250	.717	.375	.797	.750	.000	.750	.750

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



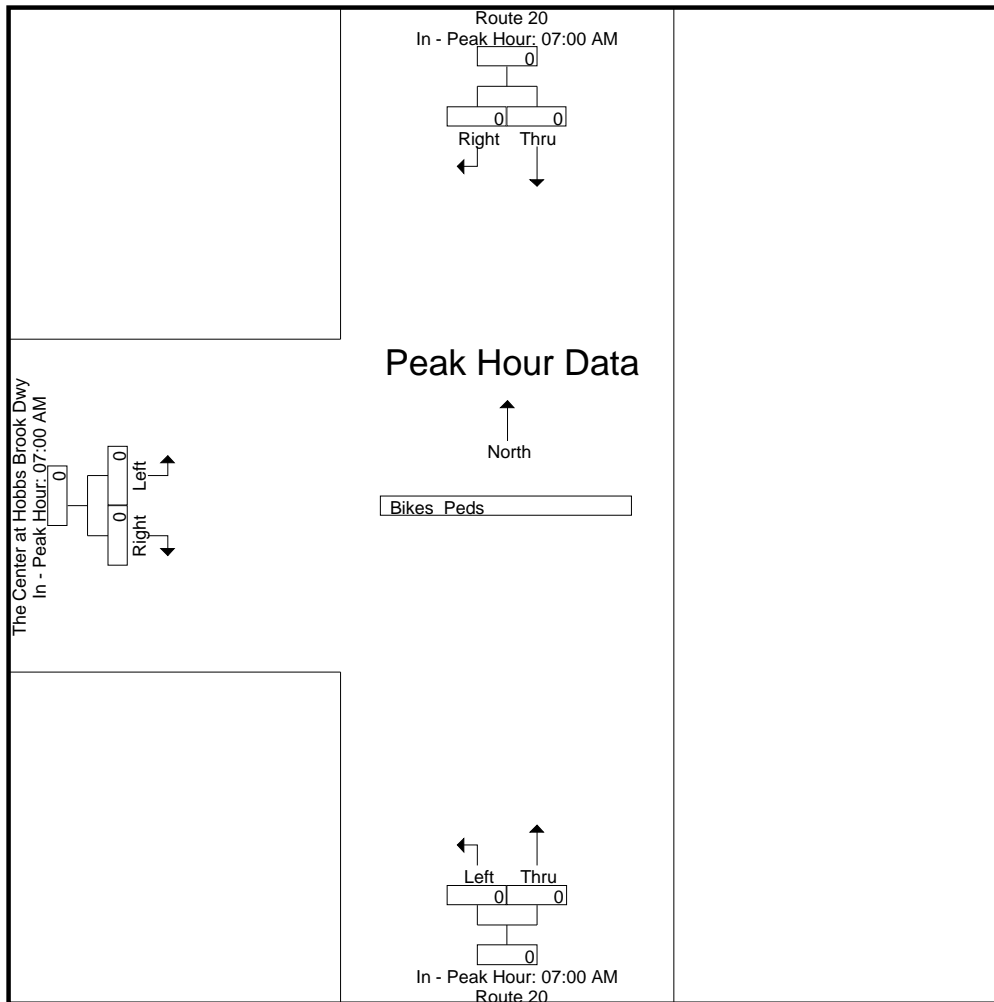
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : The Center at Hobbs Brook
 City/State : Sturbridge, MA
 Weather : Clear

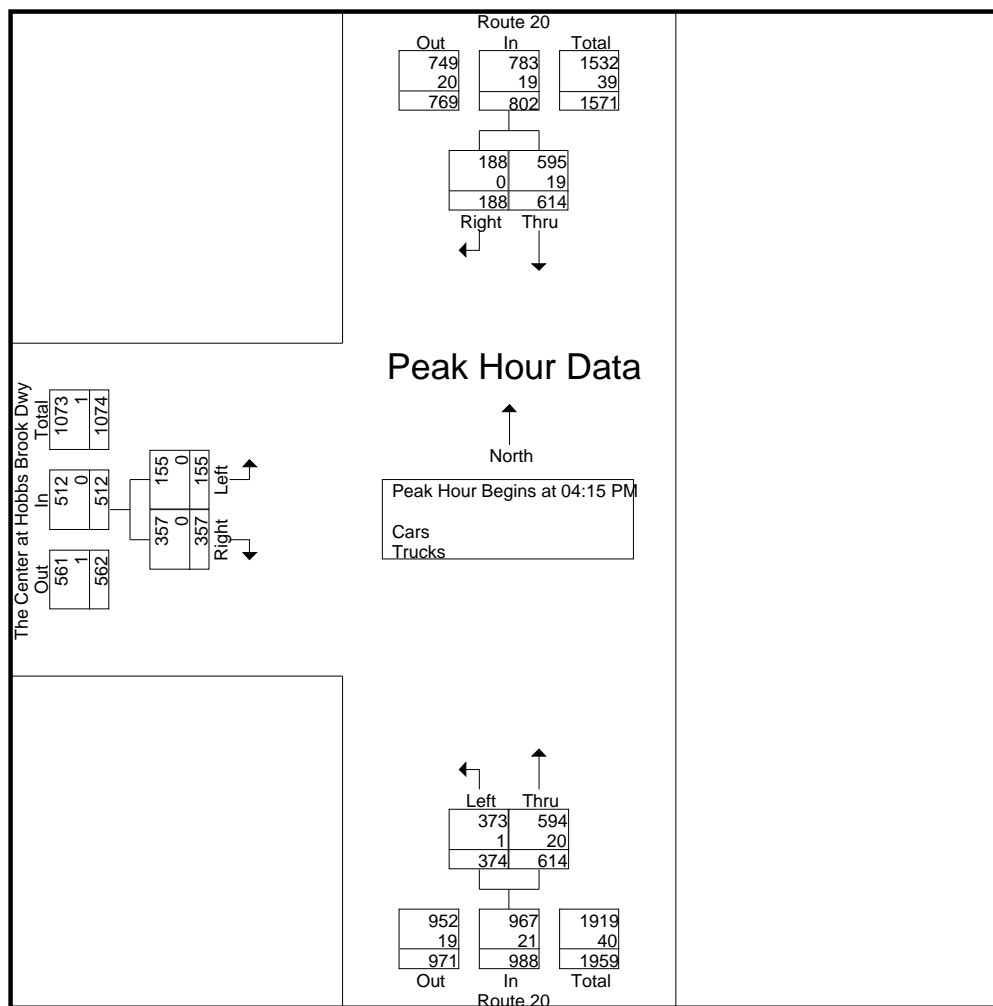
File Name : 87070003
 Site Code : 87070003
 Start Date : 10/1/2020
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right		
04:00 PM	150	30	87	148	37	84	536	
04:15 PM	153	54	101	142	48	88	586	
04:30 PM	160	51	93	178	36	88	606	
04:45 PM	151	42	95	157	41	83	569	
Total	614	177	376	625	162	343	2297	
05:00 PM	150	41	85	137	30	98	541	
05:15 PM	174	51	78	144	39	94	580	
05:30 PM	139	38	81	139	39	92	528	
05:45 PM	141	27	69	124	33	77	471	
Total	604	157	313	544	141	361	2120	
Grand Total	1218	334	689	1169	303	704	4417	
Apprch %	78.5	21.5	37.1	62.9	30.1	69.9		
Total %	27.6	7.6	15.6	26.5	6.9	15.9		
Cars	1175	331	683	1124	303	702	4318	
% Cars	96.5	99.1	99.1	96.2	100	99.7	97.8	
Trucks	43	3	6	45	0	2	99	
% Trucks	3.5	0.9	0.9	3.8	0	0.3	2.2	

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	153	54	207	101	142	243	48	88	136	586
04:30 PM	160	51	211	93	178	271	36	88	124	606
04:45 PM	151	42	193	95	157	252	41	83	124	569
05:00 PM	150	41	191	85	137	222	30	98	128	541
Total Volume	614	188	802	374	614	988	155	357	512	2302
% App. Total	76.6	23.4		37.9	62.1		30.3	69.7		
PHF	.959	.870	.950	.926	.862	.911	.807	.911	.941	.950
Cars	595	188	783	373	594	967	155	357	512	2262
% Cars	96.9	100	97.6	99.7	96.7	97.9	100	100	100	98.3
Trucks	19	0	19	1	20	21	0	0	0	40
% Trucks	3.1	0	2.4	0.3	3.3	2.1	0	0	0	1.7

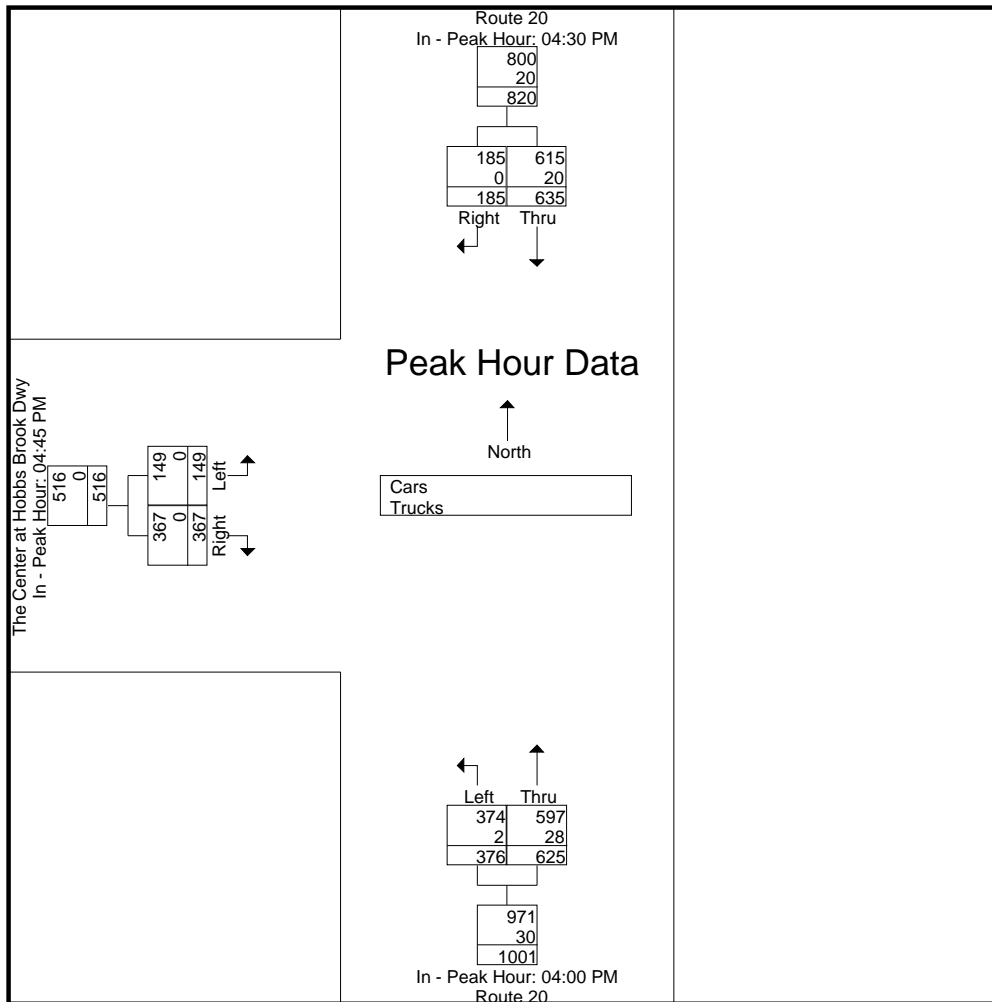
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	04:30 PM			04:00 PM			04:45 PM		
+0 mins.	160	51	211	87	148	235	41	83	124
+15 mins.	151	42	193	101	142	243	30	98	128
+30 mins.	150	41	191	93	178	271	39	94	133
+45 mins.	174	51	225	95	157	252	39	92	131
Total Volume	635	185	820	376	625	1001	149	367	516
% App. Total	77.4	22.6		37.6	62.4		28.9	71.1	
PHF	.912	.907	.911	.931	.878	.923	.909	.936	.970
Cars	615	185	800	374	597	971	149	367	516
% Cars	96.9	100	97.6	99.5	95.5	97	100	100	100
Trucks	20	0	20	2	28	30	0	0	0
% Trucks	3.1	0	2.4	0.5	4.5	3	0	0	0

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

Page No : 4

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

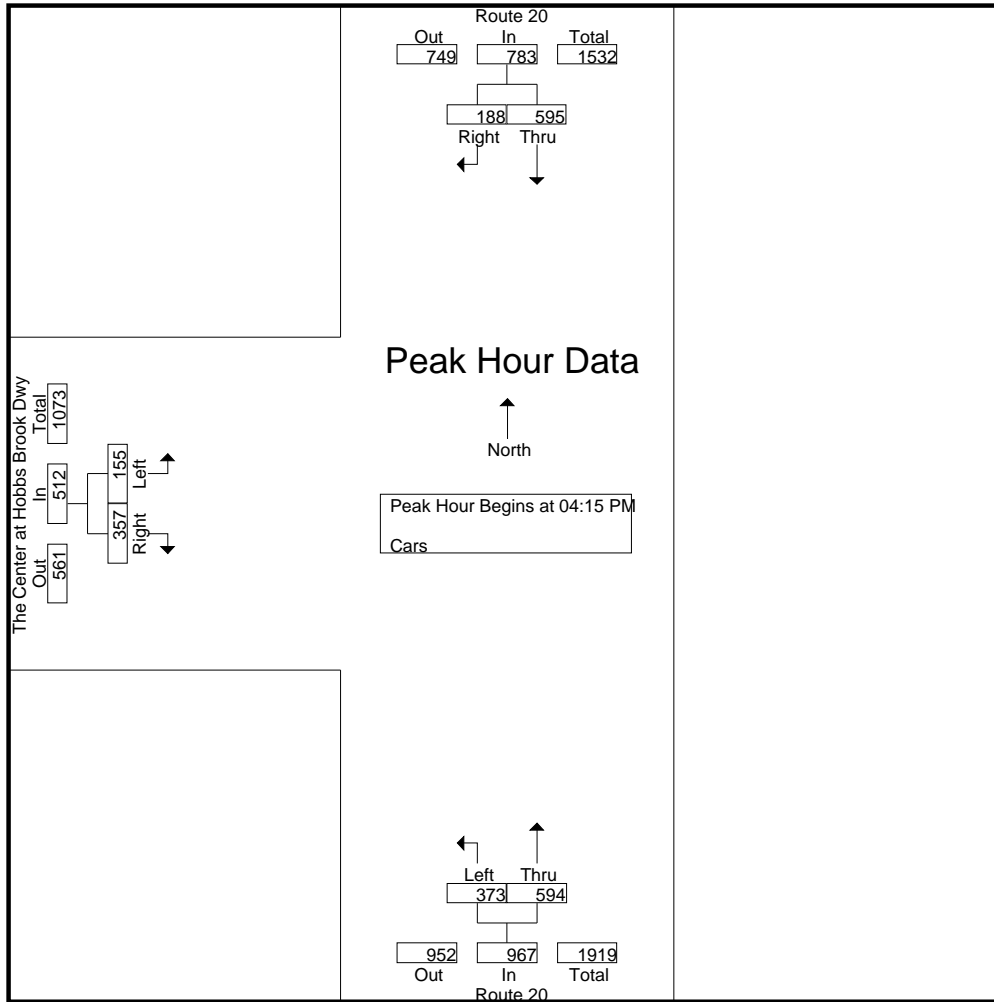
Weather : Clear

Groups Printed- Cars

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
04:00 PM	143	28	86	134	37	84	512
04:15 PM	148	54	101	135	48	88	574
04:30 PM	157	51	92	173	36	88	597
04:45 PM	147	42	95	155	41	83	563
Total	595	175	374	597	162	343	2246
05:00 PM	143	41	85	131	30	98	528
05:15 PM	168	51	78	141	39	94	571
05:30 PM	132	37	79	137	39	92	516
05:45 PM	137	27	67	118	33	75	457
Total	580	156	309	527	141	359	2072
Grand Total	1175	331	683	1124	303	702	4318
Apprch %	78	22	37.8	62.2	30.1	69.9	
Total %	27.2	7.7	15.8	26	7	16.3	

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	148	54	202	101	135	236	48	88	136	574
04:30 PM	157	51	208	92	173	265	36	88	124	597
04:45 PM	147	42	189	95	155	250	41	83	124	563
05:00 PM	143	41	184	85	131	216	30	98	128	528
Total Volume	595	188	783	373	594	967	155	357	512	2262
% App. Total	76	24		38.6	61.4		30.3	69.7		
PHF	.947	.870	.941	.923	.858	.912	.807	.911	.941	.947

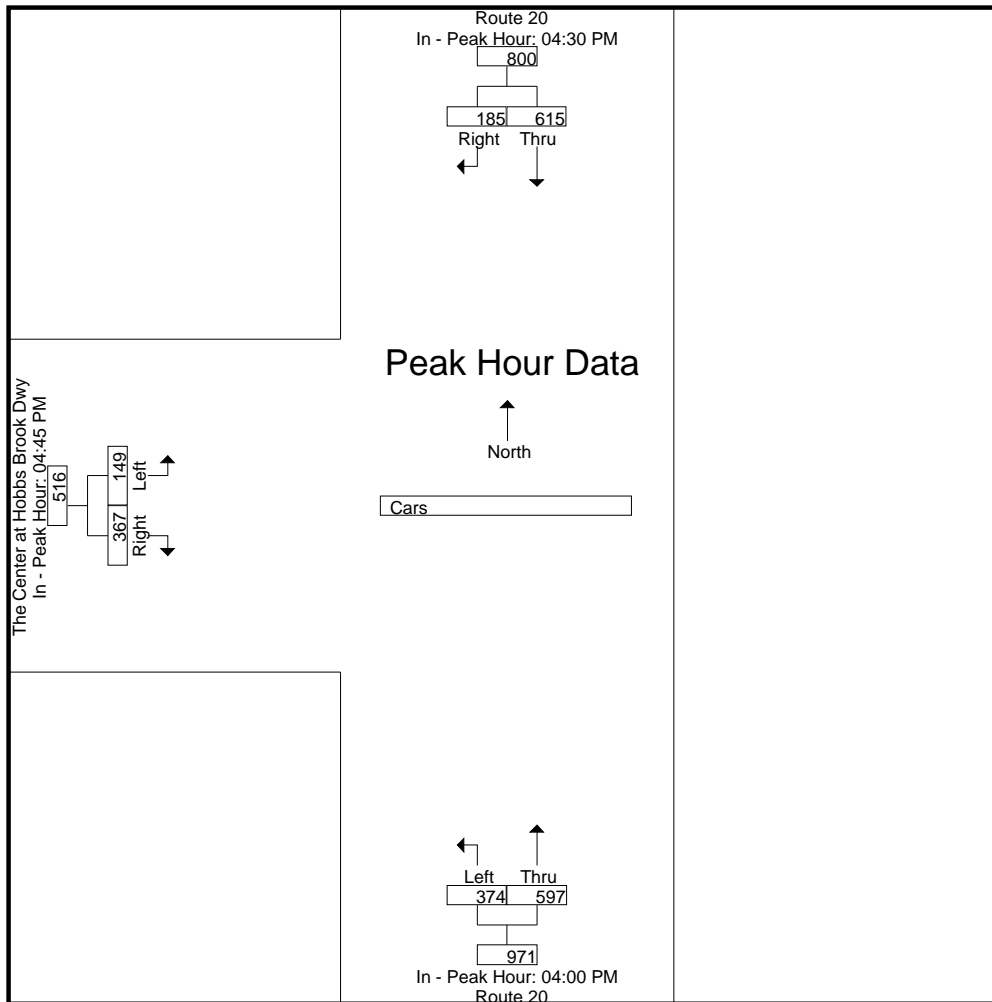
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	04:30 PM			04:00 PM			04:45 PM		
+0 mins.	157	51	208	86	134	220	41	83	124
+15 mins.	147	42	189	101	135	236	30	98	128
+30 mins.	143	41	184	92	173	265	39	94	133
+45 mins.	168	51	219	95	155	250	39	92	131
Total Volume	615	185	800	374	597	971	149	367	516
% App. Total	76.9	23.1		38.5	61.5		28.9	71.1	
PHF	.915	.907	.913	.926	.863	.916	.909	.936	.970

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

Page No : 7

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

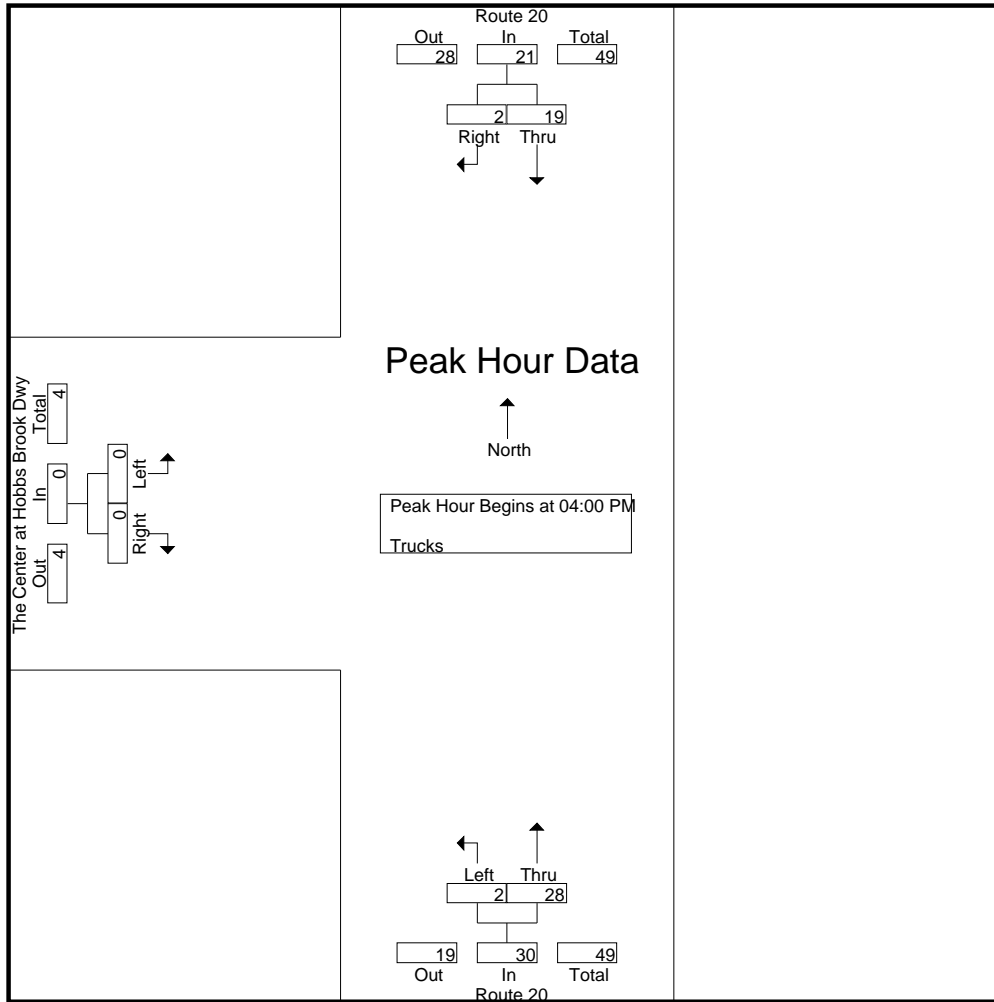
Weather : Clear

Groups Printed- Trucks

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right		
04:00 PM	7	2	1	14	0	0	24	
04:15 PM	5	0	0	7	0	0	12	
04:30 PM	3	0	1	5	0	0	9	
04:45 PM	4	0	0	2	0	0	6	
Total	19	2	2	28	0	0	51	
05:00 PM	7	0	0	6	0	0	13	
05:15 PM	6	0	0	3	0	0	9	
05:30 PM	7	1	2	2	0	0	12	
05:45 PM	4	0	2	6	0	2	14	
Total	24	1	4	17	0	2	48	
Grand Total	43	3	6	45	0	2	99	
Apprch %	93.5	6.5	11.8	88.2	0	100		
Total %	43.4	3	6.1	45.5	0	2		

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	7	2	9	1	14	15	0	0	0	24
04:15 PM	5	0	5	0	7	7	0	0	0	12
04:30 PM	3	0	3	1	5	6	0	0	0	9
04:45 PM	4	0	4	0	2	2	0	0	0	6
Total Volume	19	2	21	2	28	30	0	0	0	51
% App. Total	90.5	9.5		6.7	93.3		0	0		
PHF	.679	.250	.583	.500	.500	.500	.000	.000	.000	.531

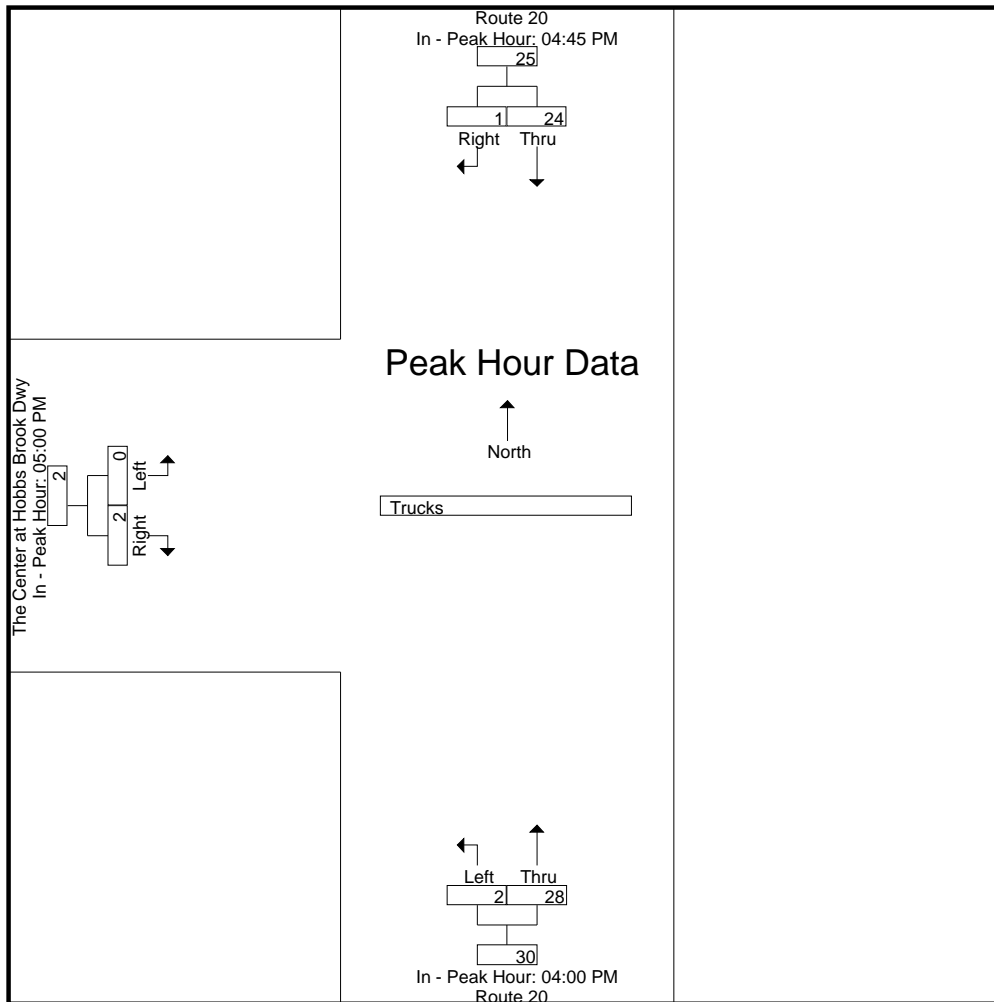
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	04:45 PM			04:00 PM			05:00 PM		
+0 mins.	4	0	4	1	14	15	0	0	0
+15 mins.	7	0	7	0	7	7	0	0	0
+30 mins.	6	0	6	1	5	6	0	0	0
+45 mins.	7	1	8	0	2	2	0	2	2
Total Volume	24	1	25	2	28	30	0	2	2
% App. Total	96	4		6.7	93.3		0	100	
PHF	.857	.250	.781	.500	.500	.500	.000	.250	.250

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 87070003

Site Code : 87070003

Start Date : 10/1/2020

Page No : 10

N/S Street : Route 20

E/W Street : The Center at Hobbs Brook

City/State : Sturbridge, MA

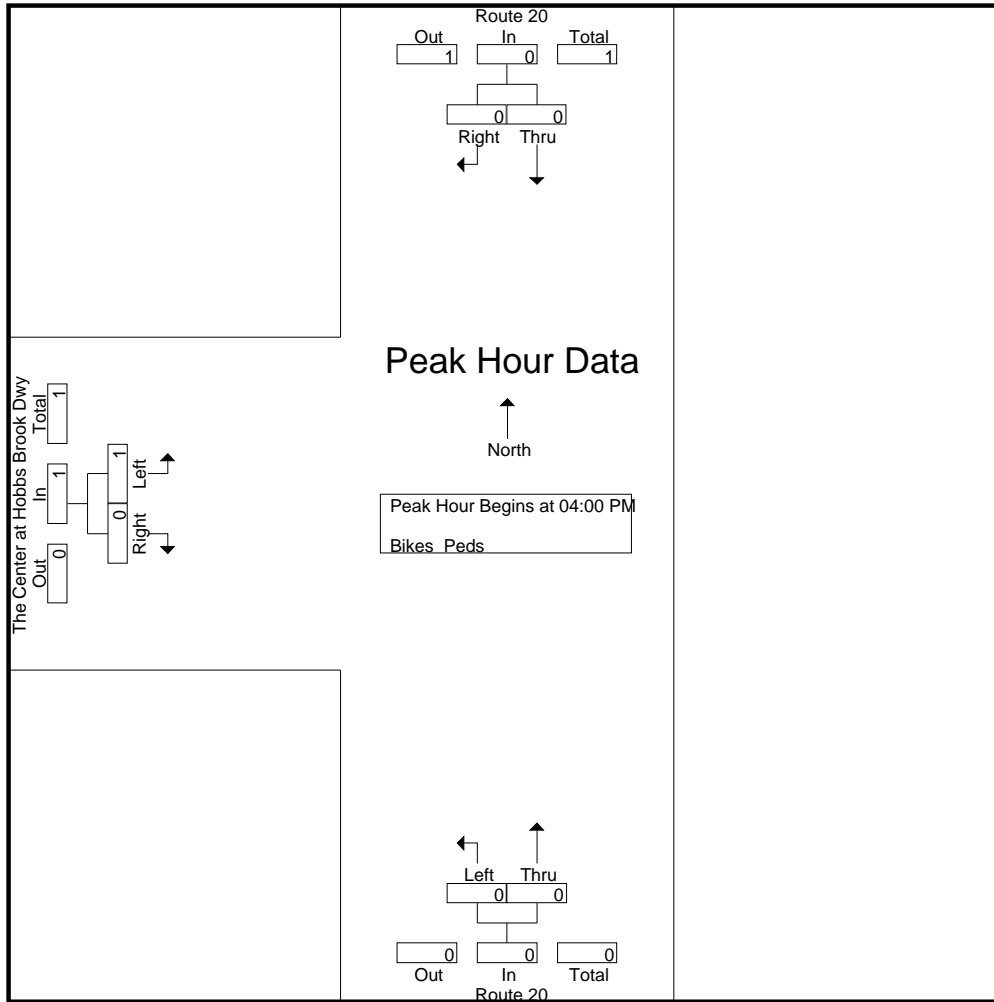
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Exclu. Total	Inclu. Total	Int. Total
	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	1	0	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	1	0	0	0	1	1
Apprch %	0	0		0	0		100	0				
Total %	0	0		0	0		100	0			100	

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

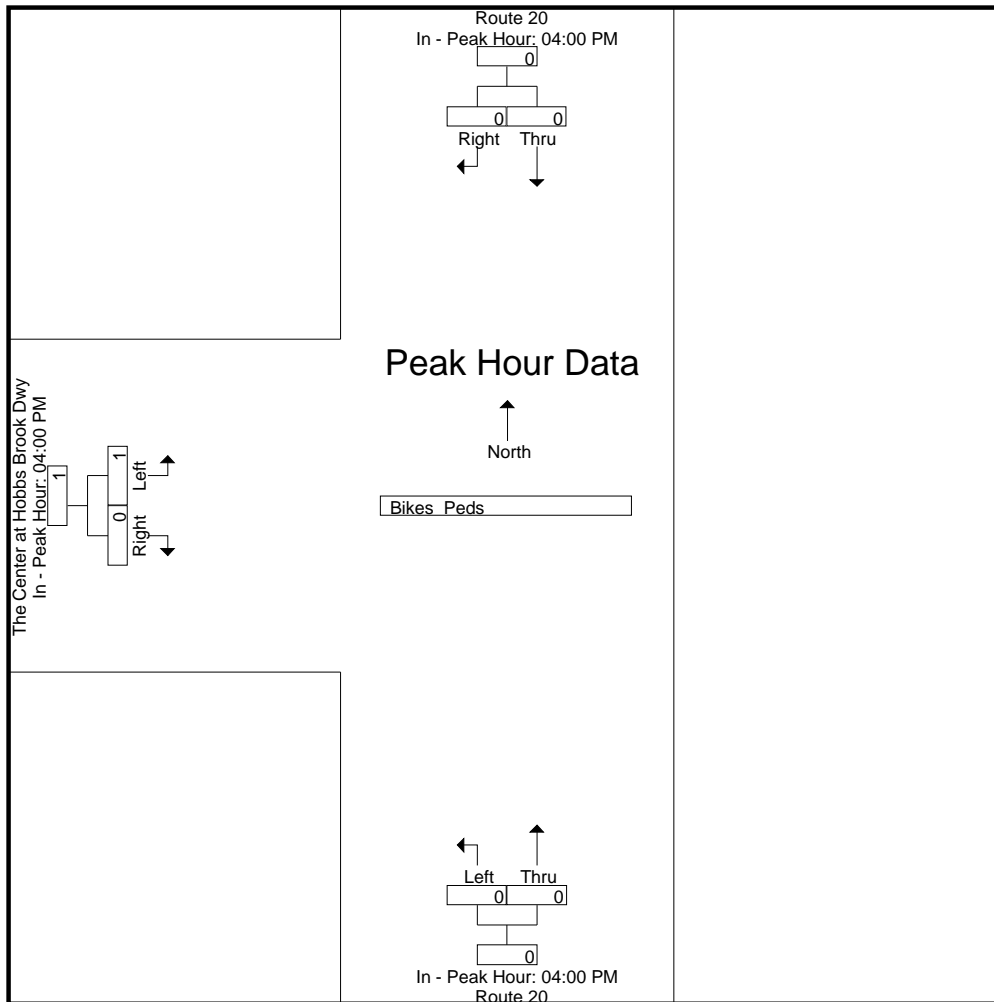
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1
% App. Total	0	0		0	0		100	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 870700S3
Site Code : 87070003
Start Date : 10/3/2020
Page No : 1

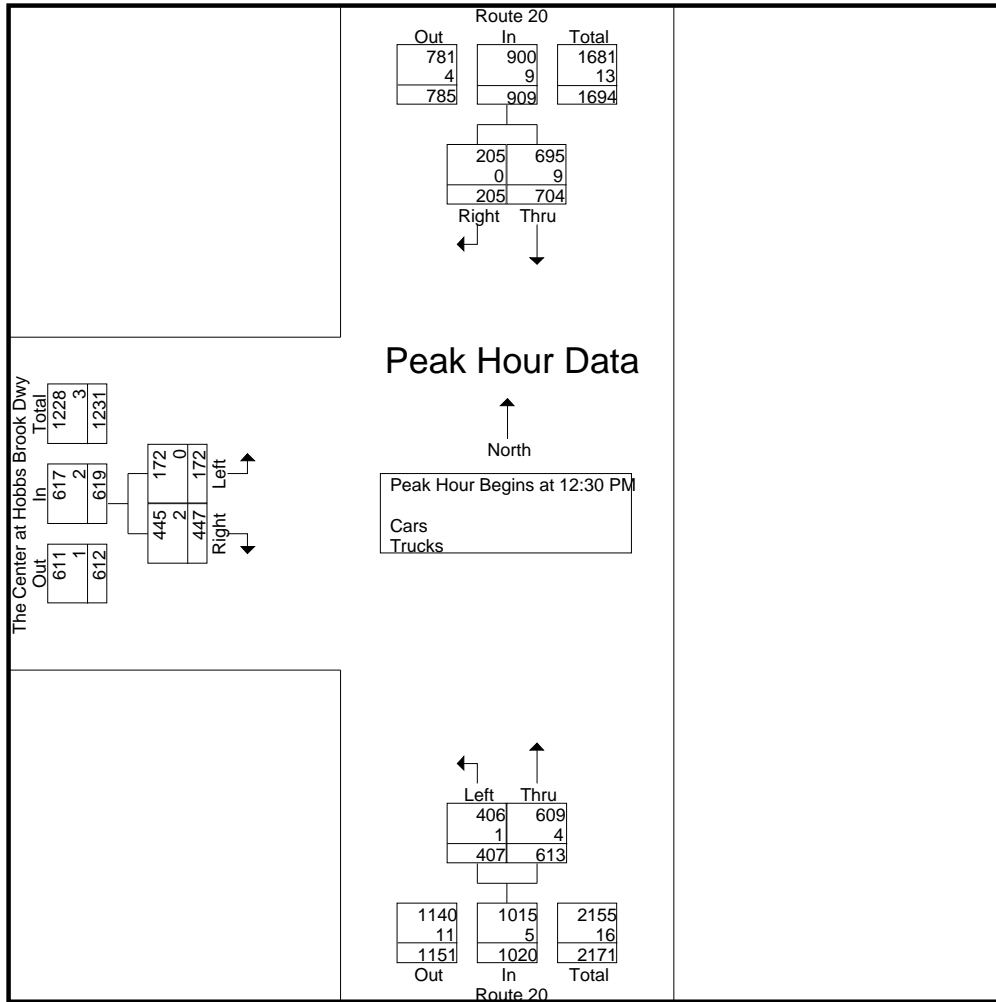
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Cars - Trucks

Start Time	Route 20 From North		Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right			
11:00 AM	137	45	103	156	26	81		548	
11:15 AM	169	40	100	159	29	85		582	
11:30 AM	165	51	108	163	46	90		623	
11:45 AM	149	53	104	177	36	101		620	
Total	620	189	415	655	137	357		2373	
12:00 PM	176	37	106	168	43	98		628	
12:15 PM	141	49	111	168	25	90		584	
12:30 PM	188	59	129	162	40	112		690	
12:45 PM	183	50	104	148	48	109		642	
Total	688	195	450	646	156	409		2544	
01:00 PM	157	48	95	147	39	98		584	
01:15 PM	176	48	79	156	45	128		632	
01:30 PM	173	45	94	147	39	98		596	
01:45 PM	173	63	93	172	44	98		643	
Total	679	204	361	622	167	422		2455	
Grand Total	1987	588	1226	1923	460	1188		7372	
Apprch %	77.2	22.8	38.9	61.1	27.9	72.1			
Total %	27	8	16.6	26.1	6.2	16.1			
Cars	1953	588	1222	1900	460	1183		7306	
% Cars	98.3	100	99.7	98.8	100	99.6		99.1	
Trucks	34	0	4	23	0	5		66	
% Trucks	1.7	0	0.3	1.2	0	0.4		0.9	

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	188	59	247	129	162	291	40	112	152	690
12:45 PM	183	50	233	104	148	252	48	109	157	642
01:00 PM	157	48	205	95	147	242	39	98	137	584
01:15 PM	176	48	224	79	156	235	45	128	173	632
Total Volume	704	205	909	407	613	1020	172	447	619	2548
% App. Total	77.4	22.6		39.9	60.1		27.8	72.2		
PHF	.936	.869	.920	.789	.946	.876	.896	.873	.895	.923
Cars	695	205	900	406	609	1015	172	445	617	2532
% Cars	98.7	100	99.0	99.8	99.3	99.5	100	99.6	99.7	99.4
Trucks	9	0	9	1	4	5	0	2	2	16
% Trucks	1.3	0	1.0	0.2	0.7	0.5	0	0.4	0.3	0.6

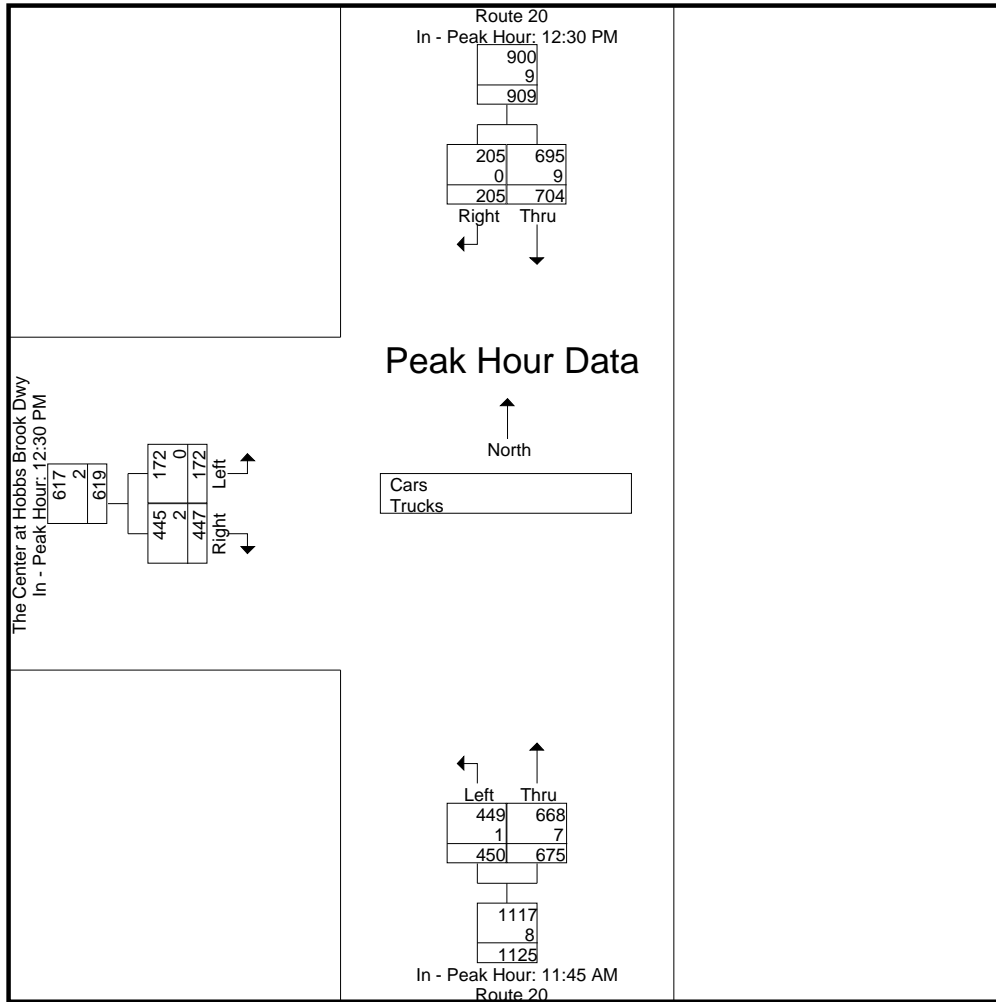
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM			11:45 AM			12:30 PM		
+0 mins.	188	59	247	104	177	281	40	112	152
+15 mins.	183	50	233	106	168	274	48	109	157
+30 mins.	157	48	205	111	168	279	39	98	137
+45 mins.	176	48	224	129	162	291	45	128	173
Total Volume	704	205	909	450	675	1125	172	447	619
% App. Total	77.4	22.6		40	60		27.8	72.2	
PHF	.936	.869	.920	.872	.953	.966	.896	.873	.895
Cars	695	205	900	449	668	1117	172	445	617
% Cars	98.7	100	99	99.8	99	99.3	100	99.6	99.7
Trucks	9	0	9	1	7	8	0	2	2
% Trucks	1.3	0	1	0.2	1	0.7	0	0.4	0.3

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : The Center at Hobbs Brook
 City/State : Sturbridge, MA
 Weather : Clear

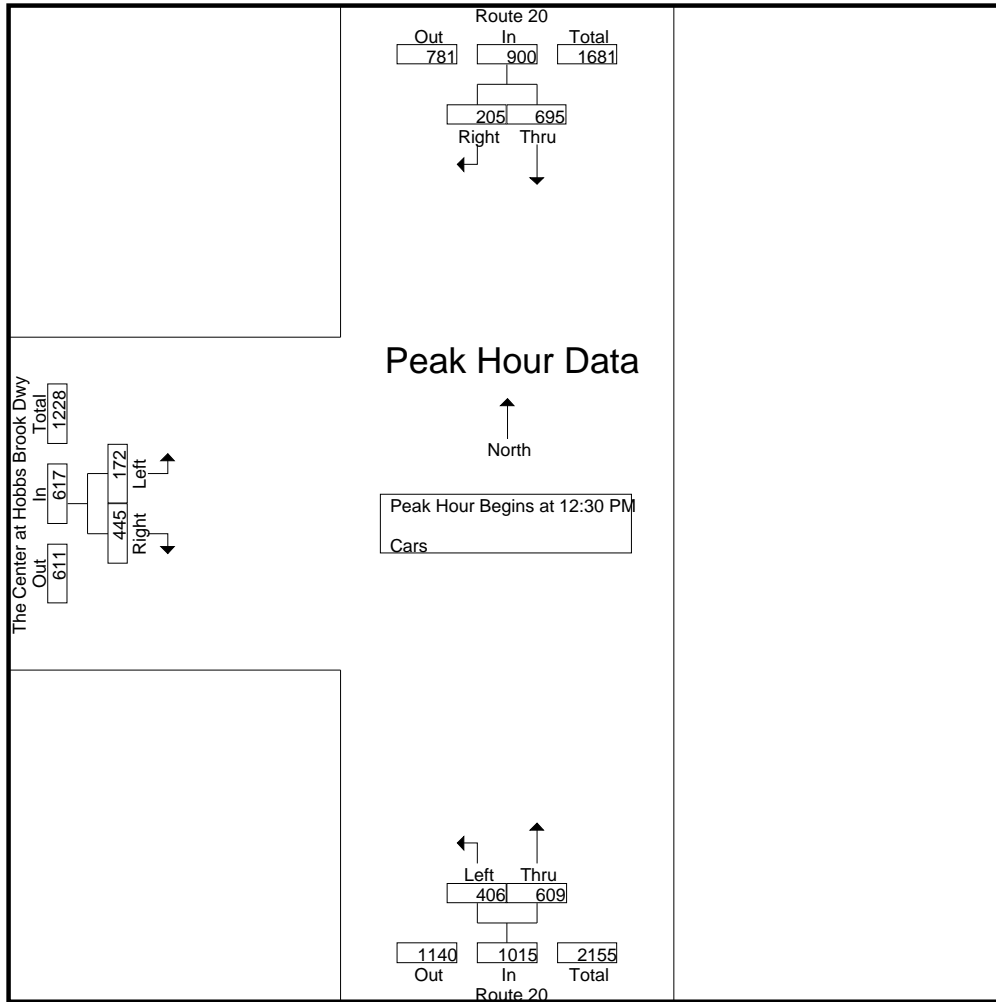
File Name : 870700S3
 Site Code : 87070003
 Start Date : 10/3/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right		
11:00 AM	136	45	103	156	26	81	547	
11:15 AM	163	40	100	155	29	84	571	
11:30 AM	162	51	108	159	46	90	616	
11:45 AM	147	53	104	176	36	101	617	
Total	608	189	415	646	137	356	2351	
12:00 PM	173	37	105	167	43	97	622	
12:15 PM	136	49	111	163	25	89	573	
12:30 PM	185	59	129	162	40	112	687	
12:45 PM	178	50	104	145	48	108	633	
Total	672	195	449	637	156	406	2515	
01:00 PM	157	48	95	146	39	97	582	
01:15 PM	175	48	78	156	45	128	630	
01:30 PM	171	45	92	145	39	98	590	
01:45 PM	170	63	93	170	44	98	638	
Total	673	204	358	617	167	421	2440	
Grand Total	1953	588	1222	1900	460	1183	7306	
Apprch %	76.9	23.1	39.1	60.9	28	72		
Total %	26.7	8	16.7	26	6.3	16.2		

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:30 PM										
12:30 PM	185	59	244	129	162	291	40	112	152	687
12:45 PM	178	50	228	104	145	249	48	108	156	633
01:00 PM	157	48	205	95	146	241	39	97	136	582
01:15 PM	175	48	223	78	156	234	45	128	173	630
Total Volume	695	205	900	406	609	1015	172	445	617	2532
% App. Total	77.2	22.8		40	60		27.9	72.1		
PHF	.939	.869	.922	.787	.940	.872	.896	.869	.892	.921

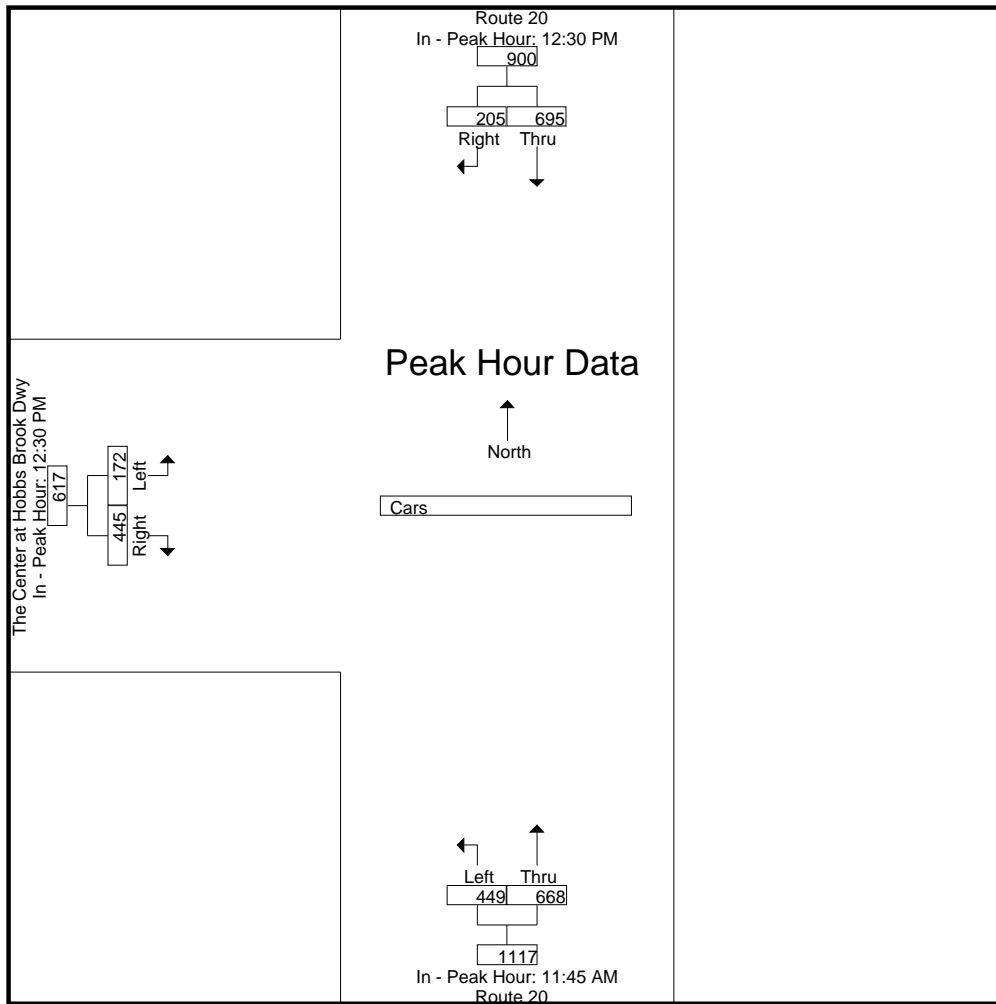
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



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

	12:30 PM			11:45 AM			12:30 PM		
+0 mins.	185	59	244	104	176	280	40	112	152
+15 mins.	178	50	228	105	167	272	48	108	156
+30 mins.	157	48	205	111	163	274	39	97	136
+45 mins.	175	48	223	129	162	291	45	128	173
Total Volume	695	205	900	449	668	1117	172	445	617
% App. Total	77.2	22.8		40.2	59.8		27.9	72.1	
PHF	.939	.869	.922	.870	.949	.960	.896	.869	.892

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : The Center at Hobbs Brook
 City/State : Sturbridge, MA
 Weather : Clear

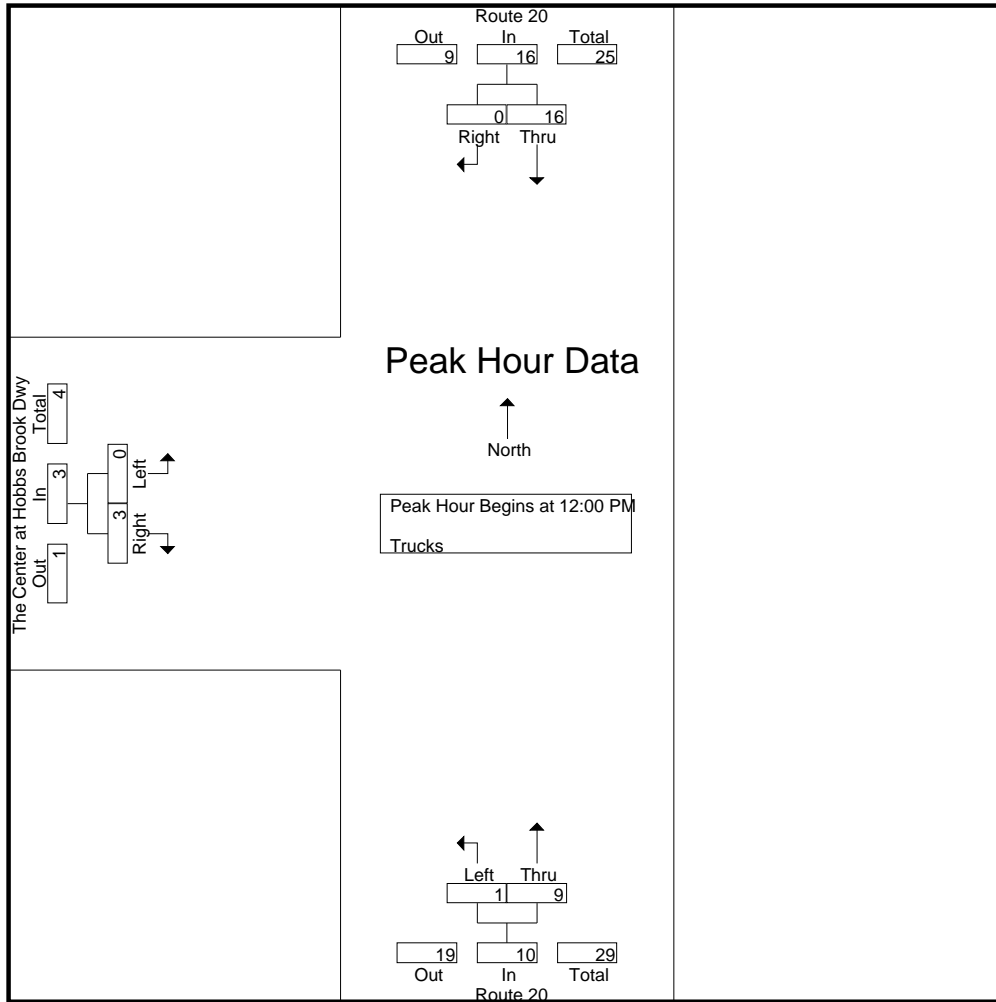
File Name : 870700S3
 Site Code : 87070003
 Start Date : 10/3/2020
 Page No : 7

Groups Printed- Trucks

Start Time	Route 20 From North		Route 20 From South		The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	Left	Thru	Left	Right		
11:00 AM	1	0	0	0	0	0	1	
11:15 AM	6	0	0	4	0	1	11	
11:30 AM	3	0	0	4	0	0	7	
11:45 AM	2	0	0	1	0	0	3	
Total	12	0	0	9	0	1	22	
12:00 PM	3	0	1	1	0	1	6	
12:15 PM	5	0	0	5	0	1	11	
12:30 PM	3	0	0	0	0	0	3	
12:45 PM	5	0	0	3	0	1	9	
Total	16	0	1	9	0	3	29	
01:00 PM	0	0	0	1	0	1	2	
01:15 PM	1	0	1	0	0	0	2	
01:30 PM	2	0	2	2	0	0	6	
01:45 PM	3	0	0	2	0	0	5	
Total	6	0	3	5	0	1	15	
Grand Total	34	0	4	23	0	5	66	
Apprch %	100	0	14.8	85.2	0	100		
Total %	51.5	0	6.1	34.8	0	7.6		

Start Time	Route 20 From North			Route 20 From South			The Center at Hobbs Brook Dwy From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:00 PM										
12:00 PM	3	0	3	1	1	2	0	1	1	6
12:15 PM	5	0	5	0	5	5	0	1	1	11
12:30 PM	3	0	3	0	0	0	0	0	0	3
12:45 PM	5	0	5	0	3	3	0	1	1	9
Total Volume	16	0	16	1	9	10	0	3	3	29
% App. Total	100	0		10	90		0	100		
PHF	.800	.000	.800	.250	.450	.500	.000	.750	.750	.659

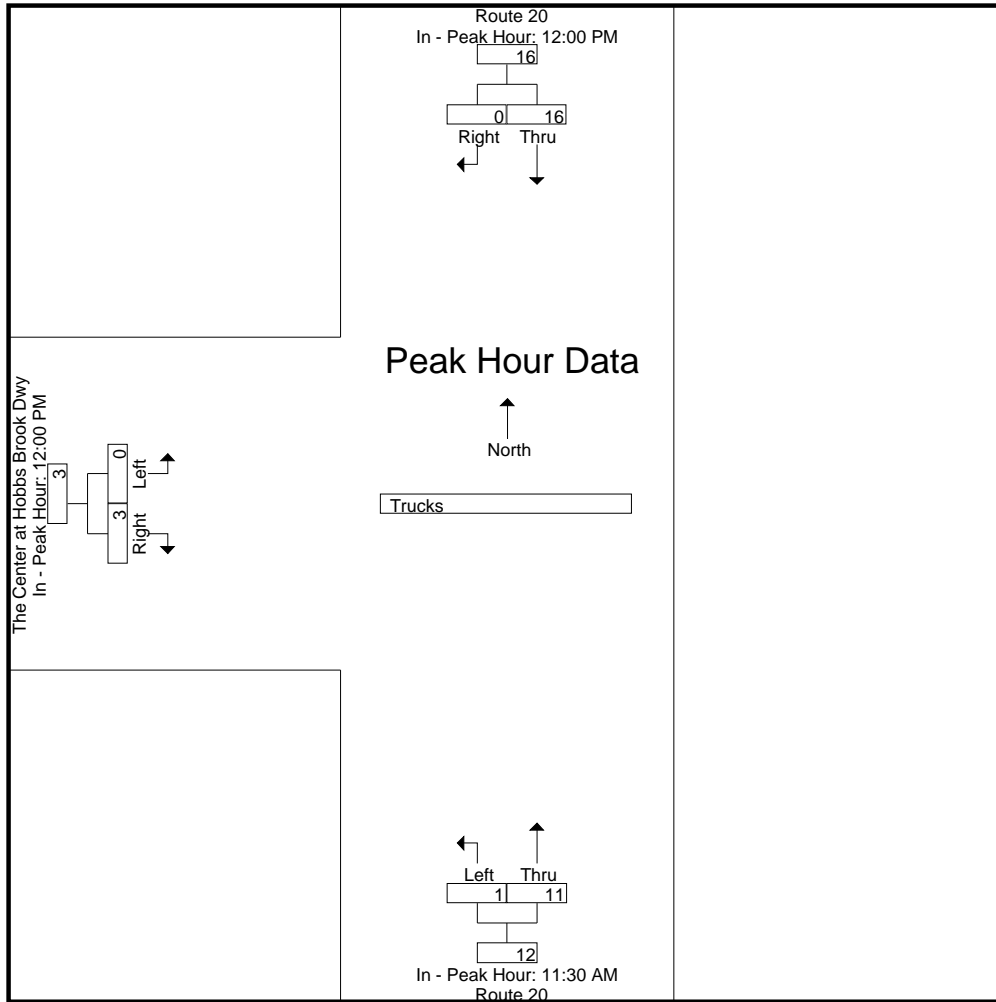
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



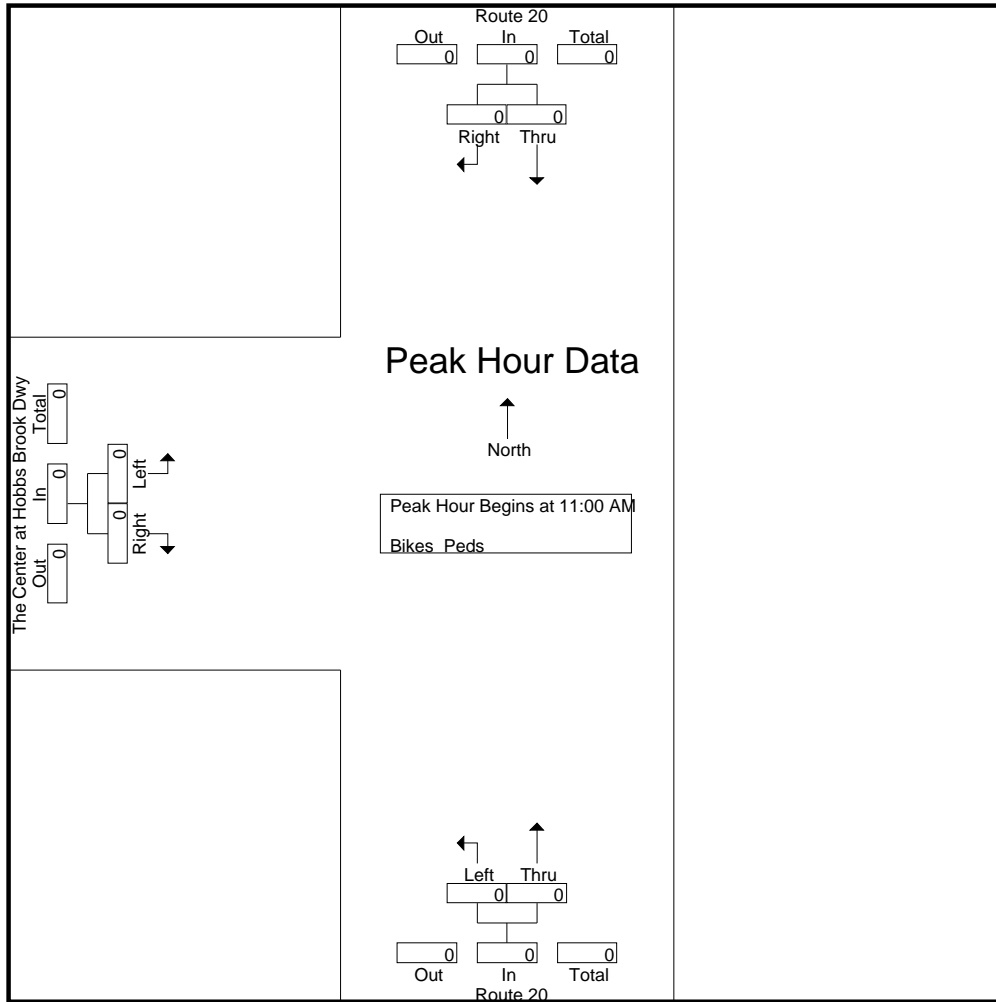
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 PM			11:30 AM			12:00 PM		
+0 mins.	3	0	3	0	4	4	0	1	1
+15 mins.	5	0	5	0	1	1	0	1	1
+30 mins.	3	0	3	1	1	2	0	0	0
+45 mins.	5	0	5	0	5	5	0	1	1
Total Volume	16	0	16	1	11	12	0	3	3
% App. Total	100	0		8.3	91.7		0	100	
PHF	.800	.000	.800	.250	.550	.600	.000	.750	.750

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



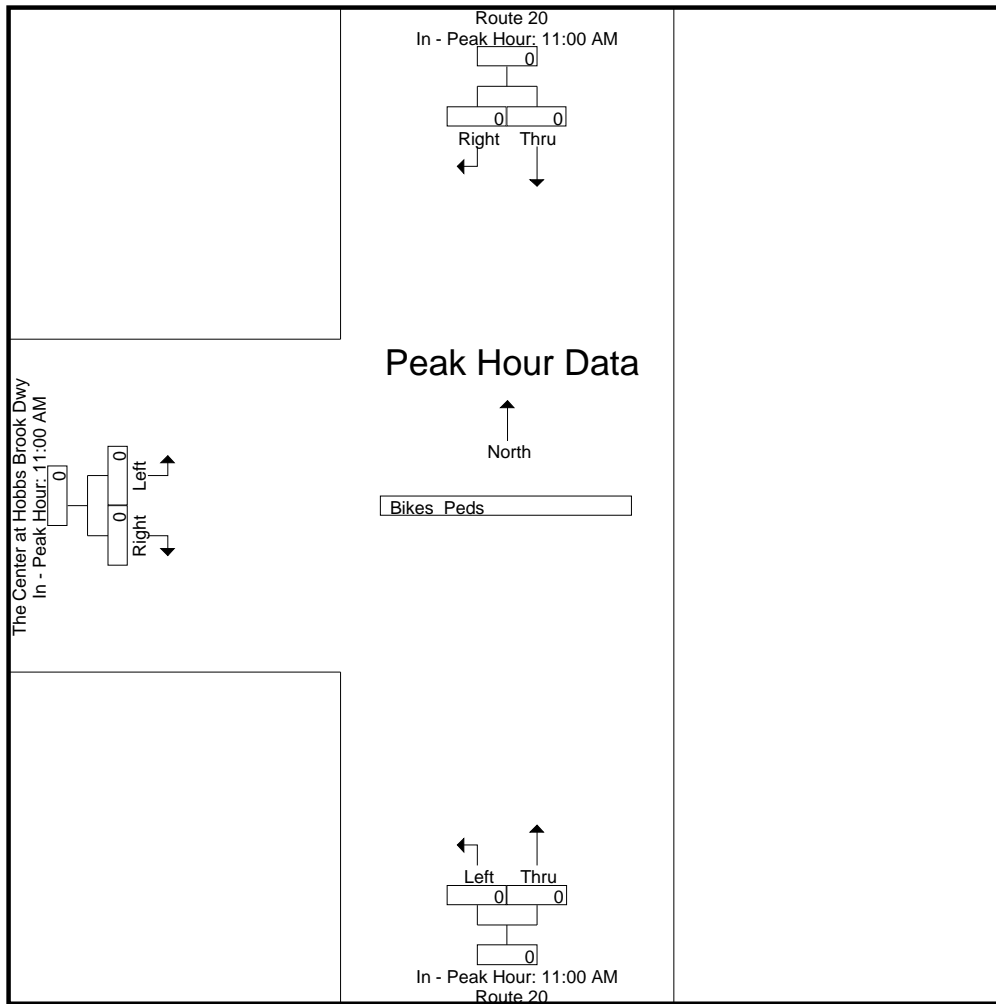
N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



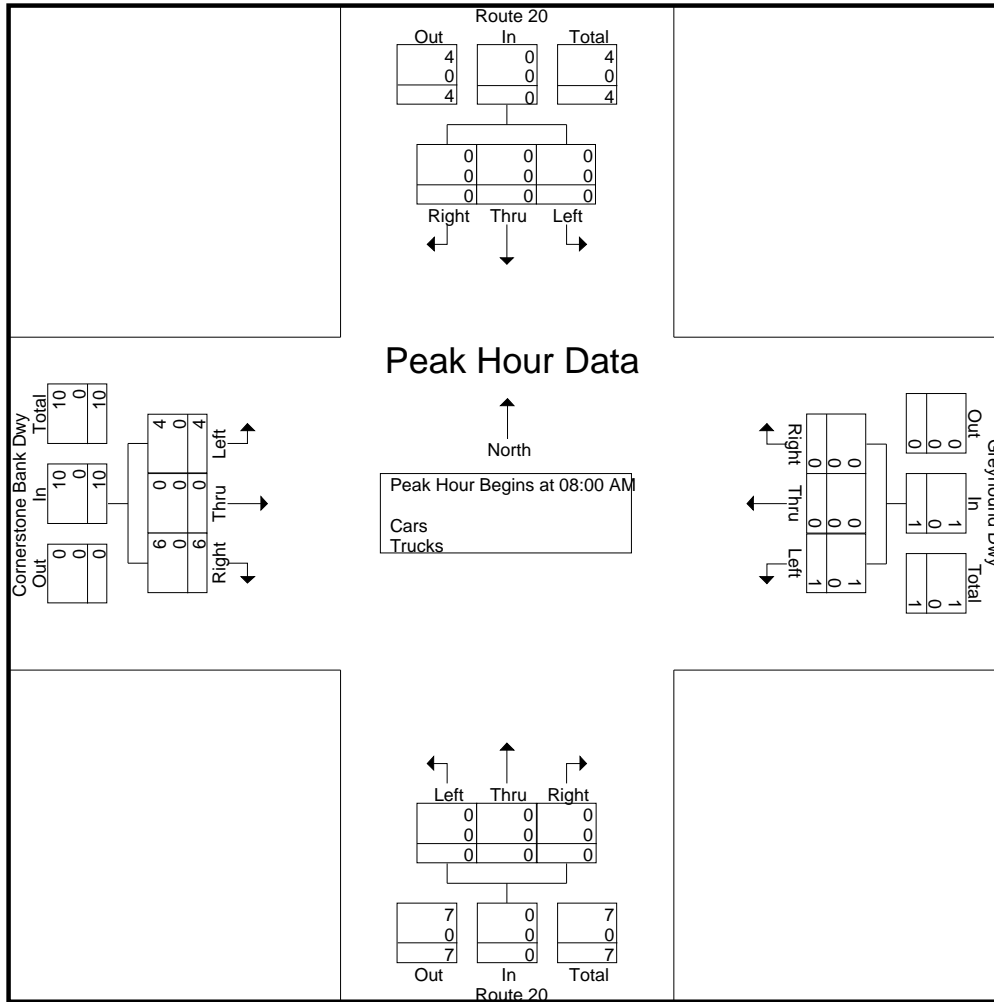
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Route 20
E/W Street : The Center at Hobbs Brook
City/State : Sturbridge, MA
Weather : Clear



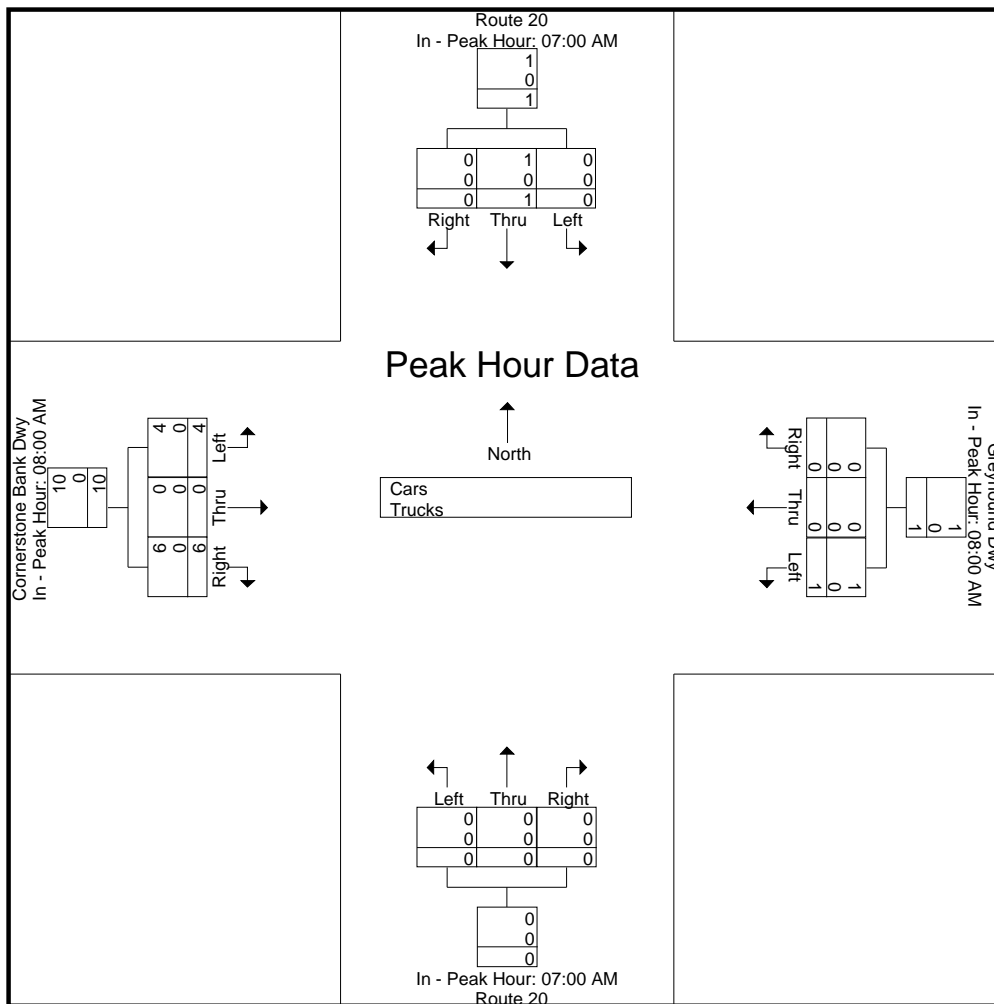
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



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

	07:00 AM				08:00 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	2
+45 mins.	0	0	0	0	1	0	0	1	0	0	0	0	1	0	4	5
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	4	0	6	10
% App. Total	0	100	0		100	0	0		0	0	0		40	0	60	
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.500	.000	.375	.500
Cars	0	1	0	1	1	0	0	1	0	0	0	0	4	0	6	10
% Cars	0	100	0	100	100	0	0	100	0	0	0	0	100	0	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070004
Site Code : 87070004
Start Date : 10/1/2020
Page No : 4

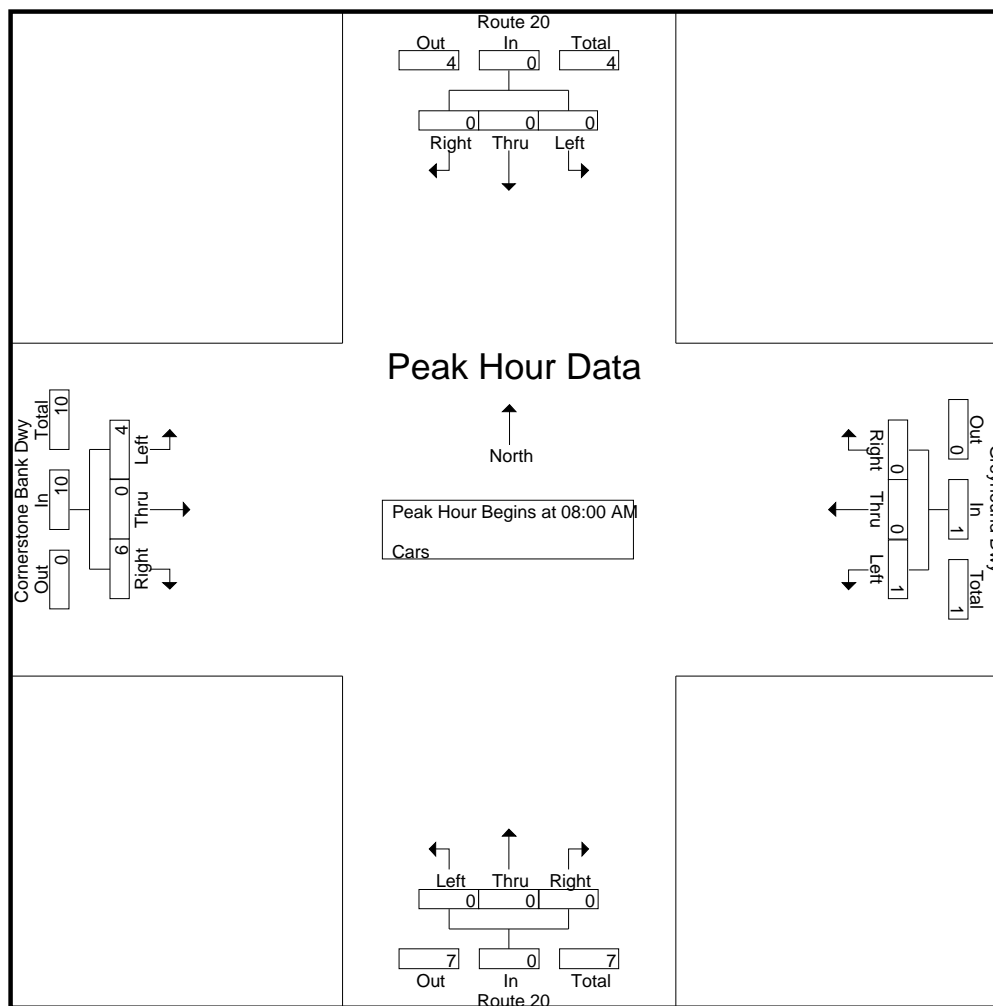
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Cornerstone Bank Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	2
07:30 AM	0	1	0	0	0	0	0	0	0	1	0	2	4
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	0	1	0	0	0	0	0	0	0	4	0	4	9
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	2
08:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	2
08:45 AM	0	0	0	1	0	0	0	0	0	1	0	4	6
Total	0	0	0	1	0	0	0	0	0	4	0	6	11
Grand Total	0	1	0	1	0	0	0	0	0	8	0	10	20
Apprch %	0	100	0	100	0	0	0	0	0	44.4	0	55.6	
Total %	0	5	0	5	0	0	0	0	0	40	0	50	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
08:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	0	4	5	6
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	4	0	6	10	11
% App. Total	0	0	0	0	100	0	0	0	0	0	0	0	40	0	60	50	55
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.500	.000	.375	.500	.458

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



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

	07:00 AM				08:00 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	2
+45 mins.	0	0	0	0	1	0	0	1	0	0	0	0	1	0	4	5
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	4	0	6	10
% App. Total	0	100	0		100	0	0		0	0	0		40	0	60	
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.500	.000	.375	.500

Accurate Counts

978-664-2565

File Name : 87070004

Site Code : 87070004

Start Date : 10/1/2020

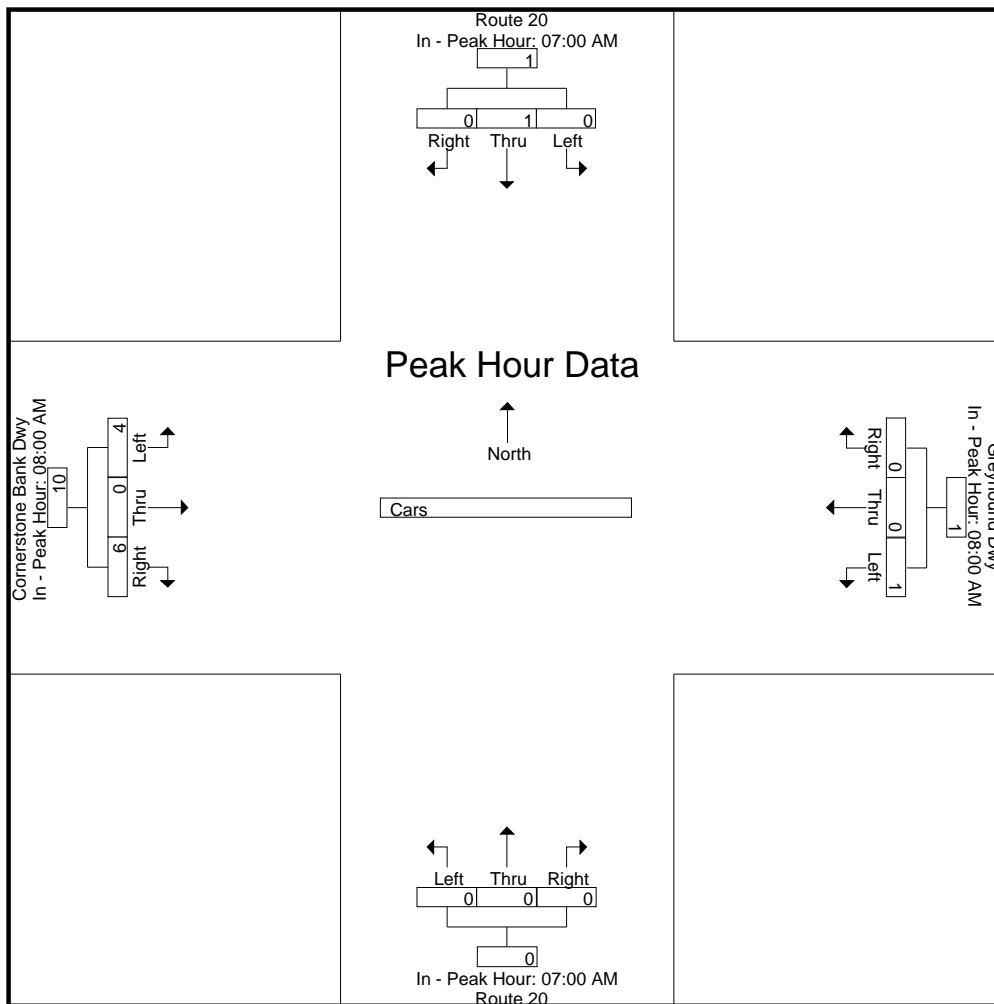
Page No : 6

N/S Street : Route 20

E/W Street : Greyhound Dwy / Bank Dwy

City/State : Sturbridge, MA

Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070004
Site Code : 87070004
Start Date : 10/1/2020
Page No : 7

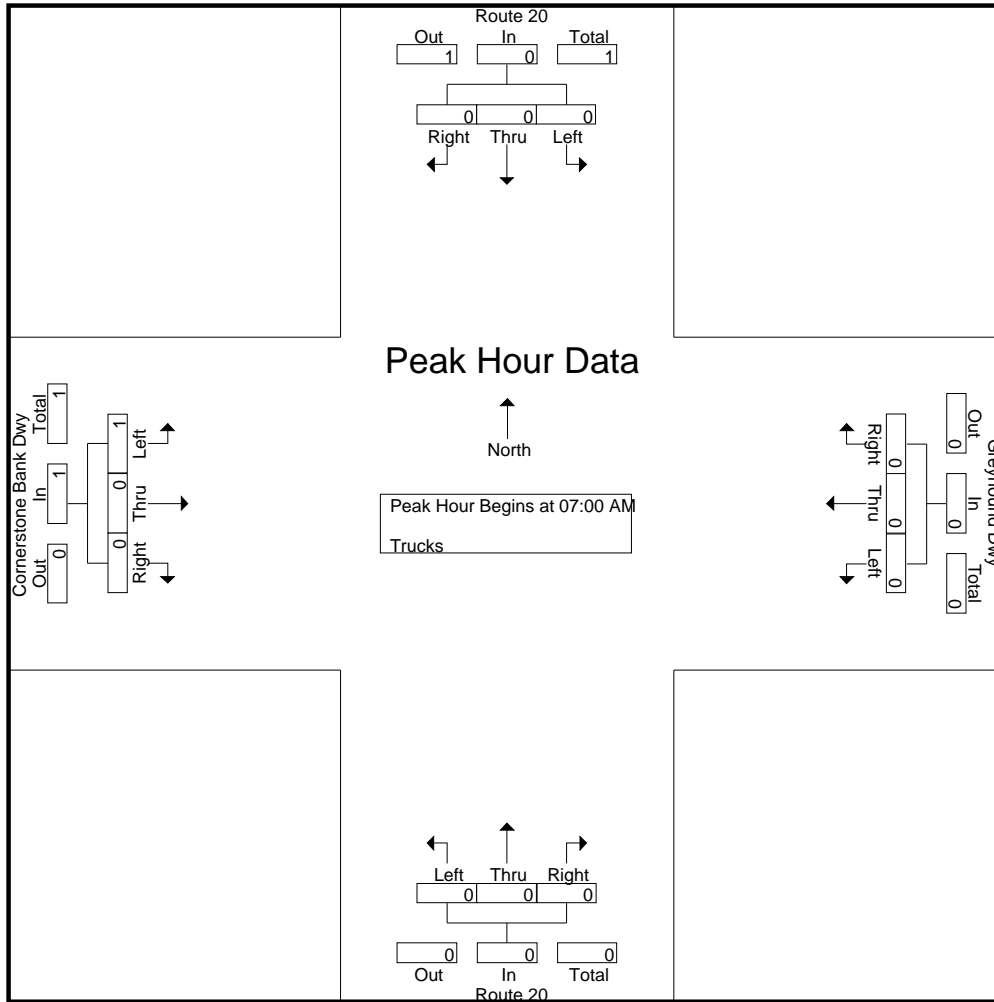
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Trucks

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Cornerstone Bank Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250

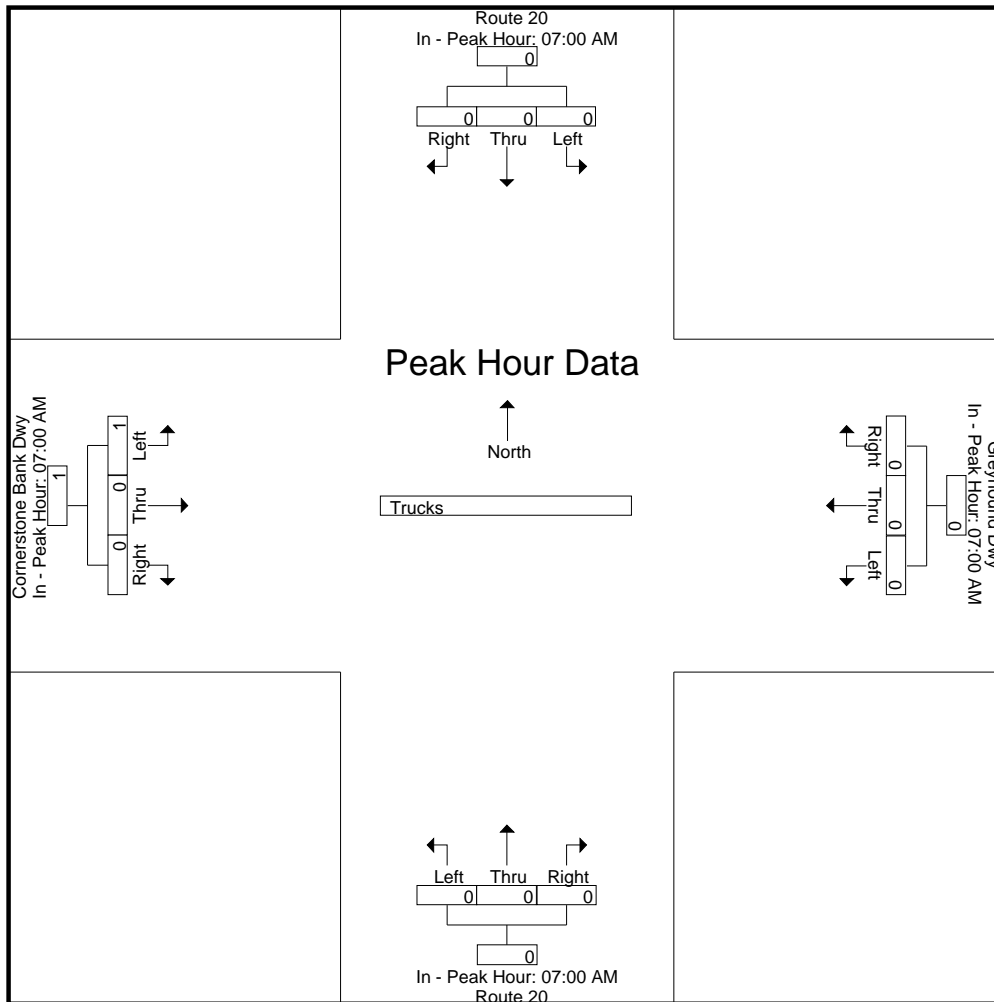
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy / Bank Dwy
 City/State : Sturbridge, MA
 Weather : Clear

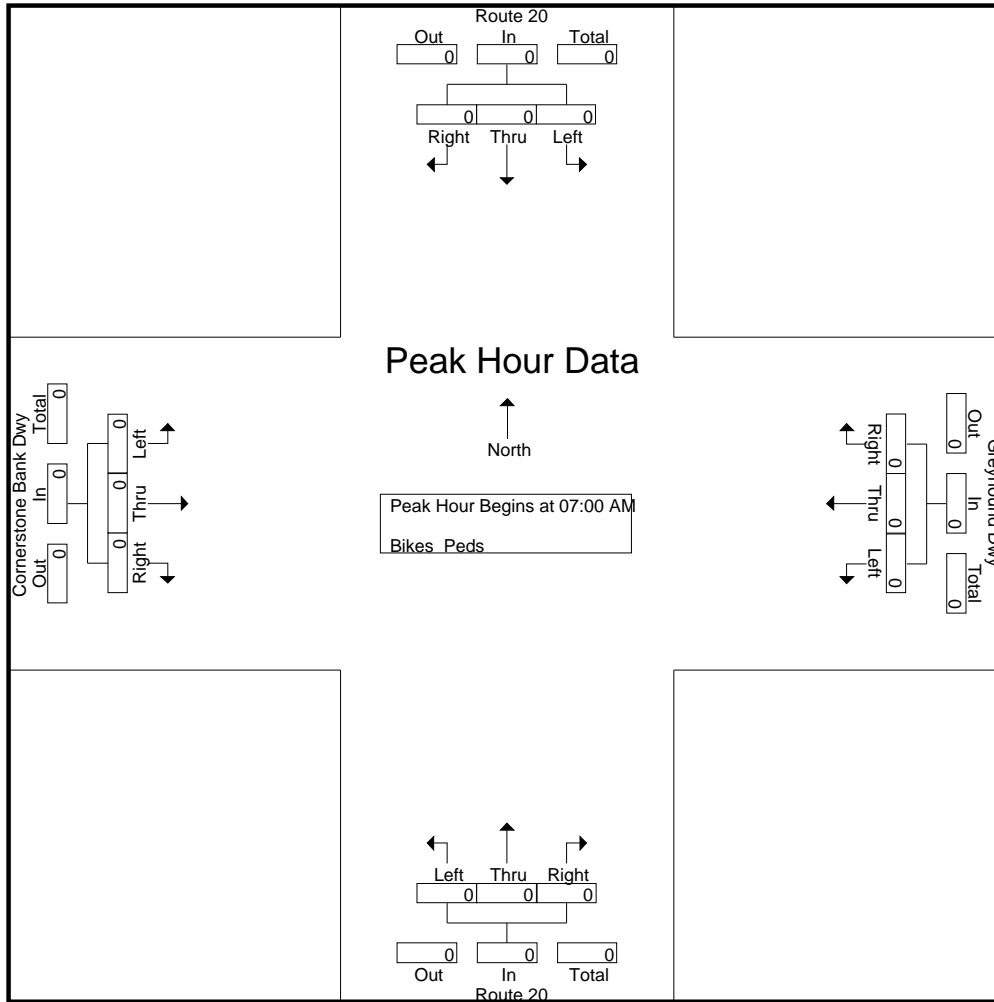
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 Site Code : 87070004
 Start Date : 10/1/2020
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:00 AM																		
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0			
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

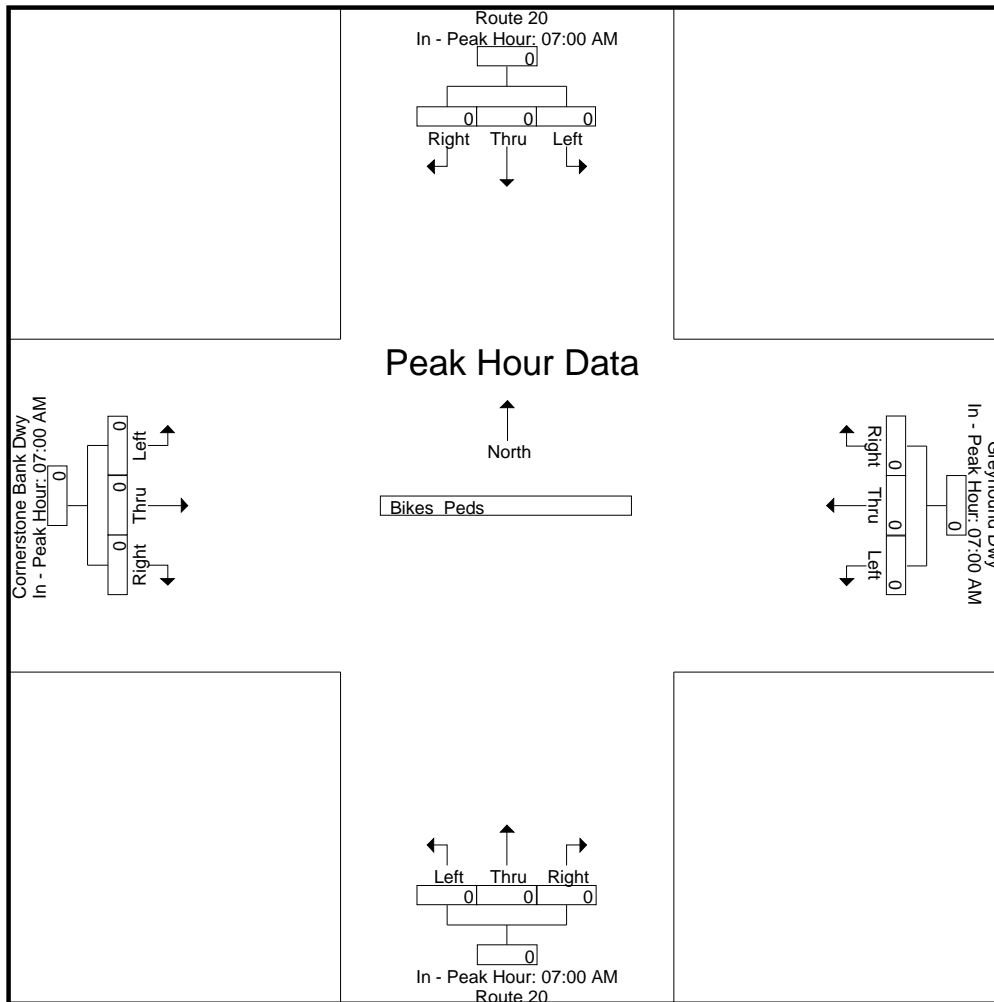
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



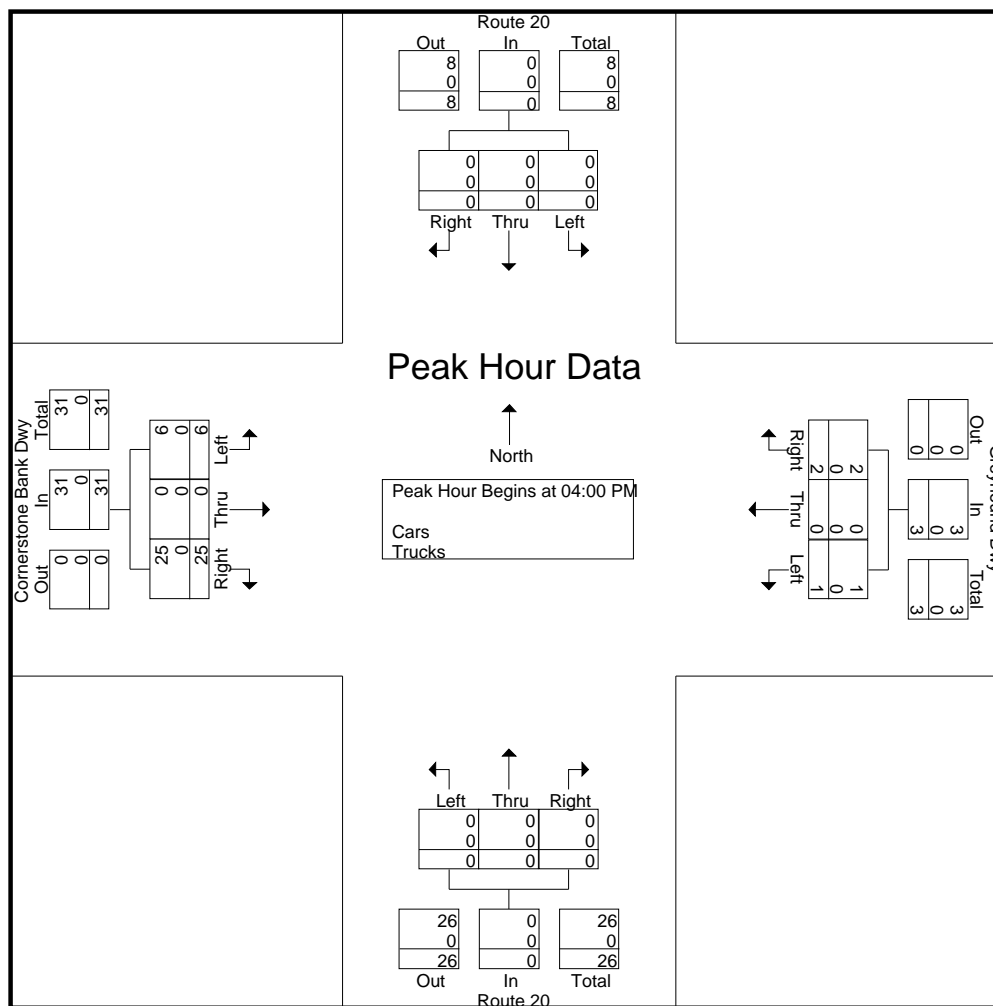
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



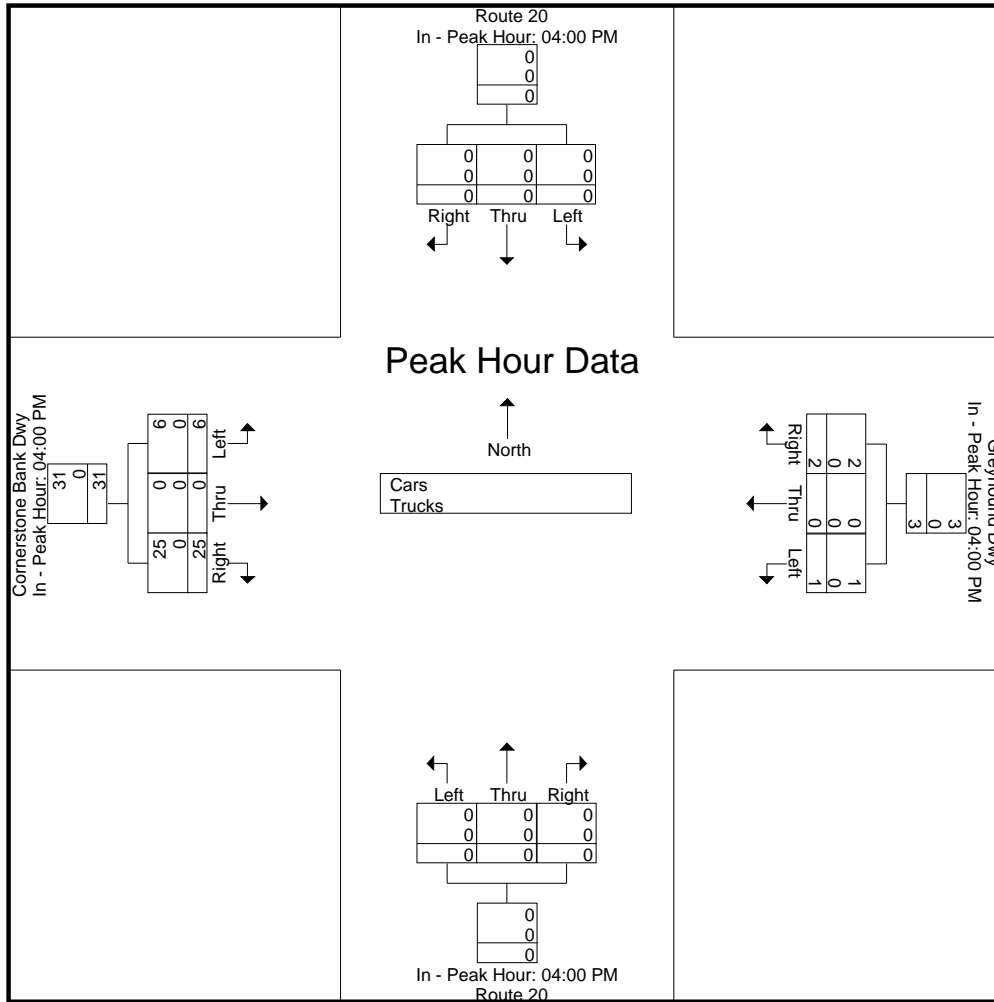
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



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

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	0	0	8	8
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	3	0	7	10
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	6
+45 mins.	0	0	0	0	1	0	1	2	0	0	0	0	2	0	5	7
Total Volume	0	0	0	0	1	0	2	3	0	0	0	0	6	0	25	31
% App. Total	0	0	0	0	33.3	0	66.7		0	0	0	0	19.4	0	80.6	
PHF	.000	.000	.000	.000	.250	.000	.500	.375	.000	.000	.000	.000	.500	.000	.781	.775
Cars	0	0	0	0	1	0	2	3	0	0	0	0	6	0	25	31
% Cars	0	0	0	0	100	0	100	100	0	0	0	0	100	0	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy / Bank Dwy
 City/State : Sturbridge, MA
 Weather : Clear

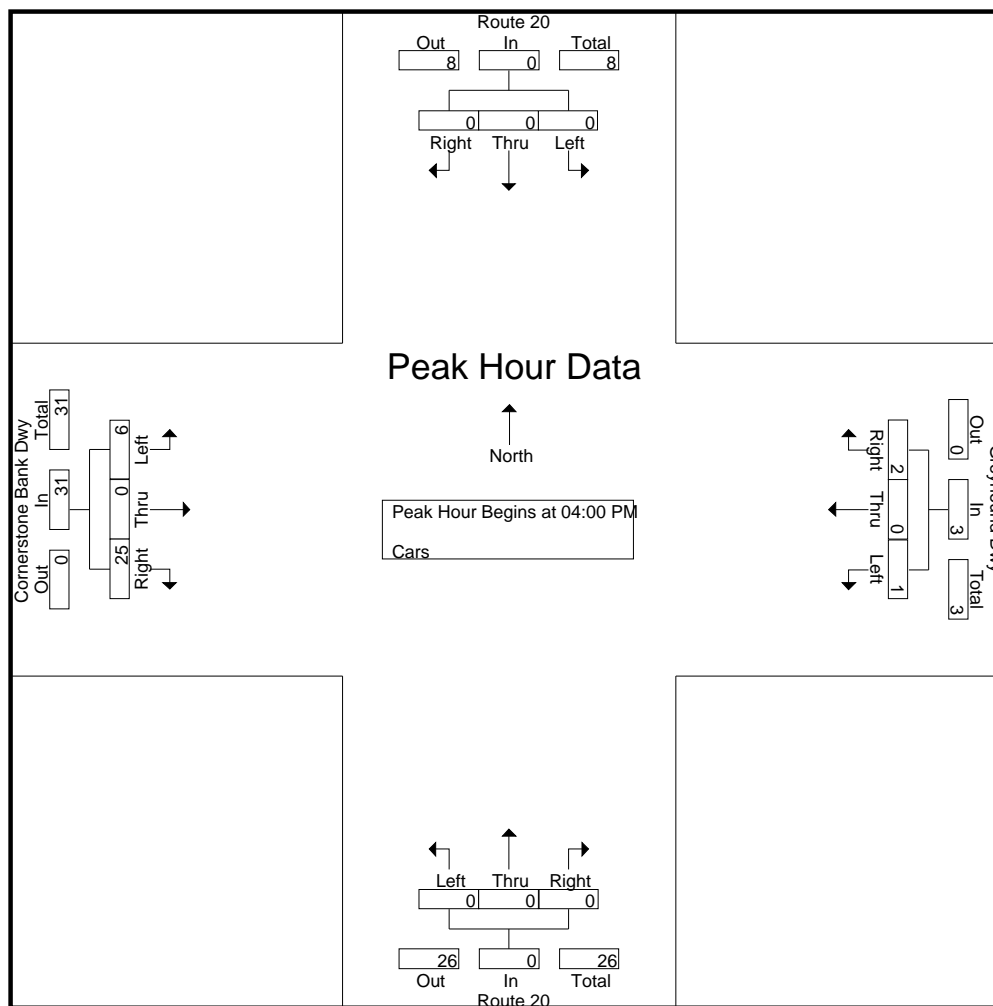
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 Site Code : 87070004
 Start Date : 10/1/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Cornerstone Bank Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	0	1	0	0	0	0	0	8	9
04:15 PM	0	0	0	0	0	0	0	0	0	3	0	7	10
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	5	6
04:45 PM	0	0	0	1	0	1	0	0	0	2	0	5	9
Total	0	0	0	1	0	2	0	0	0	6	0	25	34
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	2	0	3	5
05:30 PM	0	0	0	1	0	0	0	0	0	0	0	4	5
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	5	6
Total	0	0	0	1	0	1	0	0	0	2	0	14	18
Grand Total	0	0	0	2	0	3	0	0	0	8	0	39	52
Apprch %	0	0	0	40	0	60	0	0	0	17	0	83	
Total %	0	0	0	3.8	0	5.8	0	0	0	15.4	0	75	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:00 PM																		
04:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	8	8	9
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	7	10	10	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	6	6	
04:45 PM	0	0	0	0	1	0	1	2	0	0	0	0	2	0	5	7	9	
Total Volume	0	0	0	0	1	0	2	3	0	0	0	0	6	0	25	31	34	
% App. Total	0	0	0	0	33.3	0	66.7		0	0	0		19.4	0	80.6			
PHF	.000	.000	.000	.000	.250	.000	.500	.375	.000	.000	.000	.000	.500	.000	.781	.775	.850	

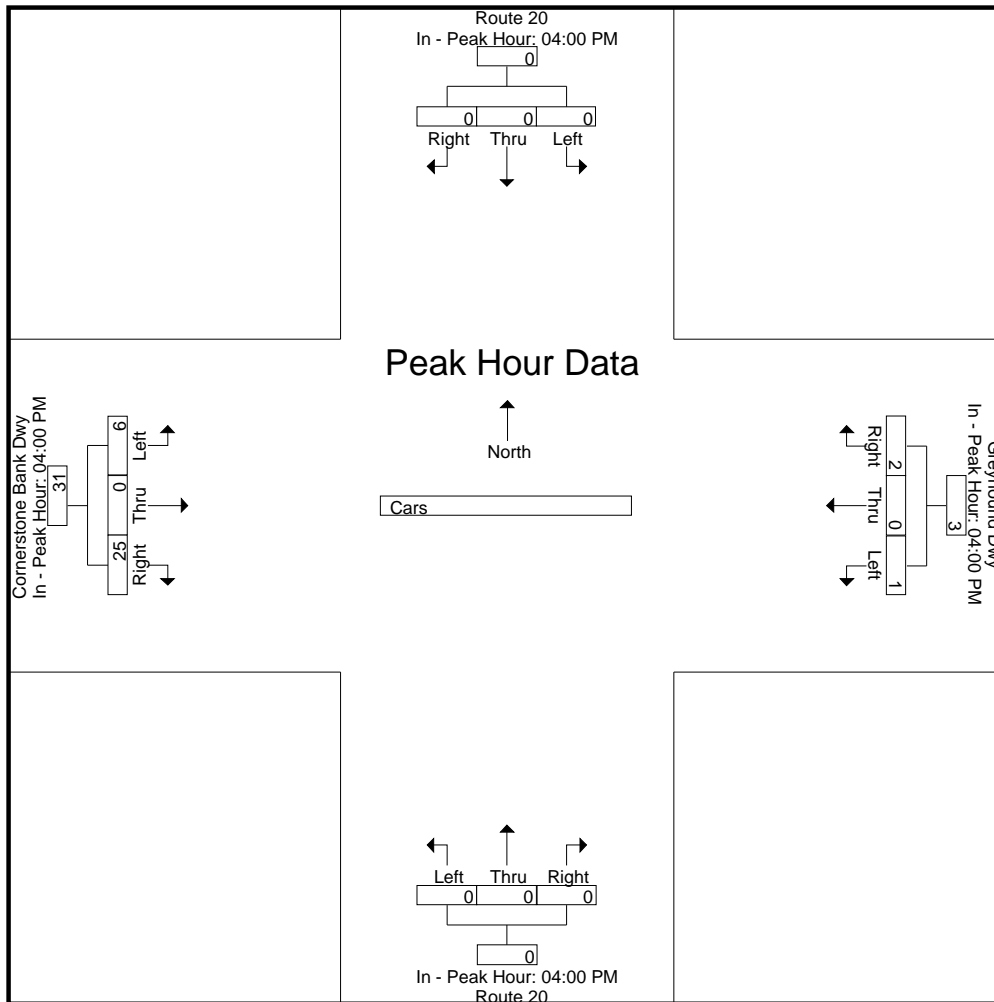
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



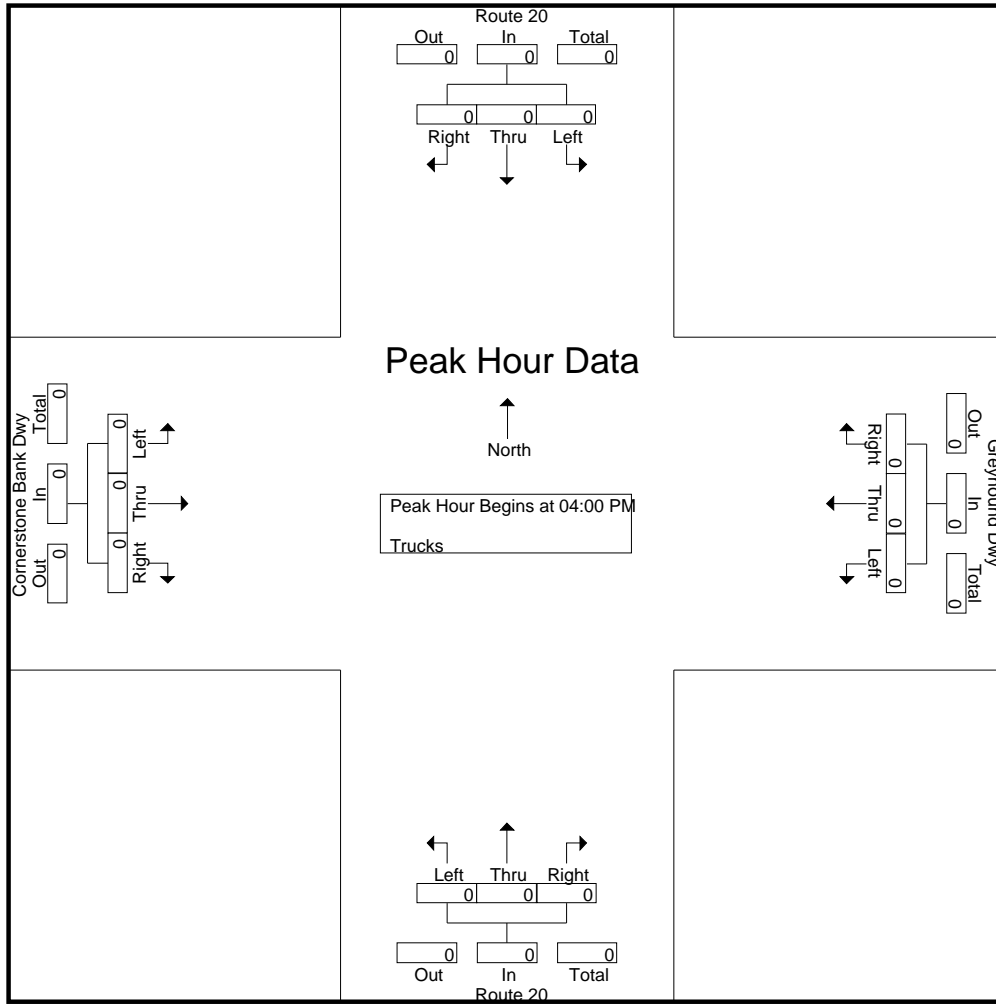
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	0	0	8	8
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	3	0	7	10
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	6
+45 mins.	0	0	0	0	1	0	1	2	0	0	0	0	2	0	5	7
Total Volume	0	0	0	0	1	0	2	3	0	0	0	0	6	0	25	31
% App. Total	0	0	0	0	33.3	0	66.7		0	0	0	0	19.4	0	80.6	
PHF	.000	.000	.000	.000	.250	.000	.500	.375	.000	.000	.000	.000	.500	.000	.781	.775

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



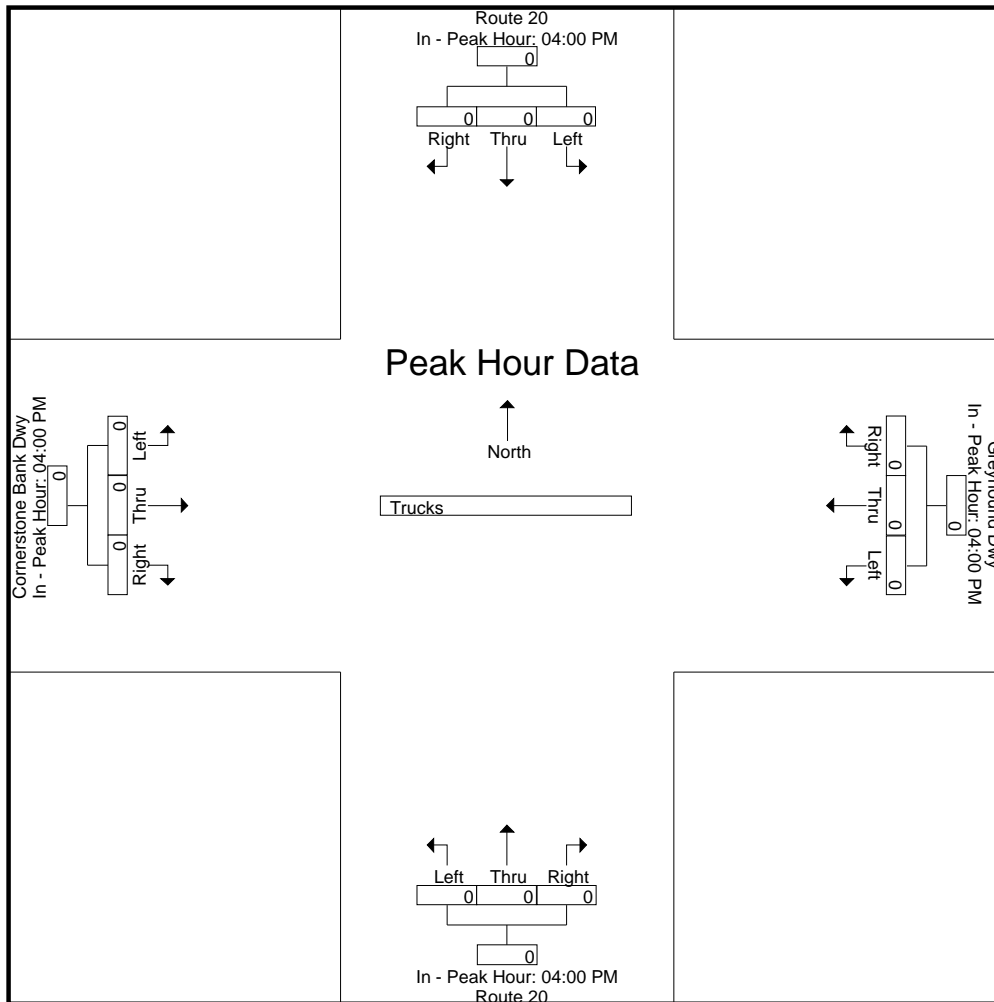
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



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

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070004
Site Code : 87070004
Start Date : 10/1/2020
Page No : 10

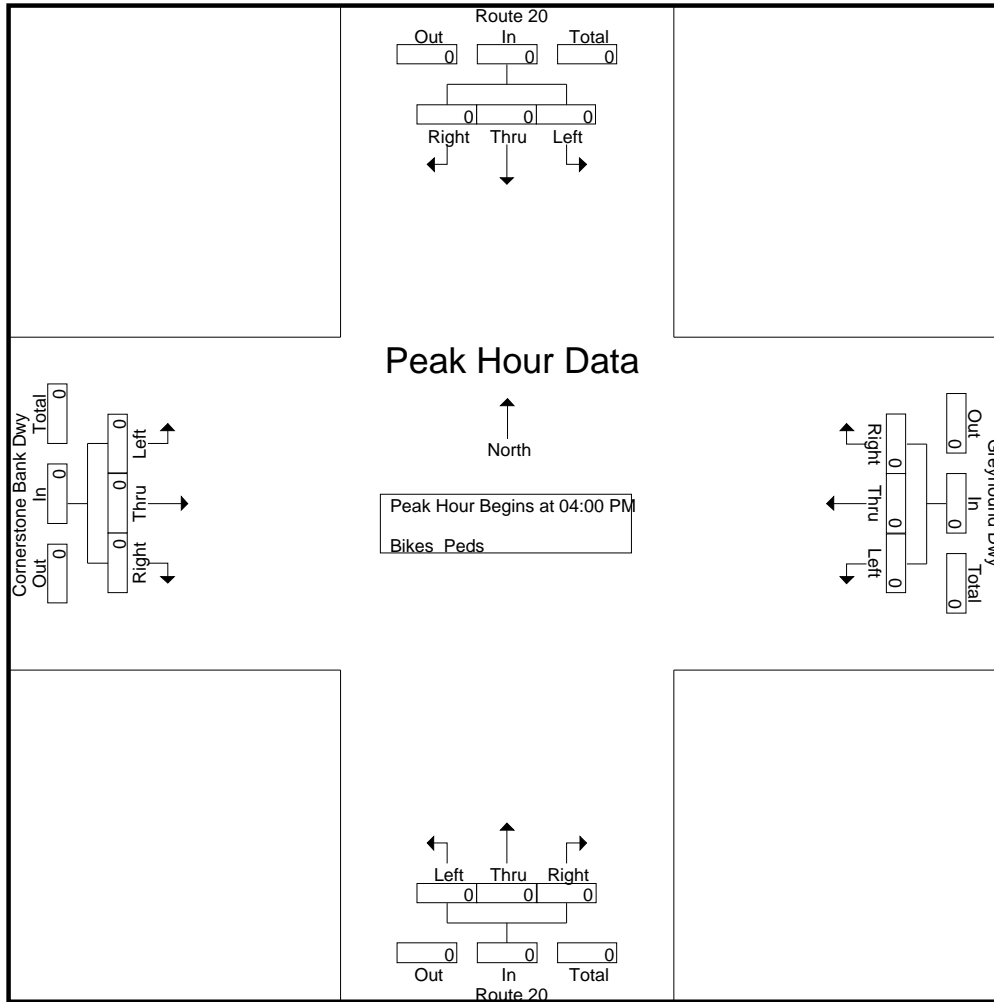
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:00 PM																		
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0			
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

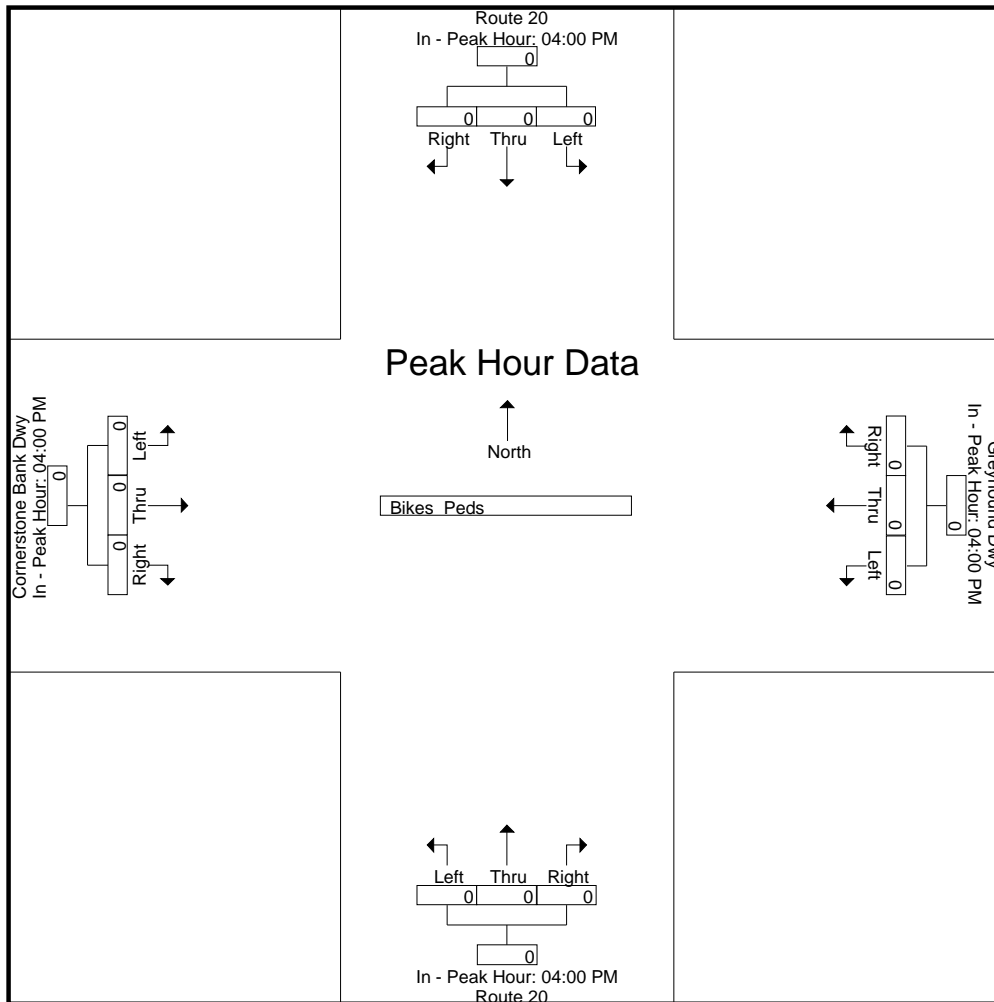
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



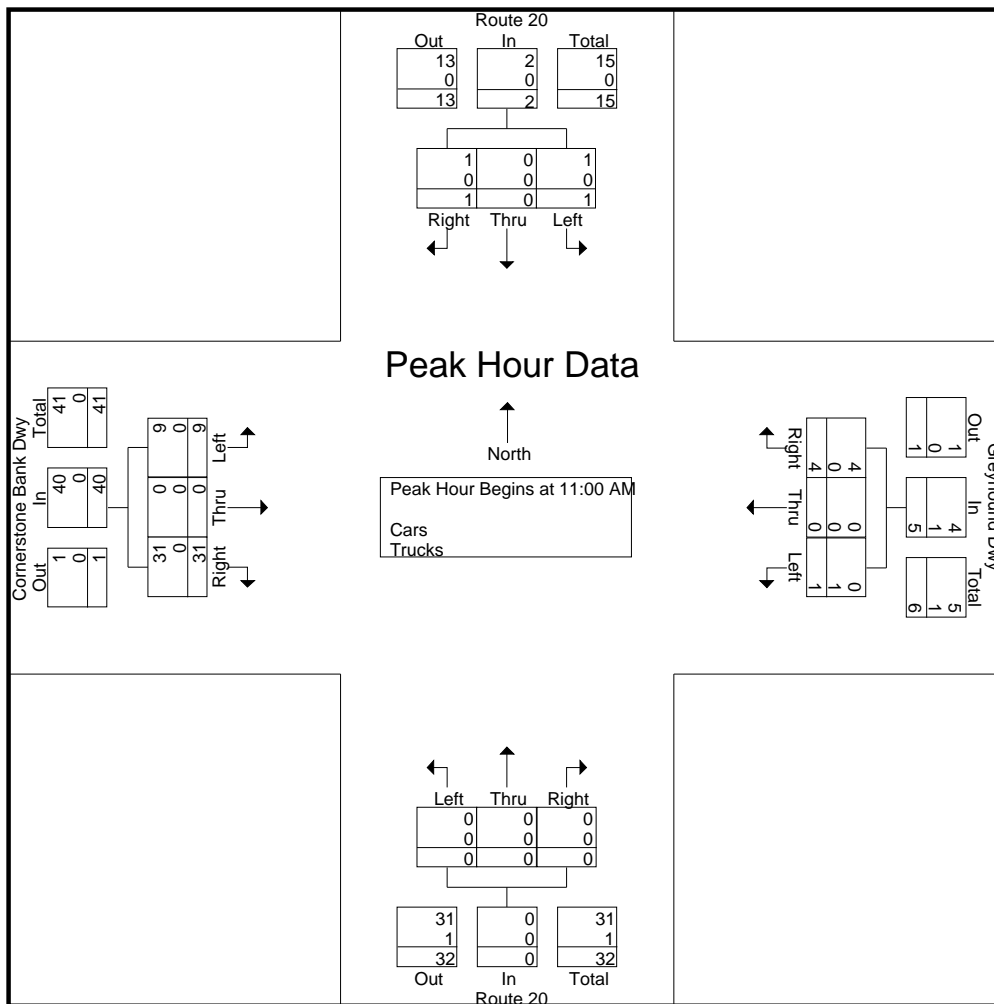
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



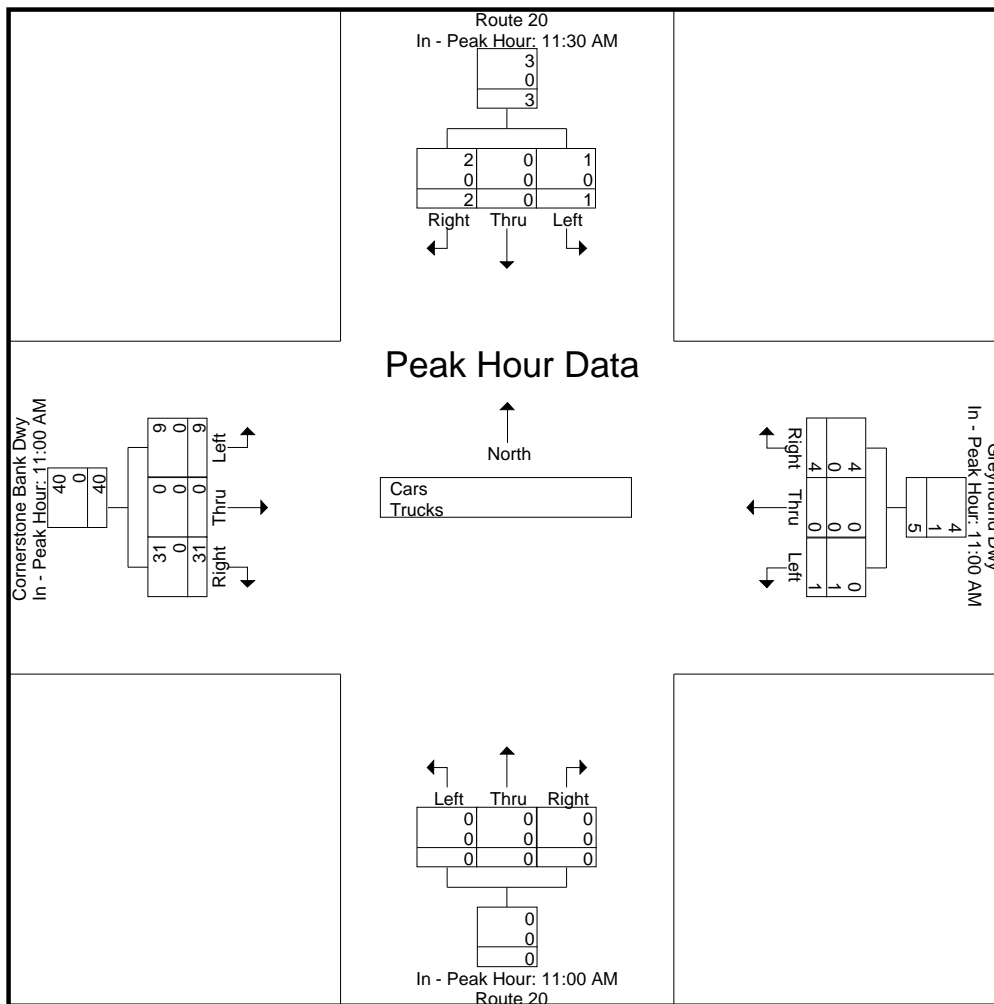
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:30 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	1	0	5	6
+15 mins.	1	0	1	2	0	0	0	0	0	0	0	0	2	0	10	12
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	2	0	12	14
+45 mins.	0	0	1	1	1	0	3	4	0	0	0	0	4	0	4	8
Total Volume	1	0	2	3	1	0	4	5	0	0	0	0	9	0	31	40
% App. Total	33.3	0	66.7		20	0	80		0	0	0		22.5	0	77.5	
PHF	.250	.000	.500	.375	.250	.000	.333	.313	.000	.000	.000	.000	.563	.000	.646	.714
Cars	1	0	2	3	0	0	4	4	0	0	0	0	9	0	31	40
% Cars	100	0	100	100	0	0	100	80	0	0	0	0	100	0	100	100
Trucks	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	100	0	0	20	0	0	0	0	0	0	0	0

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 20
 E/W Street : Greyhound Dwy / Bank Dwy
 City/State : Sturbridge, MA
 Weather : Clear

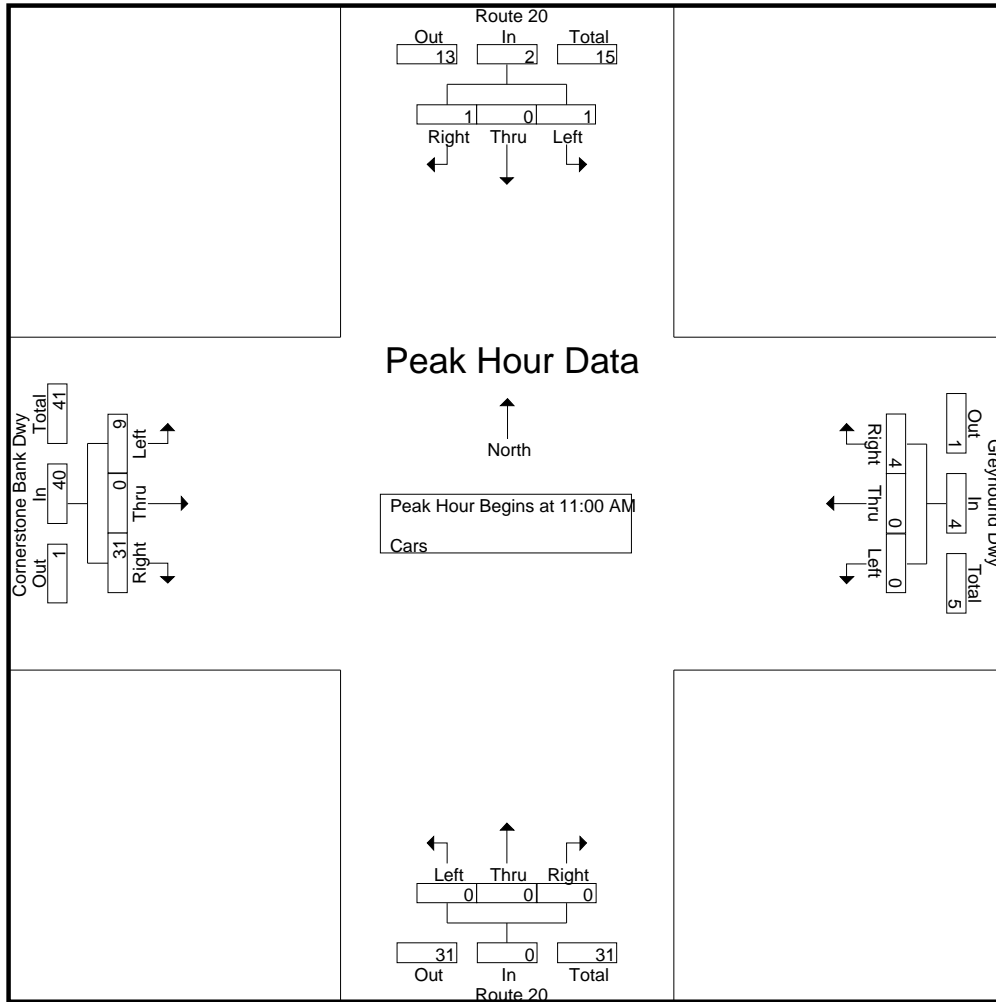
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 Start Date : 10/3/2020
 Page No : 4

Groups Printed- Cars

Start Time	Route 20 From North			Greyhound Dwy From East			Route 20 From South			Cornerstone Bank Dwy From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	1	0	0	0	1	0	5	7
11:15 AM	0	0	0	0	0	0	0	0	0	2	0	10	12
11:30 AM	0	0	0	0	0	0	0	0	0	2	0	12	14
11:45 AM	1	0	1	0	0	3	0	0	0	4	0	4	13
Total	1	0	1	0	0	4	0	0	0	9	0	31	46
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	4	5
12:15 PM	0	0	1	1	0	0	0	0	0	2	0	2	6
12:30 PM	0	0	0	0	0	0	0	0	0	2	0	9	11
12:45 PM	0	0	0	1	0	1	0	0	0	3	0	8	13
Total	0	0	1	2	0	1	0	0	0	8	0	23	35
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	3
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	4	4
01:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	4
01:45 PM	0	0	0	0	0	0	0	0	0	1	0	3	4
Total	0	0	0	0	0	0	0	0	0	3	0	12	15
Grand Total	1	0	2	2	0	5	0	0	0	20	0	66	96
Apprch %	33.3	0	66.7	28.6	0	71.4	0	0	0	23.3	0	76.7	
Total %	1	0	2.1	2.1	0	5.2	0	0	0	20.8	0	68.8	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	1	0	5	6	7
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10	12	12
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	12	14	14
11:45 AM	1	0	1	2	0	0	3	3	0	0	0	0	4	0	4	8	13
Total Volume	1	0	1	2	0	0	4	4	0	0	0	0	9	0	31	40	46
% App. Total	50	0	50		0	0	100		0	0	0		22.5	0	77.5		
PHF	.250	.000	.250	.250	.000	.000	.333	.333	.000	.000	.000	.000	.563	.000	.646	.714	.821

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



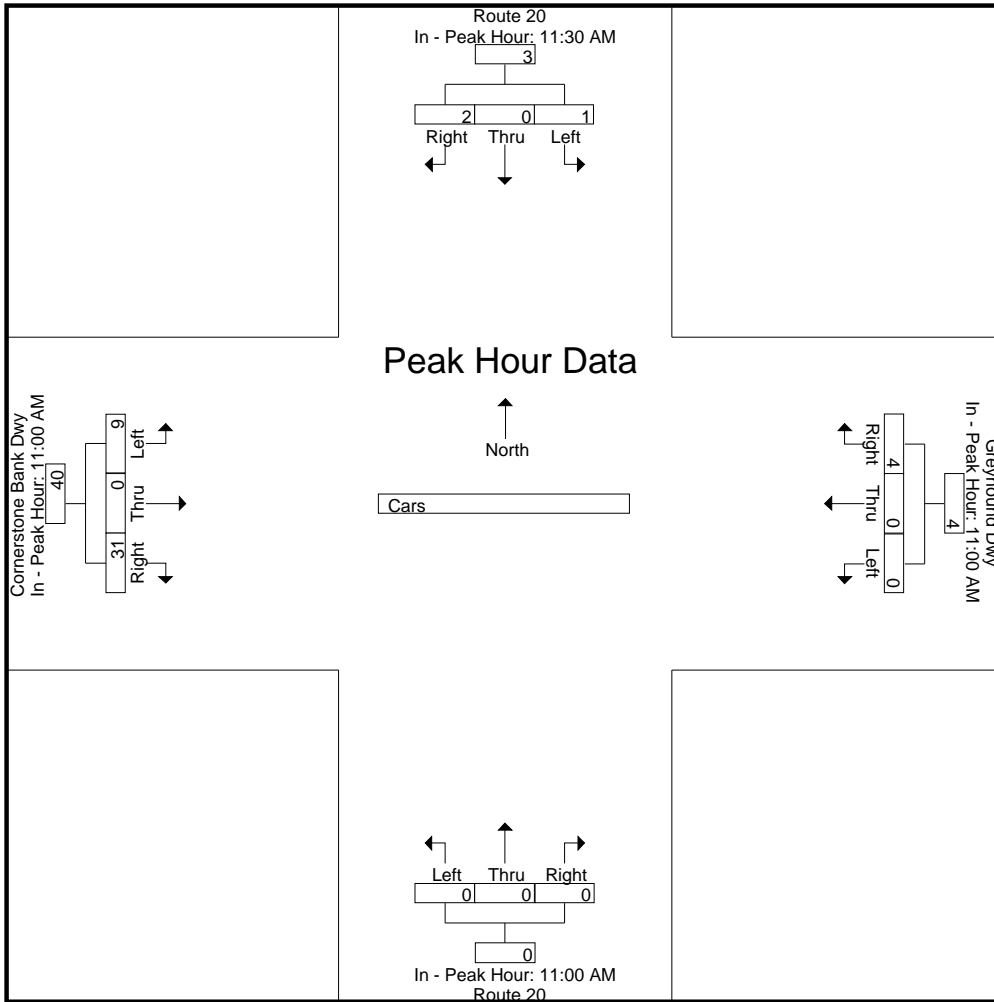
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:30 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	1	0	5	6
+15 mins.	1	0	1	2	0	0	0	0	0	0	0	0	2	0	10	12
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	2	0	12	14
+45 mins.	0	0	1	1	0	0	3	3	0	0	0	0	4	0	4	8
Total Volume	1	0	2	3	0	0	4	4	0	0	0	0	9	0	31	40
% App. Total	33.3	0	66.7		0	0	100		0	0	0		22.5	0	77.5	
PHF	.250	.000	.500	.375	.000	.000	.333	.333	.000	.000	.000	.000	.563	.000	.646	.714

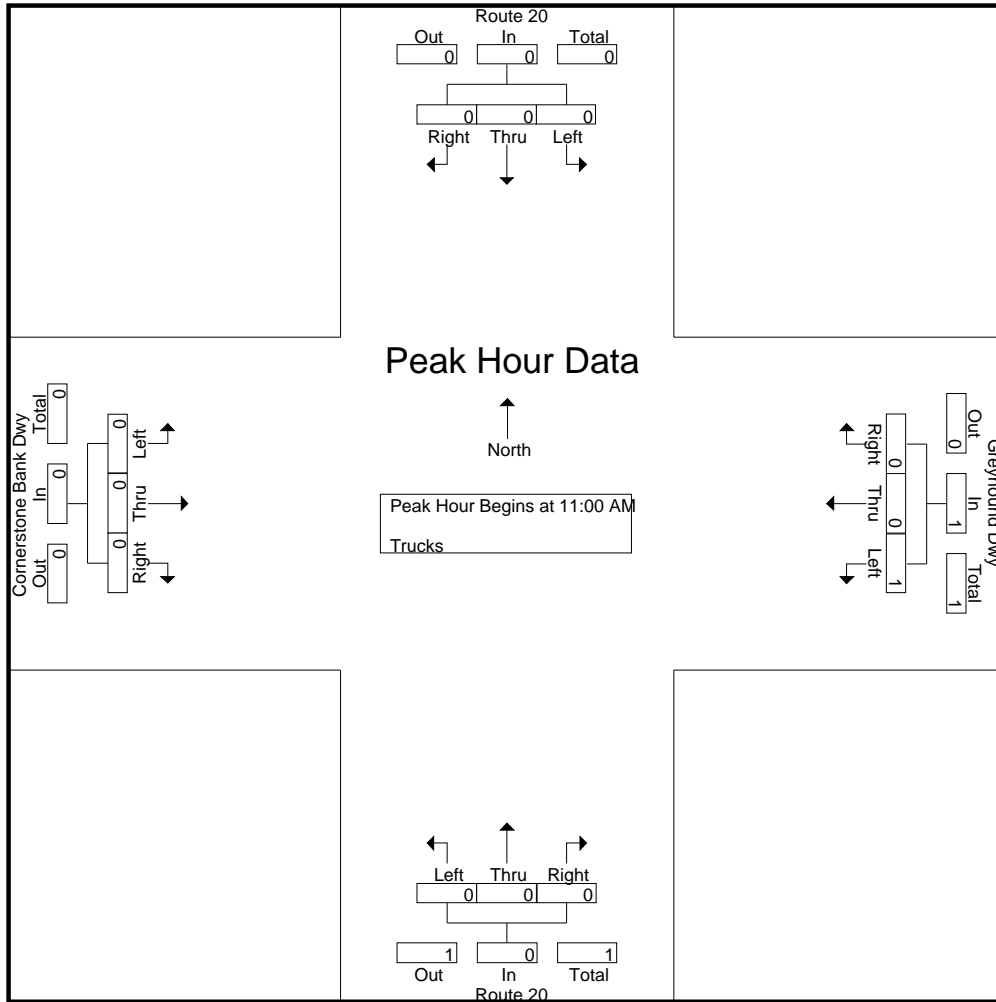
Accurate Counts
978-664-2565

File Name : 870700S4
Site Code : 87070004
Start Date : 10/3/2020
Page No : 6

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



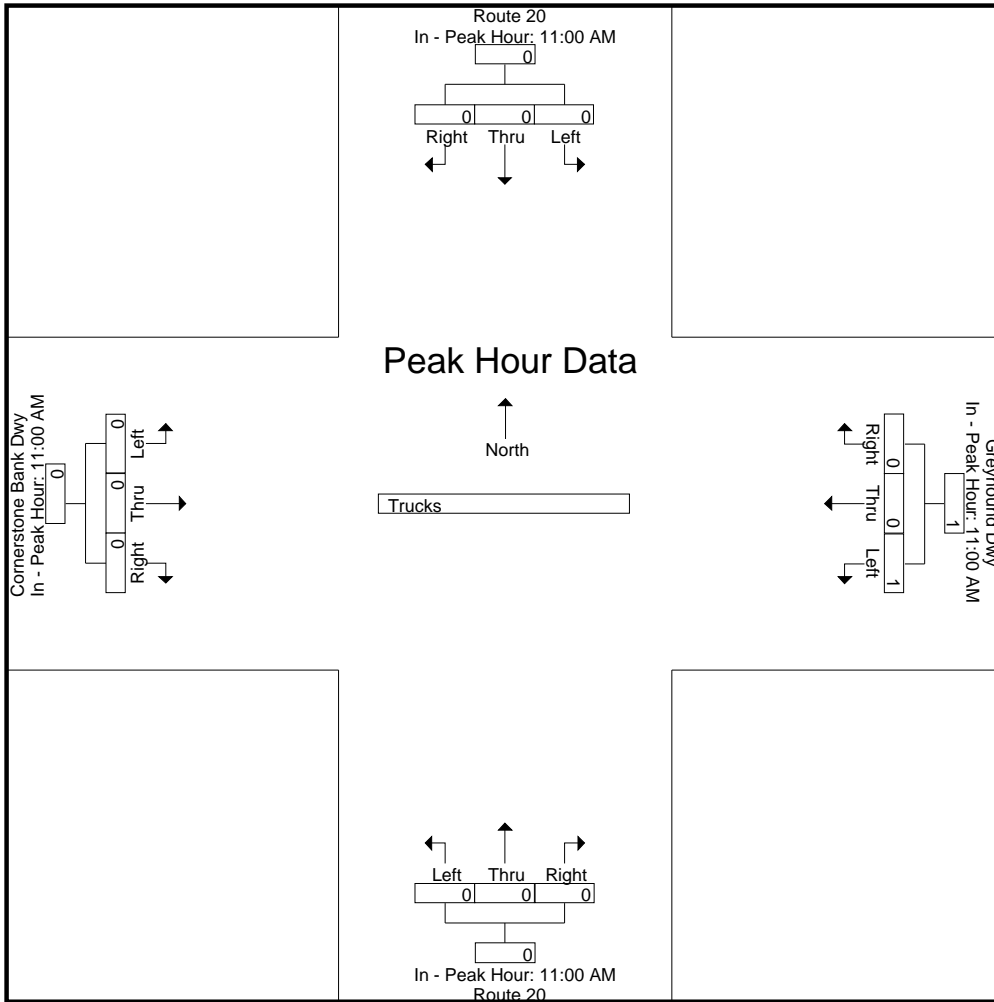
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear

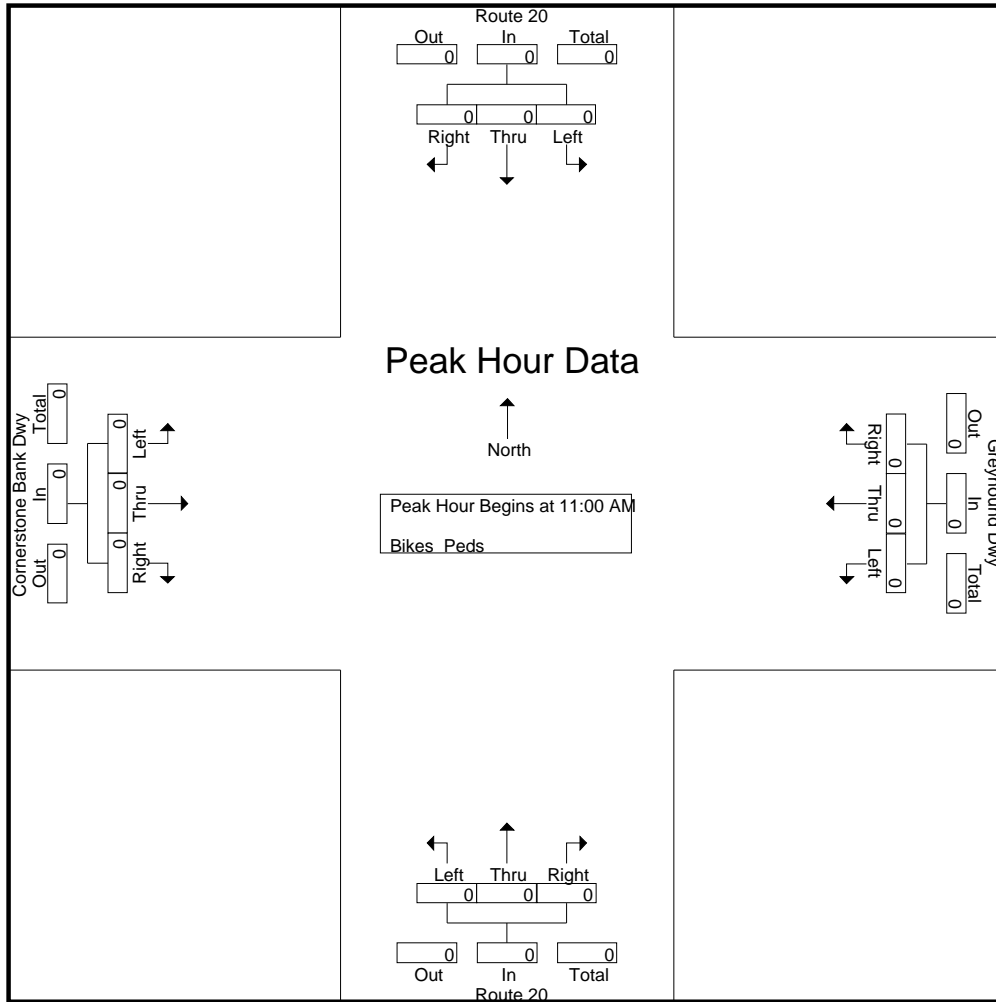
File Name : 870700S4
Site Code : 87070004
Start Date : 10/3/2020
Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	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
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	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
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

Start Time	Route 20 From North				Greyhound Dwy From East				Route 20 From South				Cornerstone Bank Dwy From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

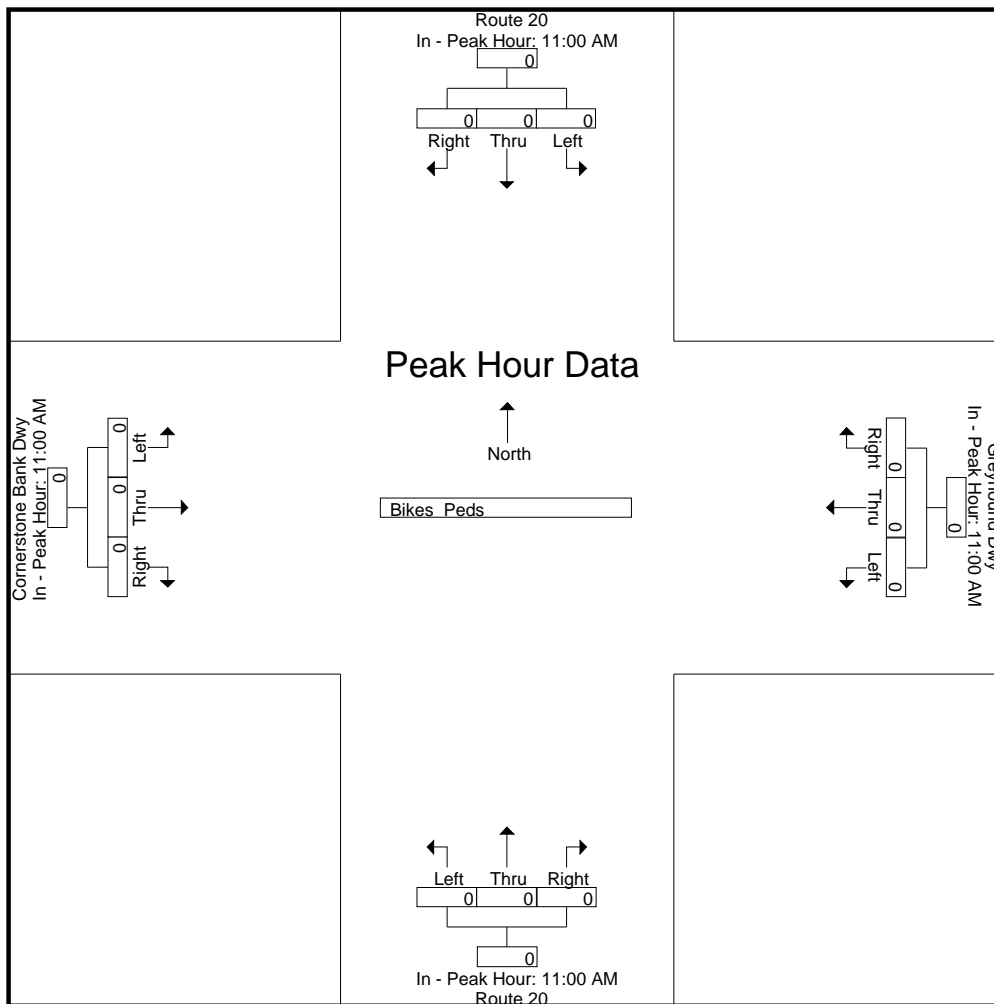
N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

N/S Street : Route 20
E/W Street : Greyhound Dwy / Bank Dwy
City/State : Sturbridge, MA
Weather : Clear



SEASONAL ADJUSTMENT DATA



Massachusetts Highway Department

3929: Monthly Hourly Volume for September 2015

Location ID:	3929	Seasonal Factor Group:	U1-Worcester
County:	Worcester	Daily Factor Group:	
Functional Class	1	Axle Factor Group:	U1-Worcester
Location:	WILBUR CROSS HIGHWAY	Growth Factor Group:	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	
1	895	571	511	570	808	1312	2033	2521	2459	2890	3208	3201	3174	3428	3440	3498	3133	2939	2590	2160	1974	1612	1242	1136	51305	
2	660	472	514	589	802	1294	2007	2567	2512	2883	3048	2987	3046	3390	3536	3341	3126	2968	2709	2280	2116	1727	1260	895	50729	
3	629	558	489	648	842	1348	2093	2585	2660	2898	3079	3430	3509	3786	3868	3934	3561	3652	3321	3409	2880	2187	1755	1651	58772	
4	1233	720	661	662	916	1307	2089	2590	2845	3446	4112	4652	4702	4632	5062	4973	4254	5037	5209	4401	4438	3469	2469	1679	75558	
5	1088	676	567	533	719	1063	1627	2889	4131	5311	5925	5098	5471	5423	4855	4097	3900	3576	2994	2647	2504	2045	1604	1135	69878	
6	637	451	318	267	257	436	740	1305	2151	3330	4350	4854	4882	4601	4221	4142	4201	4095	3888	3575	3360	2754	2119	1384	62318	
7	847	556	361	350	337	425	744	1385	2150	3483	4489	5086	5958	5512	5745	5518	5199	5339	4883	4031	3750	3092	2280	1413	72933	
8	750	609	500	559	881	1554	2423	2762	2646	3023	3519	3819	3714	3598	3680	3593	3179	3026	2548	1950	1625	1415	1145	994	53512	
9																										
10	748	534	532	629	881	1299	1966	2407	2456	2709	2747	2886	3207	3366	3734	3837	3141	2817	3193	2703	2095	1667	1508	1097	52159	
11	945	898	692	629	798	1173	1879	2291	2387	2656	3562	4203	4561	4588	4787	4711	4438	4245	4130	4226	3300	2330	1918	1484	66831	
12	861	580	490	472	529	806	1359	2283	3407	4028	5089	5439	5252	4621	4357	4310	4198	3603	2897	2548	2125	1771	1344	1056	63425	
13	902	644	476	277	253	378	723	1244	1969	3081	4219	5005	5505	5239	5629	5644	5637	5390	4308	3644	2922	2630	1604	949	68272	
14	698	535	464	531	728	1447	2281	2689	2656	2872	3338	3481	3519	3459	3618	3636	3308	3066	2704	2007	1756	1448	1088	842	52171	
15	592	501	485	539	805	1307	2094	2437	2363	2590	2855	2926	2861	2944	3158	3341	3002	2853	2483	2131	1676	1464	1104	854	47365	
16	714	502	492	605	850	1379	1968	2481	2271	2464	2818	2653	2798	3049	3226	3264	3078	2620	2425	1862	1699	1344	1045	884	46491	
17	593	495	483	631	798	1344	1980	2394	2286	2581	3057	2982	3071	3269	3509	3574	3324	3033	2800	2372	2378	1730	1320	962	50966	
18	773	594	604	659	924	1240	1920	2349	2441	2879	3662	4240	4233	4614	5002	4576	3978	4173	3951	3698	3893	2805	1987	1485	66680	
19	860	572	484	503	508	765	1408	2328	3269	4165	4662	4873	4536	4609	4117	3885	3703	3463	2821	2423	2289	1959	1470	1004	60676	
20	631	381	300	270	240	429	716	1279	2129	3209	4346	4957	5075	4877	5326	5569	5432	5470	5244	4171	3350	2647	1972	1148	69168	
21	753	521	443	518	817	1464	2307	2617	2420	2839	3241	3246	3190	2972	3242	3204	3020	2729	2308	1816	1609	1380	1043	797	48496	
22	630	501	480	579	785	1307	2003	2340	2305	2414	2454	2687	2665	2817	2981	3179	3062	2731	2303	1645	1577	1329	953	869	44596	
23	720	486	560	591	769	1309	1952	2376	2402	2631	2784	2785	2845	3036	3370	3393	3141	2882	2622	1990	1726	1514	1230	881	47995	
24	772	544	510	590	814	1363	2096	2531	2342	2501	3263	3281	3253	3578	3709	3677	3503	3153	2861	2481	2345	1735	1505	1249	53656	
25	801	602	537	603	831	1288	1917	2345	2477	2965	3992	4424	4470	4760	5297	5081	4703	4343	4572	4336	3848	3062	1916	1578	70748	
26	1005	698	478	464	534	806	1389	2512	3622	4778	5432	5131	4963	4923	4575	4248	3999	3815	3241	2810	2644	2136	1675	1120	66998	
27																										
28	1010	722	469	546	784	1467	2276	2564	2562	2678	2783	4064	3645	3199	3226	3414	3132	2811	2297	1945	1625	1306	983	818	50326	
29	583	529	497	569	766	1323	2022	2349	2271	2336	2554	2736	2567	2735	2865	2980	2810	2727	2265	1712	1512	1310	1062	728	43808	
30	586	502	448	520	720	821	1587	1838	2614	2166	2492	2641	2555	2913	2952	3219	3190	2770	2327	1840	1558	1254	1082	784	43379	

Average Monthly = 57471.82

Yearly Average = 55467

Adjustment factor = 0.97

Massachusetts Highway Department

3929: Monthly Hourly Volume for October 2015

Location ID: 3929
County: Worcester
Functional Class: 1
Location: WILBUR CROSS HIGHWAY
Seasonal Factor Group: U1-Worcester
Daily Factor Group: U1-Worcester
Axle Factor Group: U1-Worcester
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	561	532	462	571	819	1413	1963	2341	2297	2617	2963	2910	2999	3325	3566	3671	3475	3009	2668	2544	2028	1697	1487	1050	50968	Accepted
2	742	620	498	576	854	1241	1831	2256	2368	2713	3170	3716	3906	4435	4561	4292	3928	3830	3623	3923	2958	2287	1842	1301	61471	Accepted
3	729	521	423	391	438	664	1012	1936	2748	3592	4352	4727	4107	4405	3838	3826	3478	3146	2698	2266	1940	1651	1311	907	55106	Accepted
4	535	349	269	231	232	375	616	1138	1903	2834	3921	4720	5031	5088	5712	5511	5495	5417	4897	3872	3270	2230	1479	1018	66143	Accepted
5	631	445	413	469	725	1453	2160	2493	2444	2691	2998	3012	2856	2937	3005	3086	2861	2506	2290	1888	1534	1157	1047	783	45884	Accepted
6																										
7	573	420	499	565	786	1328	1990	2437	2296	2583	2814	2608	2757	2900	3105	3234	3109	2772	2476	1987	1744	1359	1149	871	46362	Accepted
8	677	509	478	598	815	1361	1999	2345	2370	2626	2981	3071	3065	3296	3762	3802	3613	3188	3085	3002	2588	1894	1500	1149	53774	Accepted
9	767	541	543	658	872	1269	2012	2530	2721	3378	4145	4707	4809	5371	5521	5465	5001	4374	4446	4820	4575	4597	2759	2104	77985	Accepted
10	1275	750	568	541	656	1084	1747	2829	4160	5457	6009	5860	5870	5075	4948	4603	4398	4104	3659	2855	2636	2028	1542	1172	73826	Accepted
11	750	430	336	312	278	442	805	1392	2217	3473	4694	5297	5136	5362	5364	5649	5518	5639	5128	4333	3721	2949	2214	1546	72985	Accepted
12	1054	660	478	534	683	1188	1824	2418	2907	3506	4564	4889	4836	5231	5550	5404	5131	4601	4111	3424	3252	2813	1883	1190	72131	Accepted
13	895	640	564	687	928	1483	2255	2551	2321	2785	3197	3366	3287	3526	3497	3335	3244	2863	2433	2039	1747	1384	1015	814	50856	Accepted
14	597	511	472	616	816	1341	2072	2446	2388	2567	2852	2832	2806	2942	3098	3435	3281	2763	2369	1987	1723	1283	968	913	47078	Accepted
15	604	504	502	680	866	1314	2083	2402	2245	2511	3057	2984	2951	3230	3677	3596	3438	2948	2971	2671	2290	1912	1475	1027	51938	Accepted
16	767	578	535	644	869	1344	1929	2221	2403	3194	3840	4333	4528	4993	5299	5036	4464	4265	4499	3430	4094	2516	1951	1507	69239	Accepted
17	1287	508	480	483	564	824	1402	2560	3622	4668	5050	5409	4926	4230	4425	4178	4129	3933	3358	2682	2245	1891	1539	1122	65515	Accepted
18																										
19	710	496	451	516	958	1834	2712	3170	3011	2798	3331	3284	3149	3231	3292	3399	3088	2707	2446	1923	1589	1267	1027	837	51226	Accepted
20	587	498	461	583	746	1262	2061	2484	2365	2539	2255	2624	2926	2741	3024	3065	3032	2713	2287	1858	1467	1351	958	801	44688	Accepted
21	547	482	490	535	756	1241	1989	2298	2322	2472	2615	2691	2702	2920	3169	3279	3124	2845	2396	1942	1635	1321	1006	843	45620	Accepted
22	728	535	475	602	816	1324	1946	2381	2342	2550	2916	2888	2908	3241	3507	3424	3470	3002	3258	2523	2104	1850	1538	1063	51391	Accepted
23	694	588	551	588	831	1252	1879	2360	2510	2958	3766	4101	4354	4681	5359	4995	4419	3968	4389	4007	3792	2615	1922	1233	67812	Accepted
24	825	567	451	420	496	745	1304	2247	3440	4424	5343	5387	4765	4407	4224	4062	4087	3844	3172	2677	2456	2008	1519	1169	64039	Accepted
25																										
26	797	489	463	523	843	1487	2199	2466	2395	2648	3115	3245	2987	3147	3097	2925	3112	2520	2362	2077	1547	1328	1106	812	47690	Accepted
27	608	527	537	567	788	1256	1987	2308	2200	2288	2635	2425	2454	2721	2873	2986	3031	2759	2386	1824	1518	1323	1050	786	43837	Accepted
28	625	489	443	546	768	1261	1939	2207	2270	2435	2610	2543	2595	2766	2875	2524	2810	2682	2139	1972	1580	1243	1168	755	43245	Accepted
29	609	448	467	613	807	1187	1835	2253	2129	2460	2721	2949	2963	3242	3614	3685	3362	3199	2974	2579	2073	1508	1250	945	49872	Accepted
30	940	833	639	611	786	1222	1821	2169	2324	2674	3235	3737	3695	4192	4492	4547	4160	3813	4101	3925	2837	2139	1602	1368	61862	Accepted
31	836	587	455	469	491	709	1063	1805	2681	3570	4067	4079	3775	3658	3593	3474	3353	2920	2186	1781	1562	1375	1061	753	50303	Accepted

Average Monthly = 56530.21

Average Yearly = 55467

Adjustment Factor = 0.98

VEHICLE TRAVEL SPEED DATA



Accurate Counts
978-664-2565

Location : Route 20 NB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707NB01

NB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/15/20	0	0	0	1	0	3	10	11	9	4	0	0	0	0	38
01:00	0	0	0	2	2	3	5	4	4	4	0	0	0	0	24
02:00	4	0	0	0	0	2	5	11	5	1	0	1	0	0	29
03:00	0	0	0	0	0	4	6	18	15	0	1	0	0	0	44
04:00	0	0	0	1	0	5	11	27	20	6	1	0	0	0	71
05:00	0	0	0	1	3	18	41	94	65	18	9	0	0	0	249
06:00	1	1	0	0	7	23	69	177	141	52	4	2	0	0	477
07:00	0	1	0	0	6	27	109	221	167	77	9	1	0	0	618
08:00	1	5	0	2	9	35	117	196	164	54	13	6	0	0	602
09:00	2	7	1	7	15	51	163	234	143	33	2	0	0	0	658
10:00	2	3	2	4	17	58	236	262	104	34	1	0	0	0	723
11:00	3	5	0	11	14	61	209	252	149	38	12	0	0	0	754
12 PM	3	3	3	2	29	71	265	292	135	37	8	2	0	0	850
13:00	1	3	2	14	19	92	237	296	178	43	11	0	0	0	896
14:00	0	0	1	3	11	56	208	342	222	65	6	3	1	0	918
15:00	3	2	4	8	10	76	224	421	222	82	18	1	0	0	1071
16:00	3	1	3	4	18	63	212	365	256	96	7	0	0	0	1028
17:00	1	7	1	1	8	42	163	331	274	78	12	2	0	0	920
18:00	0	0	0	1	4	47	180	272	132	34	7	0	0	0	677
19:00	1	1	1	1	5	36	122	131	63	14	4	1	0	0	380
20:00	1	0	0	0	8	13	68	97	51	21	5	0	0	0	264
21:00	0	0	0	0	3	20	39	77	43	9	2	0	0	0	193
22:00	0	0	0	0	2	12	22	43	29	7	1	0	0	0	116
23:00	0	0	0	0	2	6	13	36	18	5	3	1	0	0	84
Total	26	39	18	63	192	824	2734	4210	2609	812	136	20	1	0	11684

Daily
 15th Percentile : 41 MPH
 50th Percentile : 47 MPH
 85th Percentile : 53 MPH
 95th Percentile : 57 MPH

 Mean Speed(Average) : 48 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 6944
 Percent in Pace : 59.4%
 Number of Vehicles > 45 MPH : 7788
 Percent of Vehicles > 45 MPH : 66.7%

Accurate Counts
978-664-2565

Location : Route 20 NB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707NB01

NB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/16/20	0	0	0	0	1	1	11	13	5	2	0	0	0	0	33
01:00	0	0	0	0	1	2	8	6	4	2	0	0	0	0	23
02:00	0	0	0	0	0	1	3	11	6	3	0	1	0	0	25
03:00	0	0	0	0	0	5	18	20	10	1	1	0	0	0	55
04:00	0	0	0	0	3	6	21	31	14	7	0	0	0	0	82
05:00	0	0	0	0	2	10	38	71	57	21	2	0	0	0	201
06:00	0	1	0	0	6	26	99	162	97	31	4	2	0	0	428
07:00	1	1	1	3	12	57	171	194	81	18	0	1	0	0	540
08:00	2	2	0	4	11	48	145	224	131	50	2	0	0	0	619
09:00	1	3	1	6	37	65	174	230	132	33	10	1	0	0	693
10:00	0	2	1	5	29	80	191	265	111	21	6	0	0	0	711
11:00	2	3	1	6	30	111	261	282	134	33	7	1	0	0	871
12 PM	0	5	4	3	18	126	307	325	117	26	5	0	0	0	936
13:00	1	1	4	6	35	172	326	324	106	31	5	0	0	0	1011
14:00	3	4	0	18	28	124	375	312	113	25	3	0	0	0	1005
15:00	0	0	5	14	63	168	361	312	112	20	1	0	0	0	1056
16:00	1	2	2	8	39	120	340	352	133	42	10	0	0	0	1049
17:00	0	4	0	3	20	83	269	306	105	40	2	0	0	0	832
18:00	0	0	0	3	22	119	244	209	92	15	0	0	0	0	704
19:00	1	2	0	0	4	47	147	166	43	11	2	0	0	0	423
20:00	0	0	0	1	17	55	112	64	38	10	2	0	0	0	299
21:00	0	0	0	0	2	25	72	78	40	5	1	0	0	0	223
22:00	0	0	0	1	3	11	29	54	24	6	1	0	0	0	129
23:00	0	0	0	0	0	9	21	35	12	2	0	0	0	0	79
Total	12	30	19	81	383	1471	3743	4046	1717	455	64	6	0	0	12027

Daily

15th Percentile : 39 MPH
50th Percentile : 45 MPH
85th Percentile : 51 MPH
95th Percentile : 54 MPH

Mean Speed(Average) : 46 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 7789
Percent in Pace : 64.8%
Number of Vehicles > 45 MPH : 6288
Percent of Vehicles > 45 MPH : 52.3%

Accurate Counts
978-664-2565

Location : Route 20 NB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707NB01

NB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/17/20	0	0	0	0	3	5	14	17	10	1	0	0	0	0	50
01:00	0	0	0	0	4	5	6	3	4	1	0	1	0	0	24
02:00	0	0	0	0	2	1	6	6	2	0	0	0	0	0	17
03:00	0	0	0	0	0	4	6	8	1	2	0	0	0	0	21
04:00	1	0	0	2	0	7	3	9	3	1	0	0	0	0	26
05:00	0	0	0	0	3	8	17	26	8	2	0	0	0	0	64
06:00	0	0	0	0	4	16	58	61	22	3	2	0	0	0	166
07:00	0	0	0	0	4	9	52	104	71	18	4	2	0	0	264
08:00	0	1	0	0	2	20	80	166	121	34	3	1	0	0	428
09:00	0	0	1	1	13	32	193	274	135	46	6	2	0	0	703
10:00	2	0	1	0	32	95	318	308	168	20	6	1	0	0	951
11:00	0	1	1	3	30	158	389	356	157	39	6	2	0	0	1142
12 PM	0	0	1	4	33	130	399	419	198	45	4	0	0	0	1233
13:00	1	3	0	11	27	105	344	456	182	45	5	1	0	0	1180
14:00	0	1	0	1	13	73	252	364	254	89	9	2	0	0	1058
15:00	1	0	0	1	12	65	253	386	257	82	16	1	0	0	1074
16:00	0	1	2	1	10	49	164	353	269	63	17	1	0	0	930
17:00	0	1	0	4	4	49	170	325	214	48	12	0	3	0	830
18:00	0	0	0	4	11	73	182	235	123	27	2	0	0	0	657
19:00	1	1	0	0	2	49	128	150	86	27	4	2	0	0	450
20:00	0	0	0	0	3	21	82	101	65	17	3	0	0	0	292
21:00	0	0	0	0	3	21	67	106	41	9	0	0	0	0	247
22:00	0	0	0	0	0	5	38	67	32	11	0	1	0	0	154
23:00	0	0	0	0	1	4	22	40	27	2	1	0	1	0	98
Total	6	9	6	32	216	1004	3243	4340	2450	632	100	17	4	0	12059

Daily
 15th Percentile : 40 MPH
 50th Percentile : 46 MPH
 85th Percentile : 52 MPH
 95th Percentile : 56 MPH

 Mean Speed(Average) : 47 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 7583
 Percent in Pace : 62.9%
 Number of Vehicles > 45 MPH : 7543
 Percent of Vehicles > 45 MPH : 62.6%

Grand Total	44	78	43	176	791	3299	9720	12596	6776	1899	300	43	5	0	35770
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Overall
 15th Percentile : 40 MPH
 50th Percentile : 46 MPH
 85th Percentile : 52 MPH
 95th Percentile : 56 MPH

 Mean Speed(Average) : 47 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 22316
 Percent in Pace : 62.4%
 Number of Vehicles > 45 MPH : 21619
 Percent of Vehicles > 45 MPH : 60.4%

Accurate Counts
978-664-2565

Location : Route 20 SB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707SB01

SB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/15/20	0	0	0	0	0	2	9	15	6	6	1	0	0	0	39
01:00	0	0	0	2	1	2	7	14	3	2	0	0	0	0	31
02:00	0	0	0	0	0	2	6	9	3	4	0	0	0	0	24
03:00	0	0	0	0	2	5	8	11	5	0	0	0	0	0	31
04:00	0	0	0	0	4	6	20	30	20	3	1	0	0	0	84
05:00	0	0	0	0	6	12	42	53	48	13	7	0	0	0	181
06:00	0	0	0	1	10	30	90	94	83	33	11	0	1	0	353
07:00	1	0	0	1	8	38	126	165	125	41	11	0	0	0	516
08:00	0	1	0	3	14	52	144	172	105	44	9	0	0	0	544
09:00	0	1	0	2	20	92	156	141	93	18	9	0	0	0	532
10:00	1	1	0	11	17	95	204	173	106	26	1	1	0	0	636
11:00	0	0	0	5	42	118	212	237	107	17	1	0	0	0	739
12 PM	0	1	1	7	46	165	238	202	92	37	5	0	0	0	794
13:00	1	0	0	9	45	160	246	235	90	30	3	0	0	0	819
14:00	2	0	0	8	67	170	254	237	115	23	4	0	0	0	880
15:00	1	3	1	11	52	155	259	276	118	39	11	0	0	0	926
16:00	1	5	0	1	49	136	317	269	172	48	8	0	0	0	1006
17:00	0	3	0	5	38	146	314	246	190	48	6	0	0	0	996
18:00	1	0	0	4	24	129	226	216	119	23	5	0	0	0	747
19:00	0	0	0	0	14	89	147	132	62	25	4	0	0	0	473
20:00	0	1	0	1	8	45	79	101	65	16	0	0	0	0	316
21:00	0	0	0	2	4	21	66	57	41	7	2	0	0	0	200
22:00	1	0	0	0	3	17	38	32	14	8	2	0	0	0	115
23:00	0	0	0	0	4	8	25	19	15	9	1	0	0	1	82
Total	9	16	2	73	478	1695	3233	3136	1797	520	102	1	1	1	11064

Daily
 15th Percentile : 38 MPH
 50th Percentile : 45 MPH
 85th Percentile : 52 MPH
 95th Percentile : 55 MPH
 Mean Speed(Average) : 46 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 6369
 Percent in Pace : 57.6%
 Number of Vehicles > 50 MPH : 2422
 Percent of Vehicles > 50 MPH : 21.9%

Accurate Counts
978-664-2565

Location : Route 20 SB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707SB01

SB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/16/20	0	0	0	0	1	2	14	20	10	3	5	0	0	0	55
01:00	0	0	0	2	1	2	8	4	3	6	1	0	0	0	27
02:00	0	0	0	0	1	1	4	2	4	0	0	0	0	0	12
03:00	0	0	0	0	0	0	12	9	4	1	0	0	0	0	26
04:00	0	0	0	0	2	1	15	22	19	6	1	0	0	0	66
05:00	0	0	0	2	4	16	32	45	47	5	4	0	0	0	155
06:00	0	0	0	0	10	21	89	113	72	34	6	0	0	0	345
07:00	0	0	0	1	16	43	110	166	95	34	9	0	0	0	474
08:00	1	1	0	2	17	83	119	161	99	30	8	0	0	0	521
09:00	0	2	0	12	29	88	144	123	96	22	3	0	0	0	519
10:00	3	0	0	1	34	106	208	182	86	24	3	0	0	0	647
11:00	0	1	2	7	37	151	271	219	78	25	4	0	0	0	795
12 PM	0	1	2	21	54	198	284	202	79	35	3	0	0	0	879
13:00	1	0	1	5	50	213	265	207	132	27	6	0	0	0	907
14:00	2	0	0	26	49	202	266	246	114	19	2	1	0	0	927
15:00	1	6	5	18	67	221	305	225	99	22	4	0	0	0	973
16:00	1	2	0	21	75	270	340	221	99	27	2	0	0	0	1058
17:00	1	2	0	9	57	236	346	236	117	28	3	0	0	0	1035
18:00	0	0	1	4	39	133	268	209	112	28	8	0	0	0	802
19:00	1	0	0	1	23	85	151	141	97	32	4	0	0	0	535
20:00	0	0	0	4	20	58	97	93	37	15	4	0	0	0	328
21:00	0	0	0	0	9	38	66	68	39	12	4	0	0	0	236
22:00	1	0	0	2	2	16	33	48	26	11	0	0	0	0	139
23:00	0	0	0	0	1	8	21	30	20	11	0	0	0	0	91
Total	12	15	11	138	598	2192	3468	2992	1584	457	84	1	0	0	11552

Daily

- 15th Percentile : 37 MPH
- 50th Percentile : 44 MPH
- 85th Percentile : 51 MPH
- 95th Percentile : 54 MPH

Mean Speed(Average) : 45 MPH

10 MPH Pace Speed : 41-50 MPH

- Number in Pace : 6460
- Percent in Pace : 55.9%
- Number of Vehicles > 50 MPH : 2126
- Percent of Vehicles > 50 MPH : 18.4%

Location : Route 20 SB
Location : North of 195 Charlton Road
City/State: Sturbridge, MA

8707SB01

SB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/17/20	0	0	0	1	3	8	13	16	15	7	1	0	0	0	64
01:00	0	0	0	0	1	5	3	13	9	3	0	0	0	0	34
02:00	0	0	0	0	0	3	7	5	1	1	1	0	0	0	18
03:00	0	0	0	0	1	1	4	6	5	2	0	0	0	0	19
04:00	0	0	0	0	2	5	8	6	7	2	4	0	0	0	34
05:00	0	0	0	0	1	3	22	21	13	6	1	0	0	0	67
06:00	0	0	0	0	0	10	32	38	27	16	2	0	1	0	126
07:00	0	0	0	3	6	18	41	65	49	13	7	0	0	0	202
08:00	0	0	0	2	8	40	100	115	93	27	5	0	0	0	390
09:00	0	0	0	1	20	82	166	184	109	39	12	0	0	0	613
10:00	0	0	0	3	25	141	225	246	119	39	4	0	0	0	802
11:00	0	0	1	2	31	181	346	228	137	35	11	0	0	0	972
12 PM	0	0	0	4	33	199	385	300	137	27	2	0	0	0	1087
13:00	0	0	0	1	34	193	358	332	125	38	6	0	1	0	1088
14:00	0	0	0	0	41	155	335	287	157	44	4	0	0	0	1023
15:00	0	0	1	1	26	123	390	273	166	44	10	0	0	0	1034
16:00	0	0	0	2	21	111	300	287	155	56	12	1	0	1	946
17:00	0	0	0	11	16	110	272	268	136	44	9	0	0	0	866
18:00	0	0	0	1	24	90	202	230	115	36	10	0	0	0	708
19:00	0	0	0	3	7	92	158	136	85	29	6	0	0	0	516
20:00	0	0	0	3	10	39	110	99	48	8	3	0	0	0	320
21:00	0	0	0	0	4	30	82	73	40	14	7	1	0	0	251
22:00	0	0	0	0	3	11	37	54	30	17	6	1	1	0	160
23:00	0	0	0	1	1	11	24	31	16	15	3	2	1	0	105
Total	0	0	2	39	318	1661	3620	3313	1794	562	126	5	4	1	11445

Daily
 15th Percentile : 39 MPH
 50th Percentile : 45 MPH
 85th Percentile : 52 MPH
 95th Percentile : 56 MPH
 Mean Speed(Average) : 46 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 6933
 Percent in Pace : 60.6%
 Number of Vehicles > 50 MPH : 2492
 Percent of Vehicles > 50 MPH : 21.8%

Grand Total	21	31	15	250	1394	5548	10321	9441	5175	1539	312	7	5	2	34061
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Overall
 15th Percentile : 38 MPH
 50th Percentile : 44 MPH
 85th Percentile : 51 MPH
 95th Percentile : 55 MPH
 Mean Speed(Average) : 45 MPH
 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 19762
 Percent in Pace : 58.0%
 Number of Vehicles > 50 MPH : 7040
 Percent of Vehicles > 50 MPH : 20.7%

MASSDOT CRASH RATE WORKSHEETS AND HIGH CRASH LOCATION MAPPING



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Sturbridge COUNT DATE : Oct-20

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 20

MINOR STREET(S) : Hall Road

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	810	1,044	223	9		2,086

" K " FACTOR : INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES : # OF YEARS : AVERAGE # OF CRASHES PER YEAR (A) :

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

Comments : Below MassDOT District 3 crash rate

Project Title & Date: Proposed Travel Center - January 2021

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Sturbridge COUNT DATE : Oct-20

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 20

MINOR STREET(S) : 201A Charlton Road

**INTERSECTION
 DIAGRAM**
 (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	1,008	1,037	3			2,048

" K " FACTOR : INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES : # OF YEARS : AVERAGE # OF CRASHES PER YEAR (A) :

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

Comments : Below MassDOT District 3 crash rate

Project Title & Date : Proposed Travel Center - January 2021

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Sturbridge COUNT DATE : Oct-20

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 20

MINOR STREET(S) : The Center at Hobbs Brook Driveway

**INTERSECTION
 DIAGRAM
 (Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	998	810		518		2,326

" K " FACTOR : 0.090 INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME : 25,844

TOTAL # OF CRASHES : 18 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (A) : 3.60

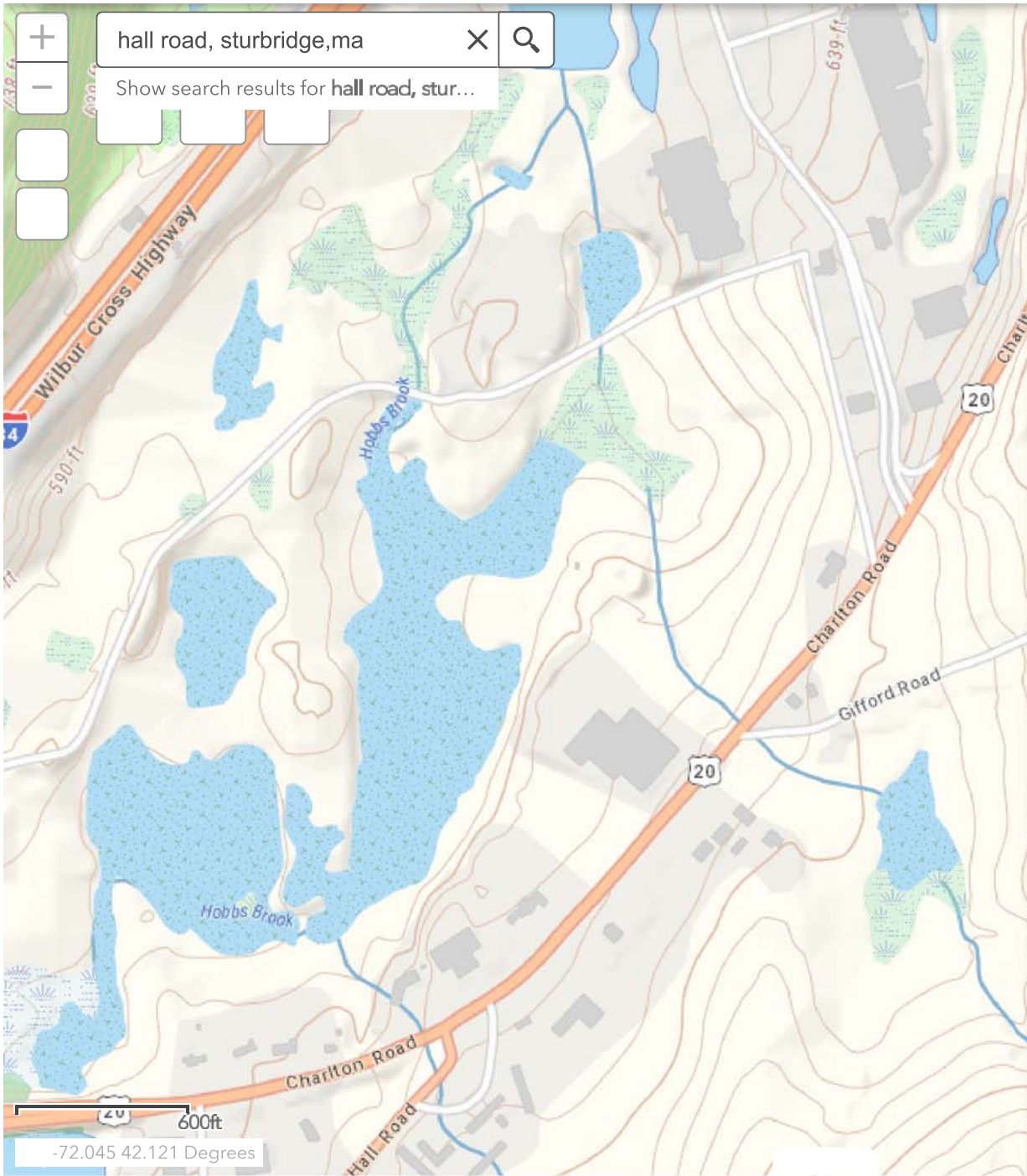
CRASH RATE CALCULATION : 0.38 RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : Below MassDOT District 3 crash rate

Project Title & Date: Proposed Travel Center - January 2021

Top Crash Locations

Accessible Version



Legend

Crash Clusters

Top 200 Intersection Cluster 2015-2017



2015-2017 HSIP Cluster



2008-2017 HSIP Bicycle Clusters



2008-2017 HSIP Pedestrian Cluster

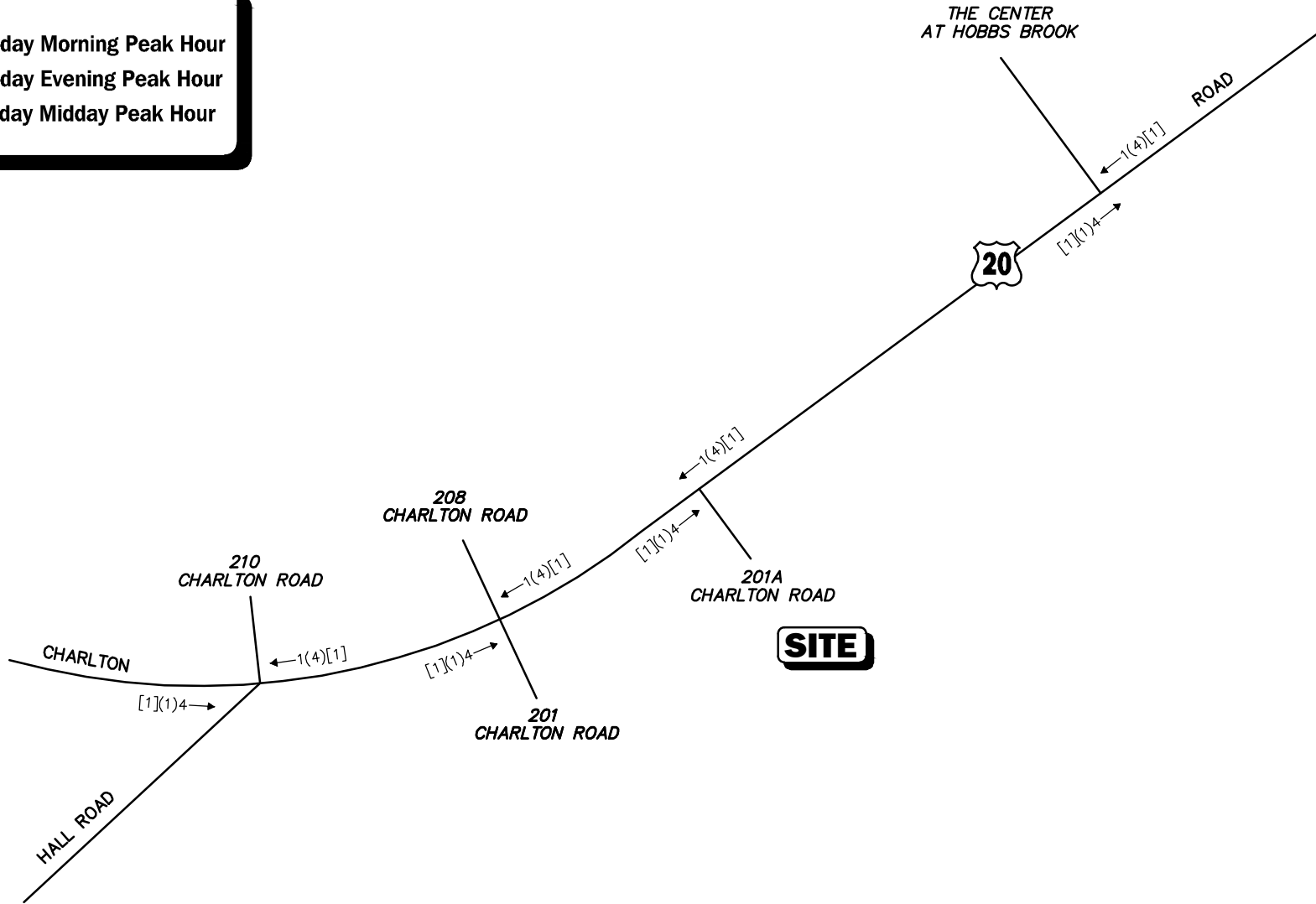


BACKGROUND DEVELOPMENT TRAFFIC-VOLUME NETWORKS



Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



 Not To Scale

Figure A-1

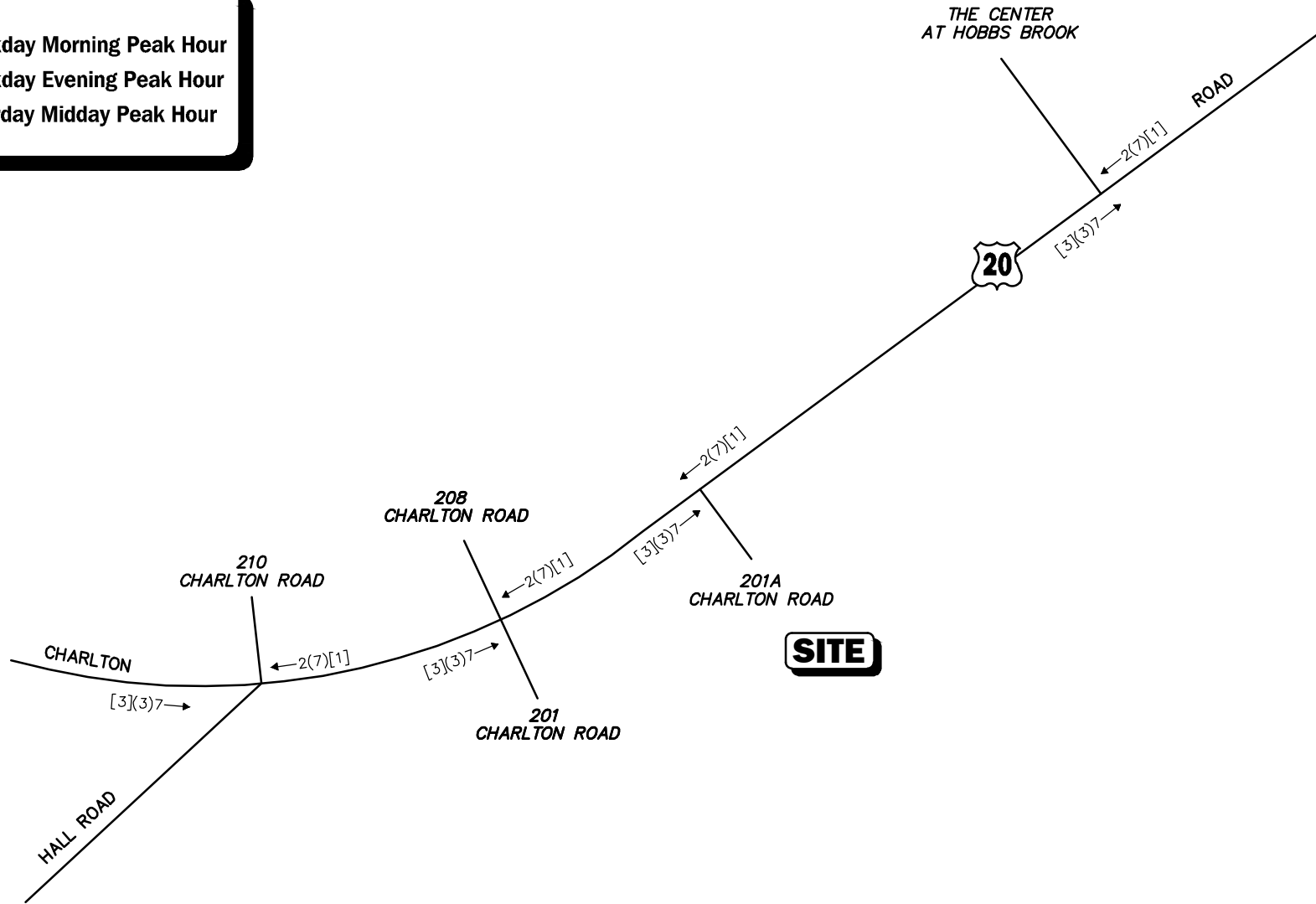


**Propane Facility
51 Technology Park Road
Peak-Hour Traffic Volumes**

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Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



Not To Scale



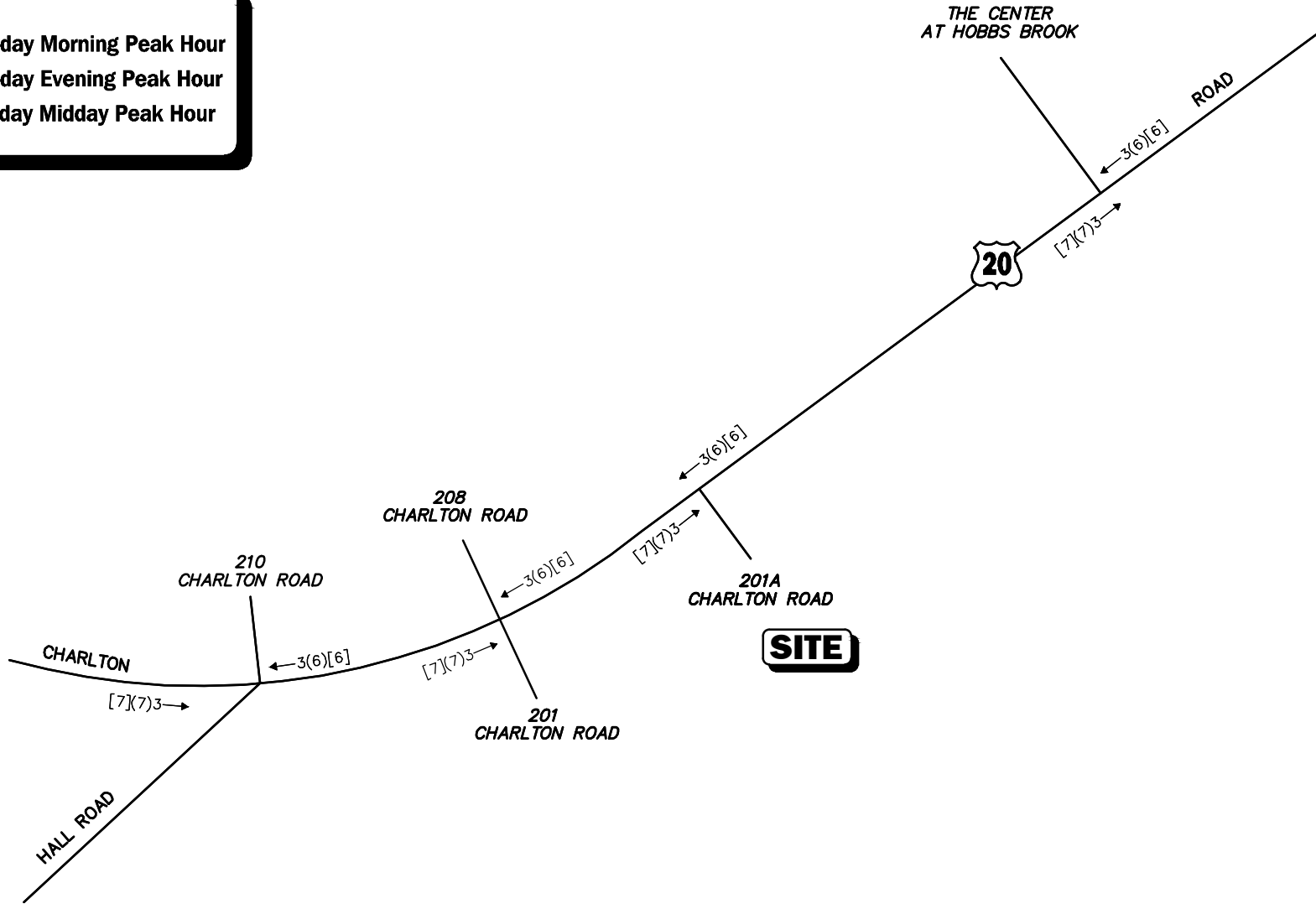
Figure A-2

**Cold Storage Warehouse
6 Picker Road
Peak-Hour Traffic Volumes**

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Legend:

- XX** Weekday Morning Peak Hour
- (XX)** Weekday Evening Peak Hour
- [XX]** Saturday Midday Peak Hour



Not To Scale

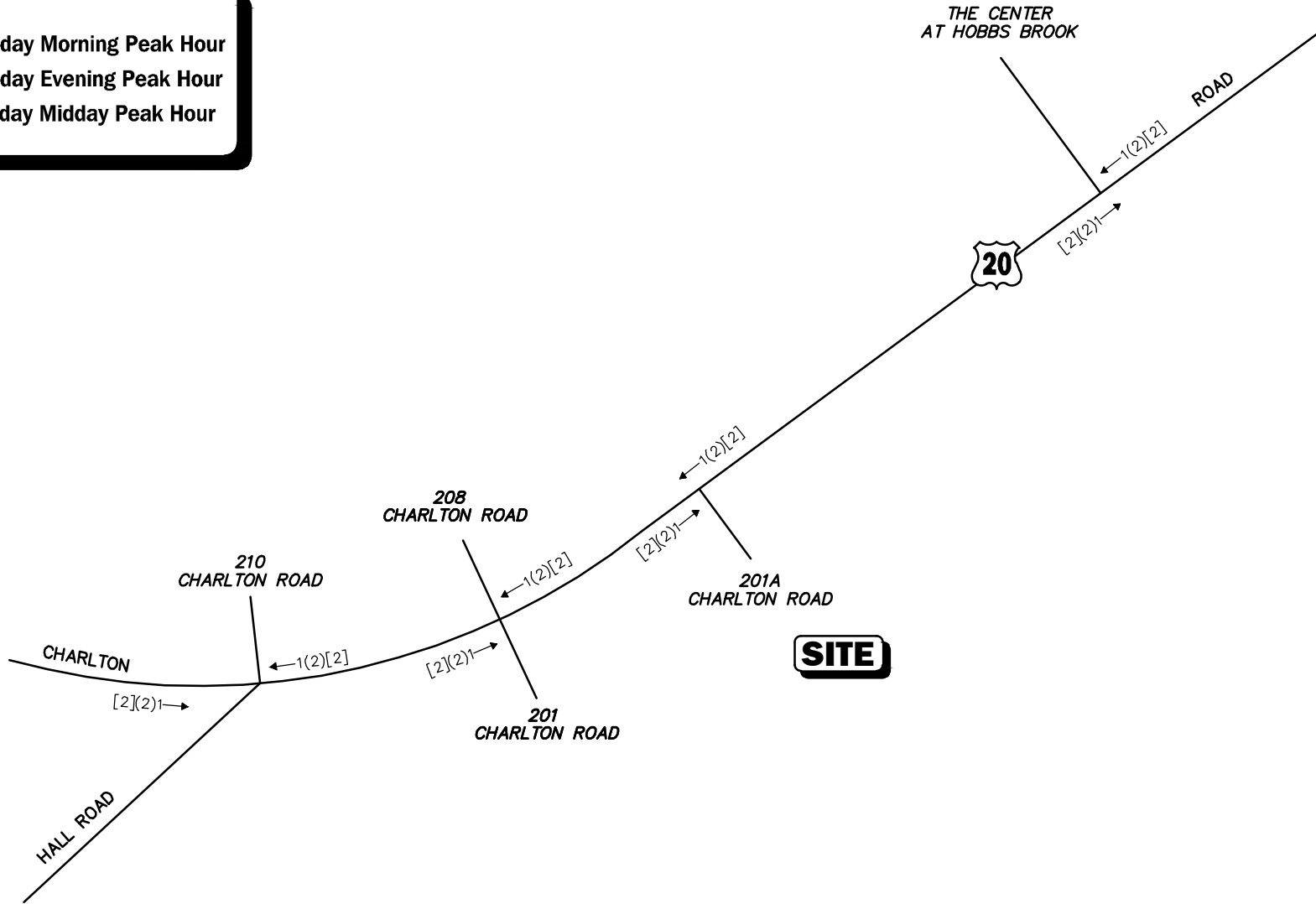


Figure A-3

**Marijuana Facility
365 Main Street
Peak-Hour Traffic Volumes**

Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



SITE



Not To Scale

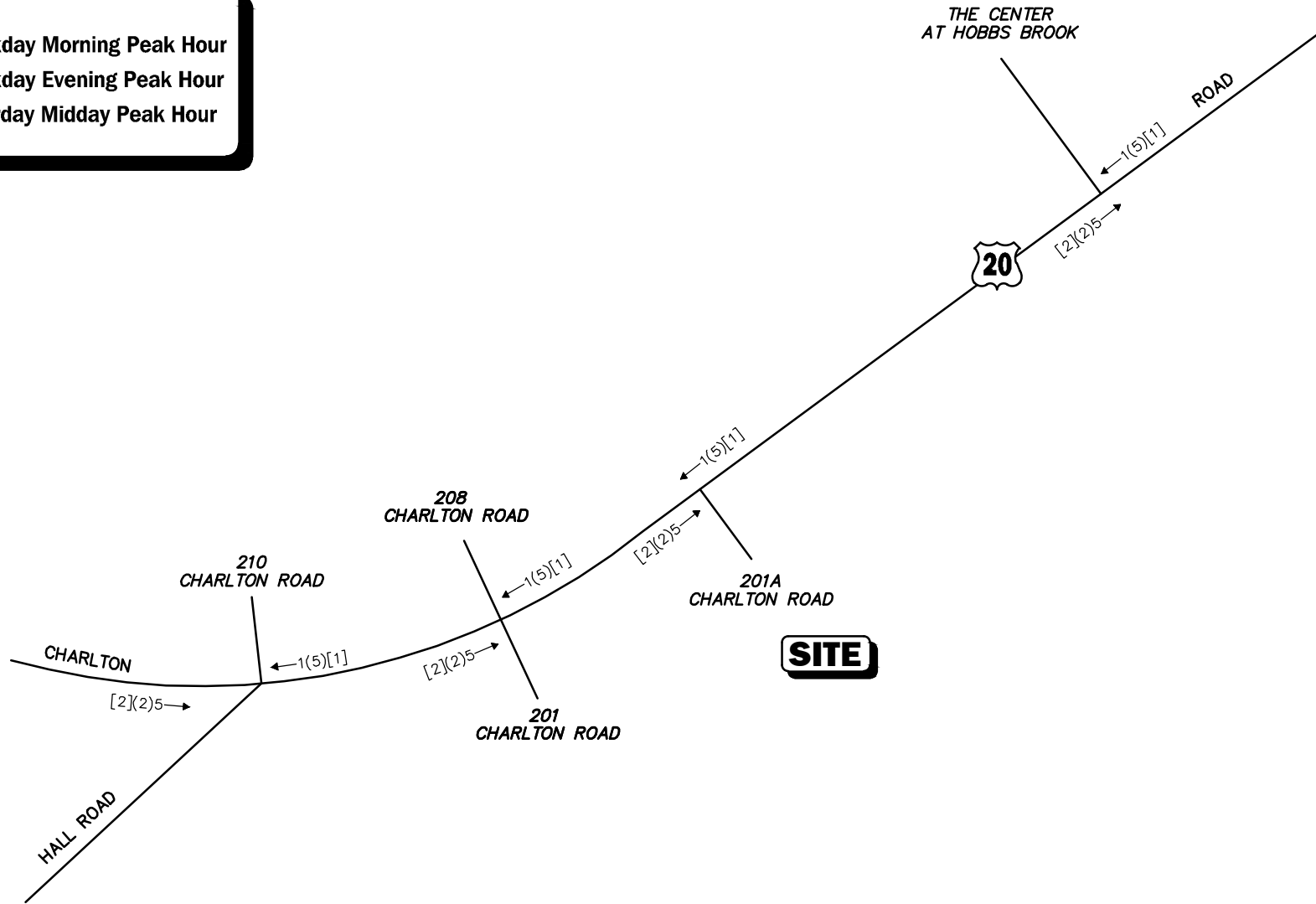


Figure A-4

**Marijuana Facility
660 Main Street
Peak-Hour Traffic Volumes**

Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



SITE



Not To Scale

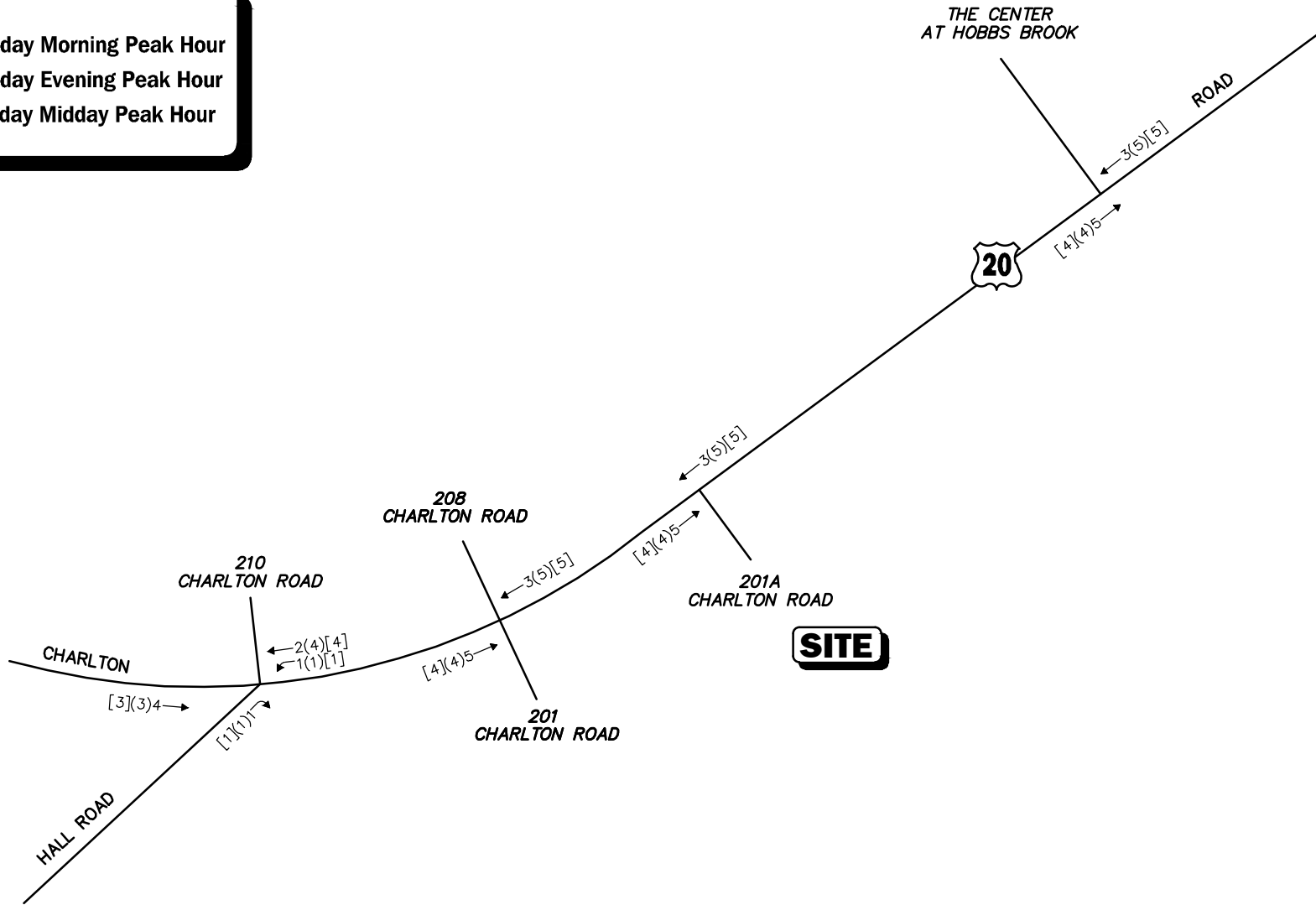


Figure A-5

**Proposed Cold Storage Warehouse
90 Charlton Road
Peak-Hour Traffic Volumes**

Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



 Not To Scale

Figure A-6

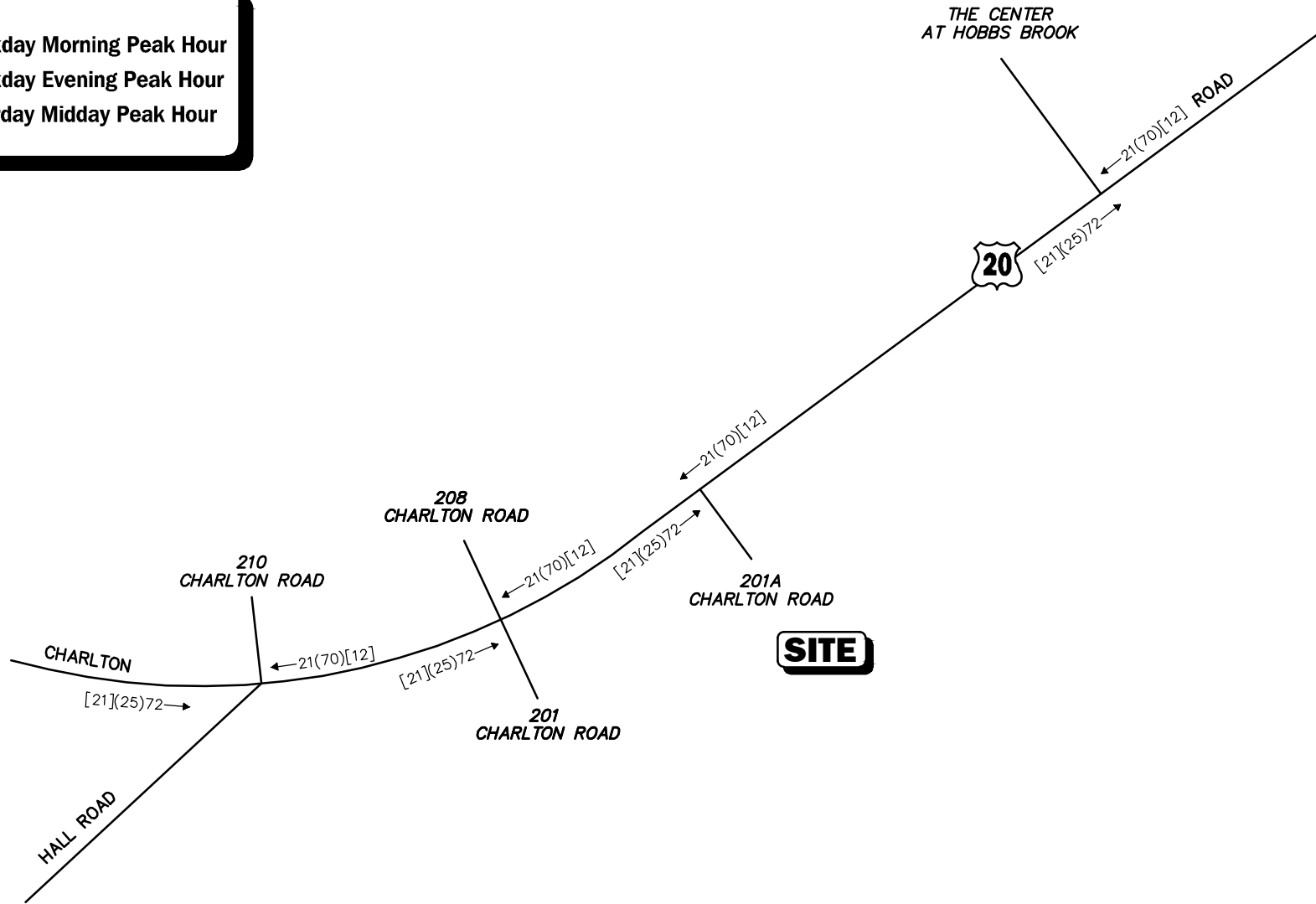


**Marijuana Facility
144 Sturbridge Road
Peak-Hour Traffic Volumes**

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Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



Not To Scale

Figure A-7

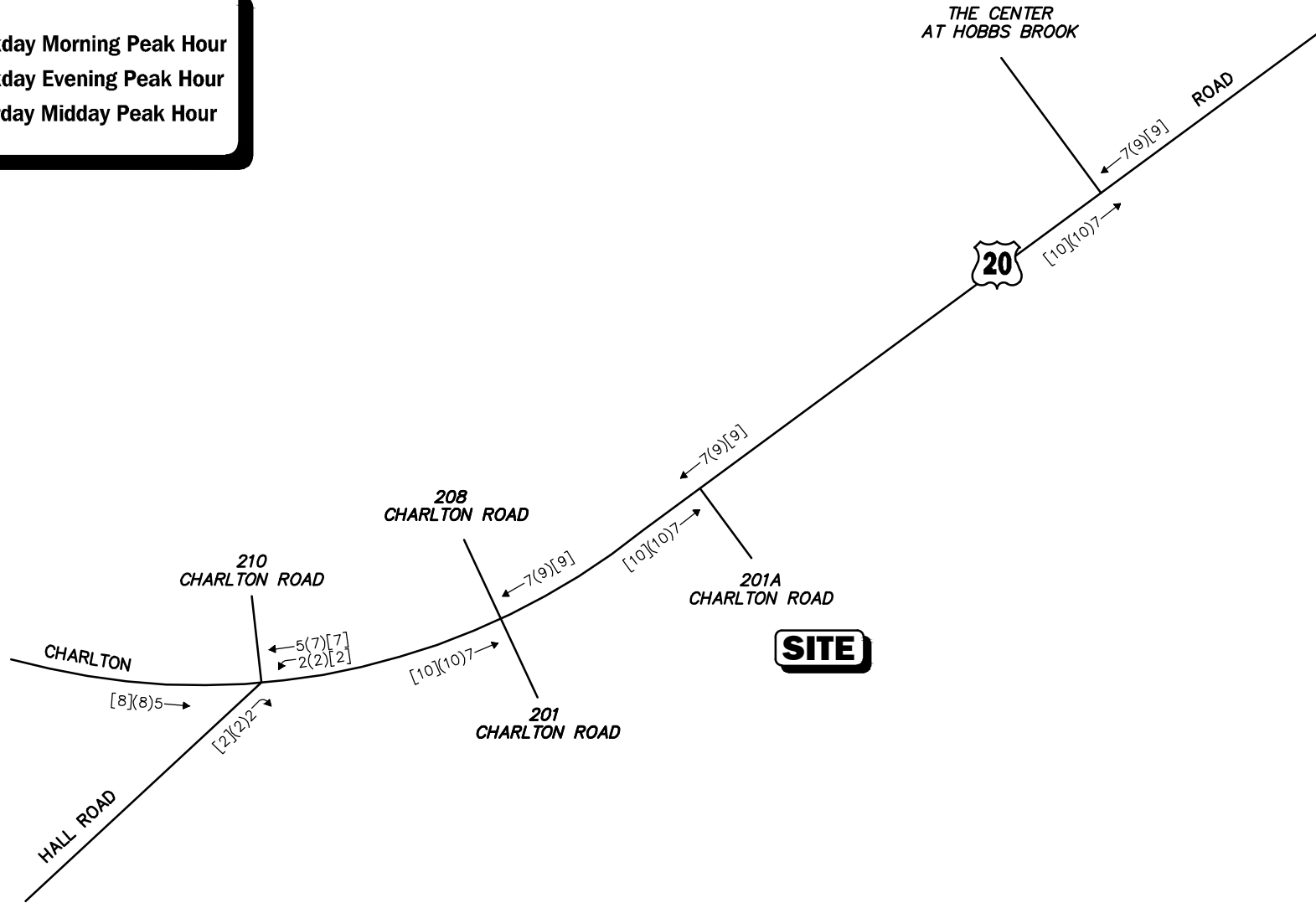


**Proposed Warehouse
214 Sturbridge Road
Peak-Hour Traffic Volumes**

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Legend:

- XX Weekday Morning Peak Hour
- (XX) Weekday Evening Peak Hour
- [XX] Saturday Midday Peak Hour



Not To Scale



Figure A-8

**Proposed Marijuana Facility
46 Worcester Road
Peak-Hour Traffic Volumes**

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GENERAL BACKGROUND TRAFFIC GROWTH



General Background Traffic Growth

STA.	CITY/TOWN	ROUTE/STREET	LOCATION	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average Annual Growth Rate
3929	Sturbridge	I-84	South of Route 20	55,400	53,645	51,486	52,177	52,522	55,467	55,862	56,868	57,167	57,566	0.86%
														0.86%

TRIP-GENERATION CALCULATIONS



Automobile Sales (New) (840)

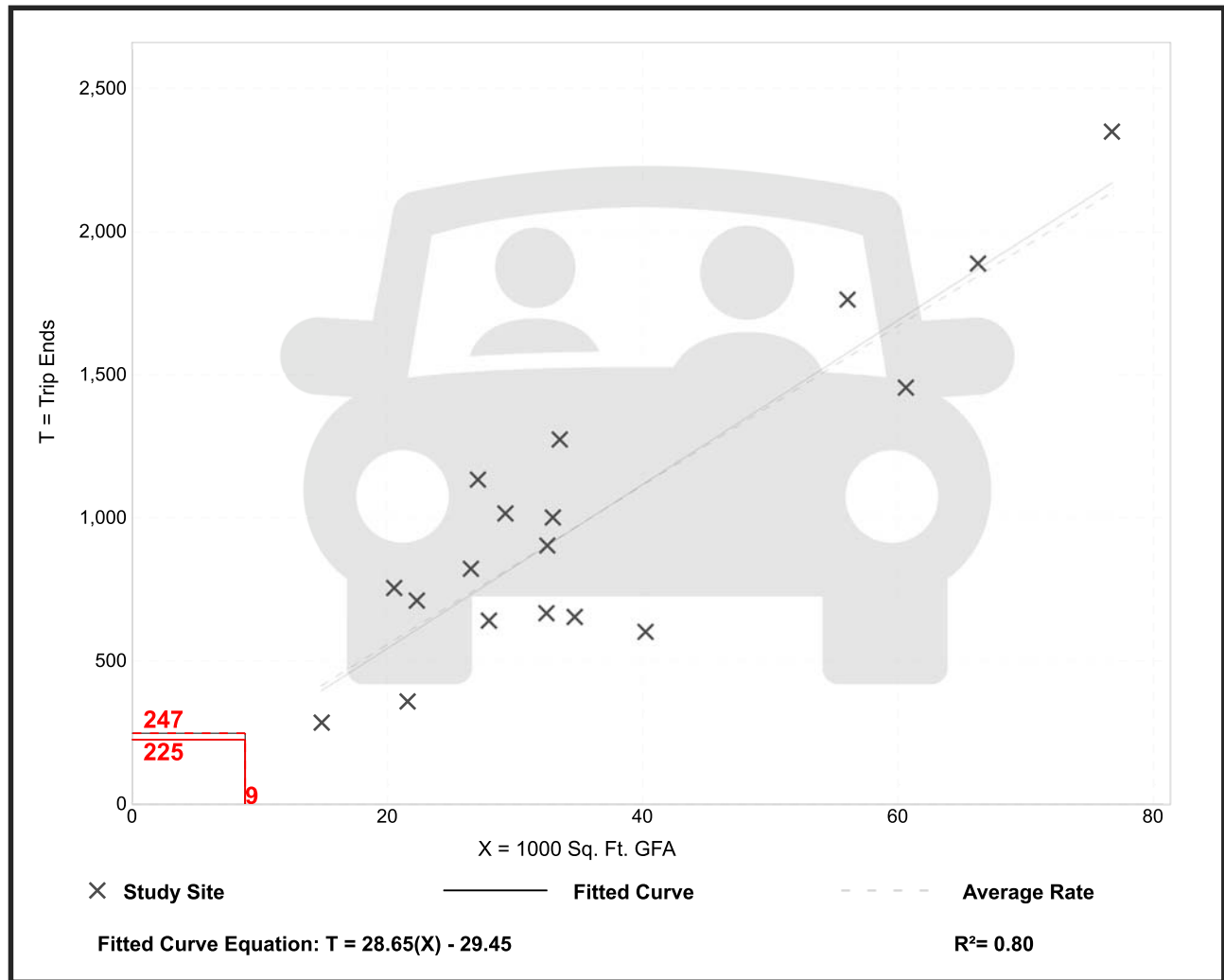
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 18
Avg. 1000 Sq. Ft. GFA: 36
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
27.84	14.98 - 41.78	7.01

Data Plot and Equation



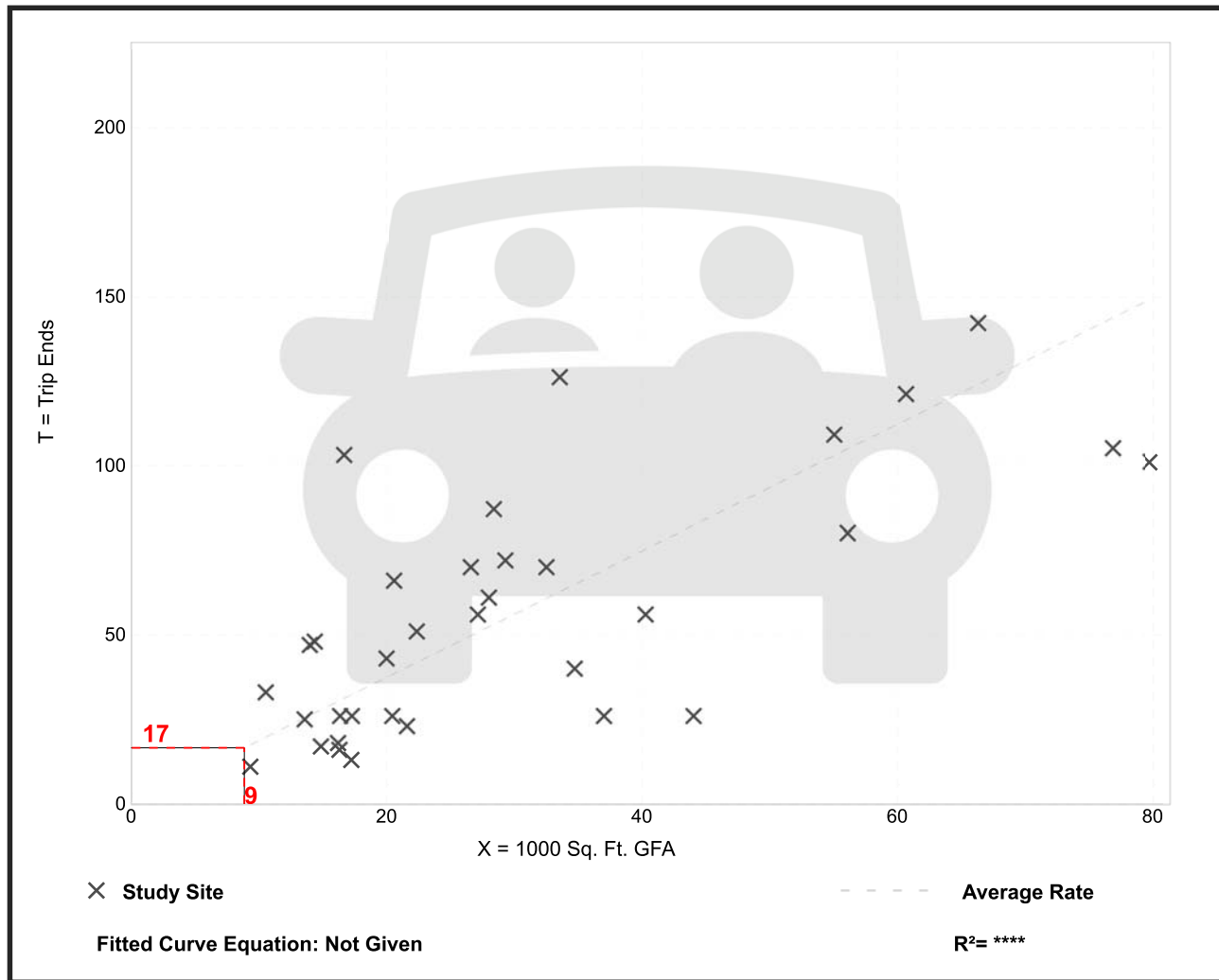
Automobile Sales (New) (840)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 34
 Avg. 1000 Sq. Ft. GFA: 31
 Directional Distribution: 73% entering, 27% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.87	0.59 - 6.17	0.95

Data Plot and Equation



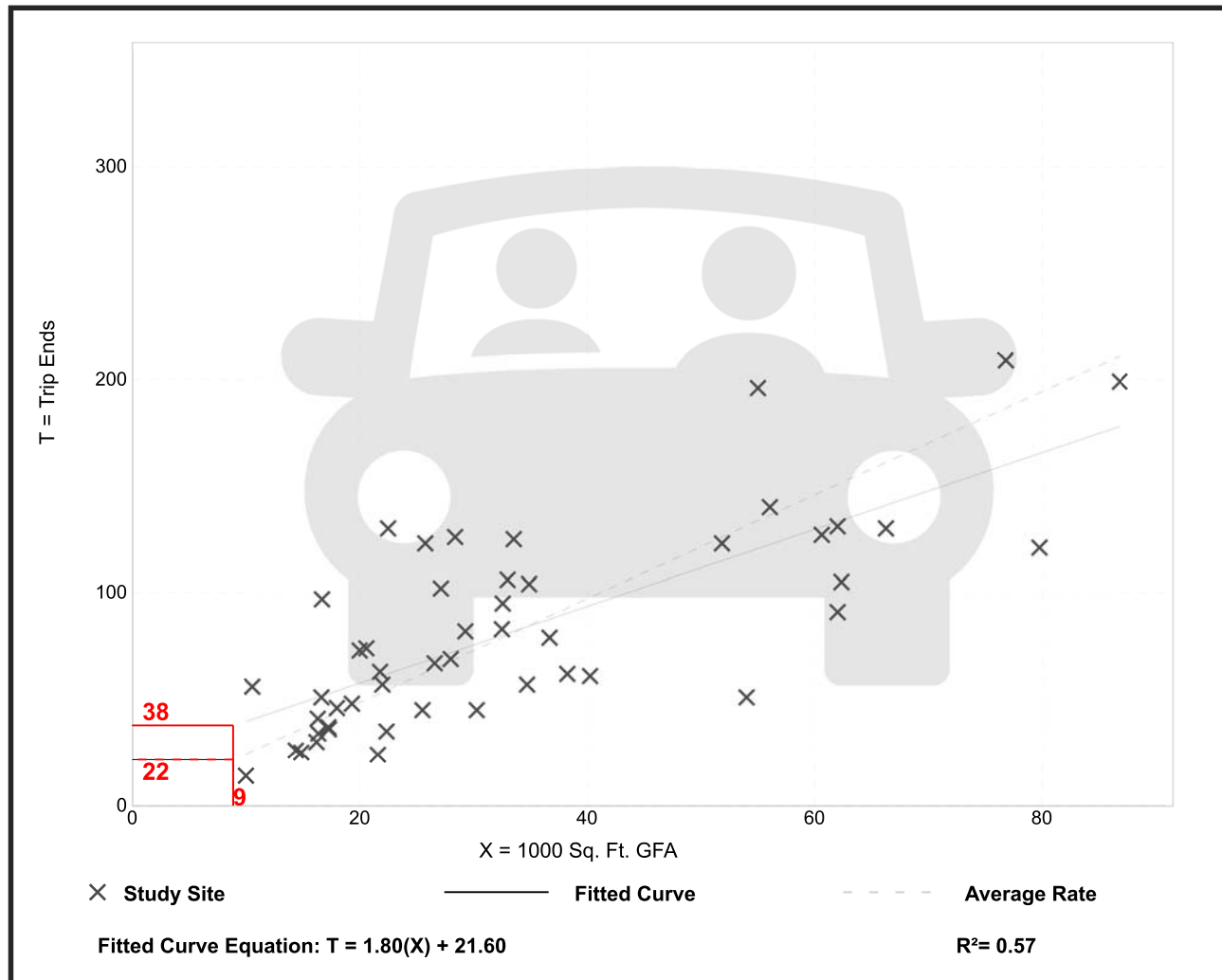
Automobile Sales (New) (840)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 49
 Avg. 1000 Sq. Ft. GFA: 34
 Directional Distribution: 40% entering, 60% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.43	0.94 - 5.81	0.99

Data Plot and Equation



Automobile Sales (New) (840)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

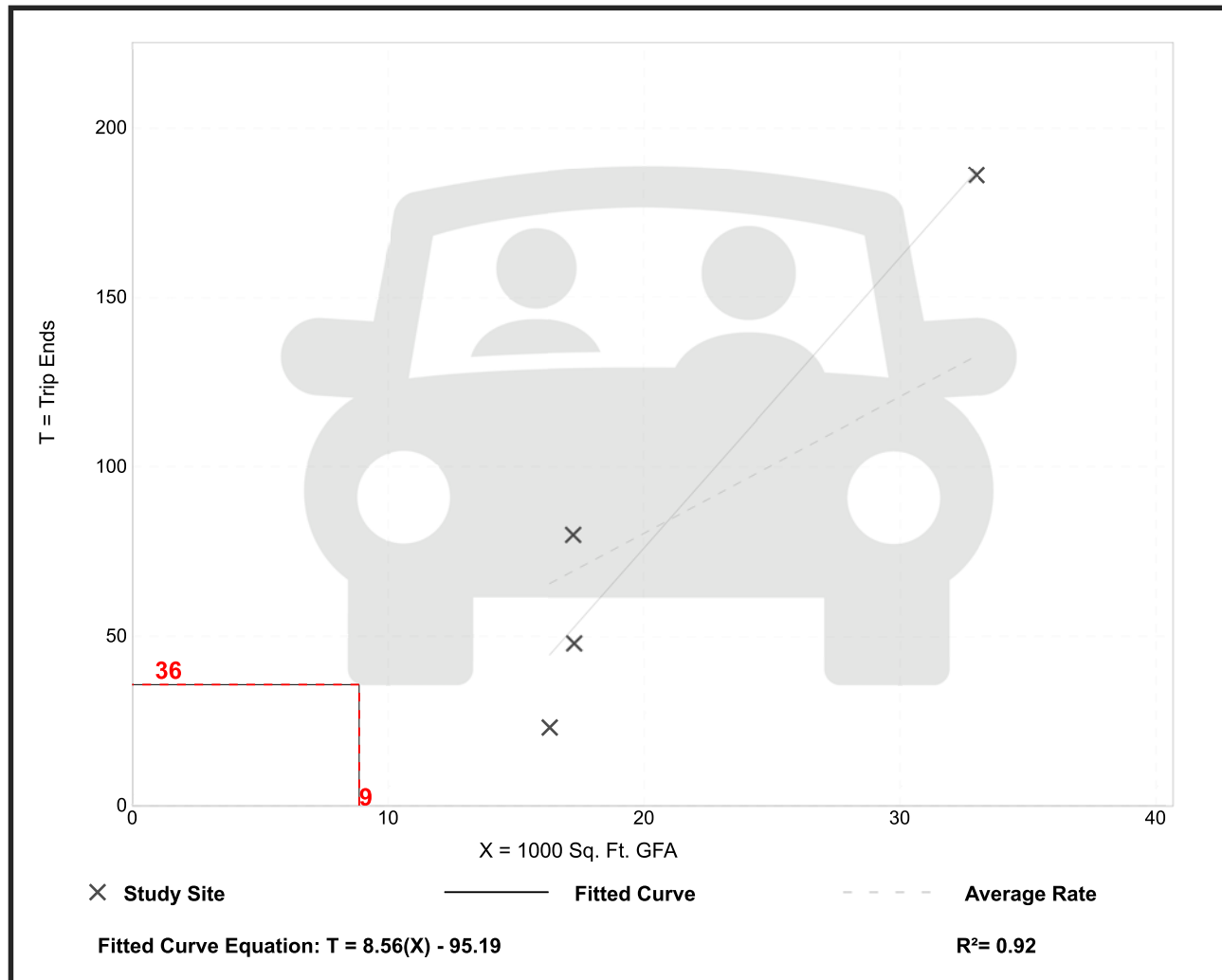
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 21
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.02	1.41 - 5.64	1.92

Data Plot and Equation

Caution – Small Sample Size



General Office Building (710)

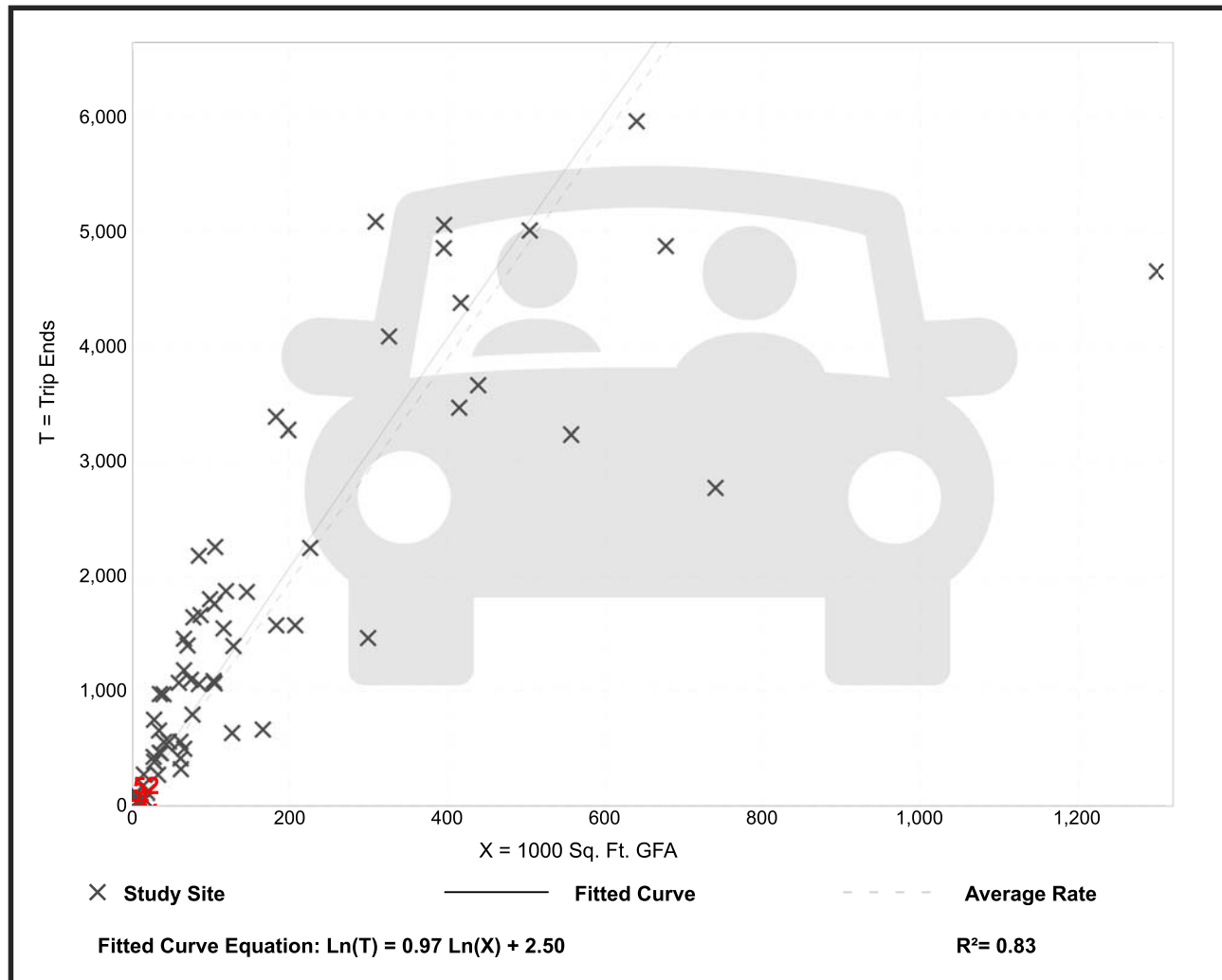
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 66
Avg. 1000 Sq. Ft. GFA: 171
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.74	2.71 - 27.56	5.15

Data Plot and Equation



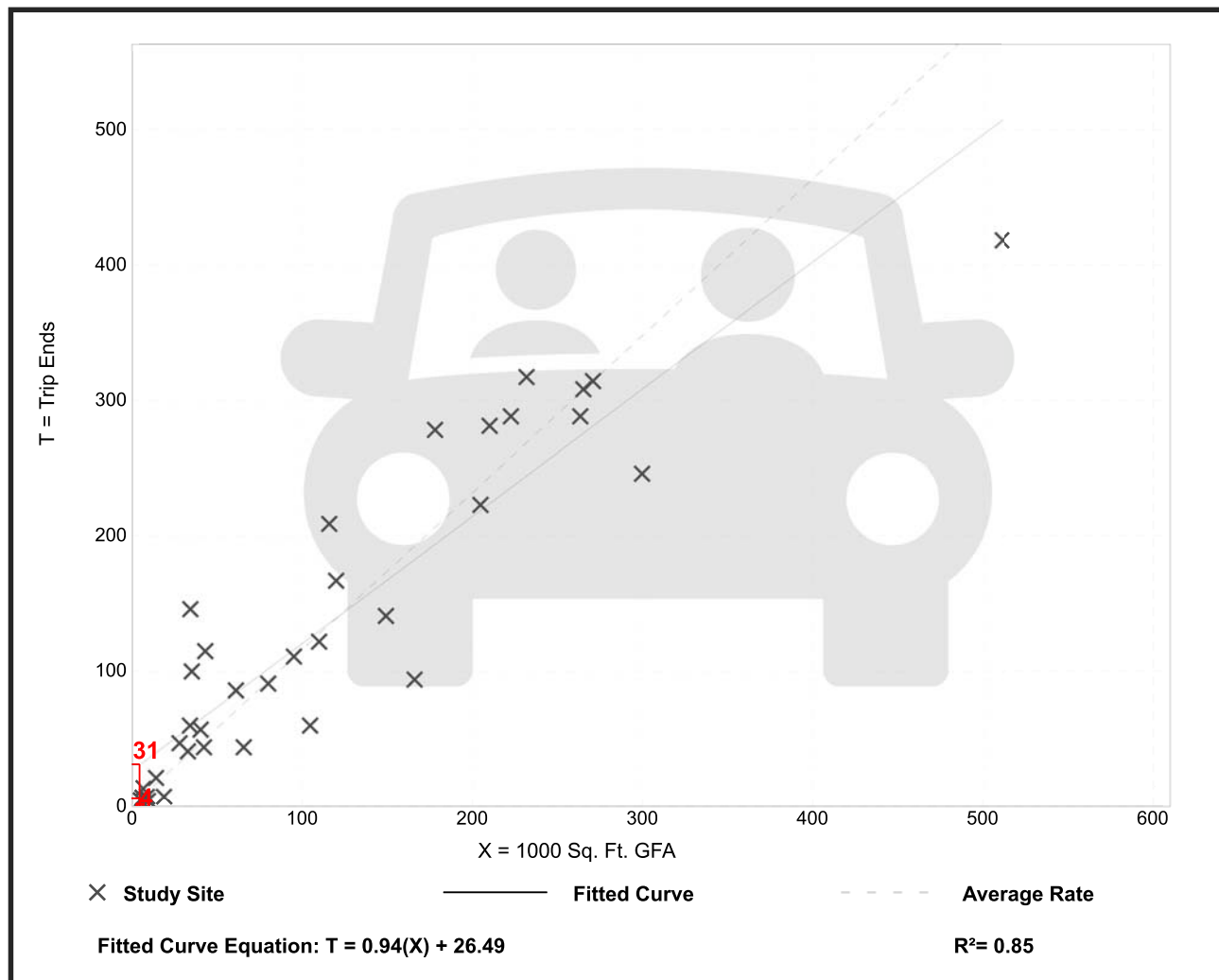
General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 35
 Avg. 1000 Sq. Ft. GFA: 117
 Directional Distribution: 86% entering, 14% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.16	0.37 - 4.23	0.47

Data Plot and Equation



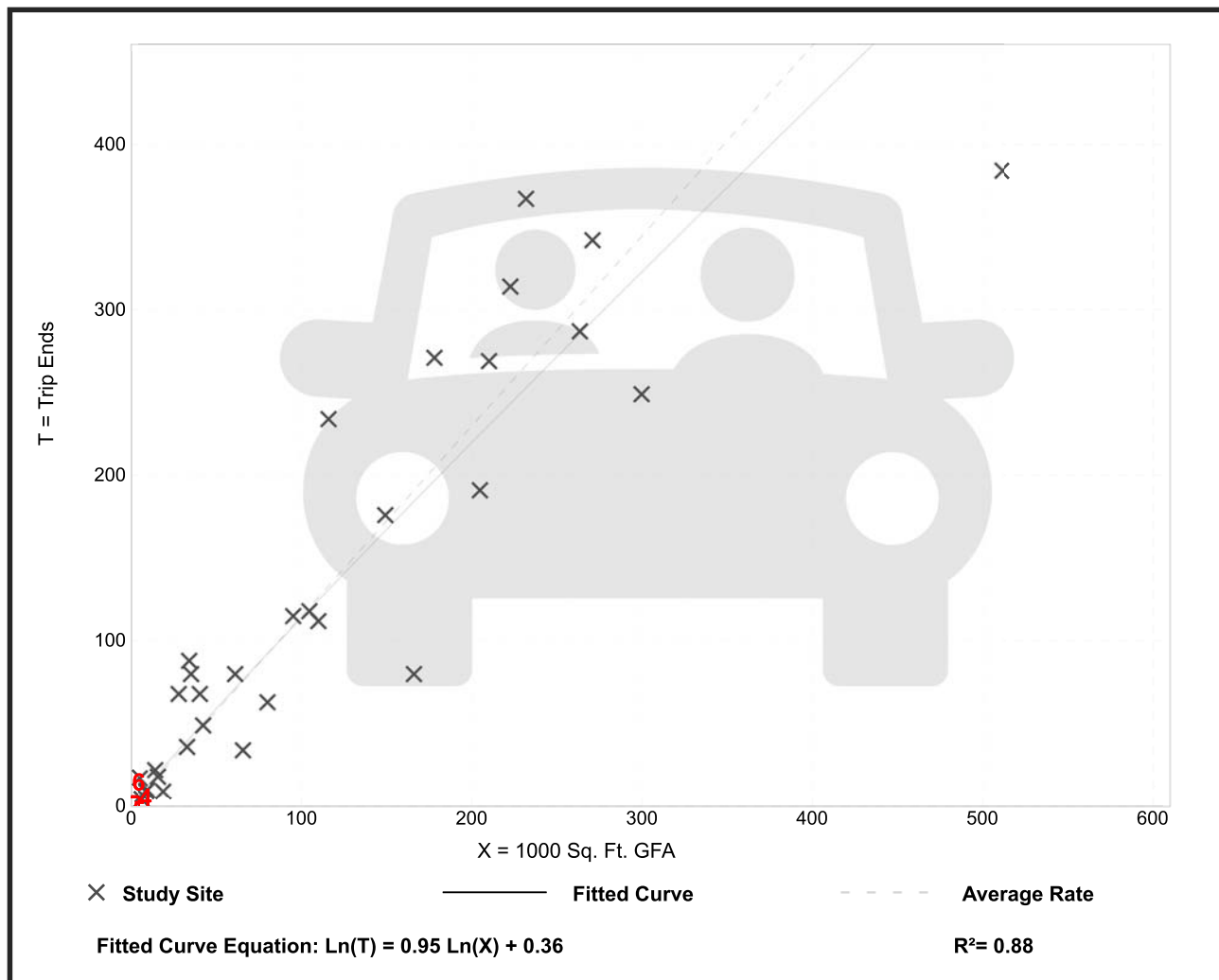
General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 32
 Avg. 1000 Sq. Ft. GFA: 114
 Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	0.47 - 3.23	0.42

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

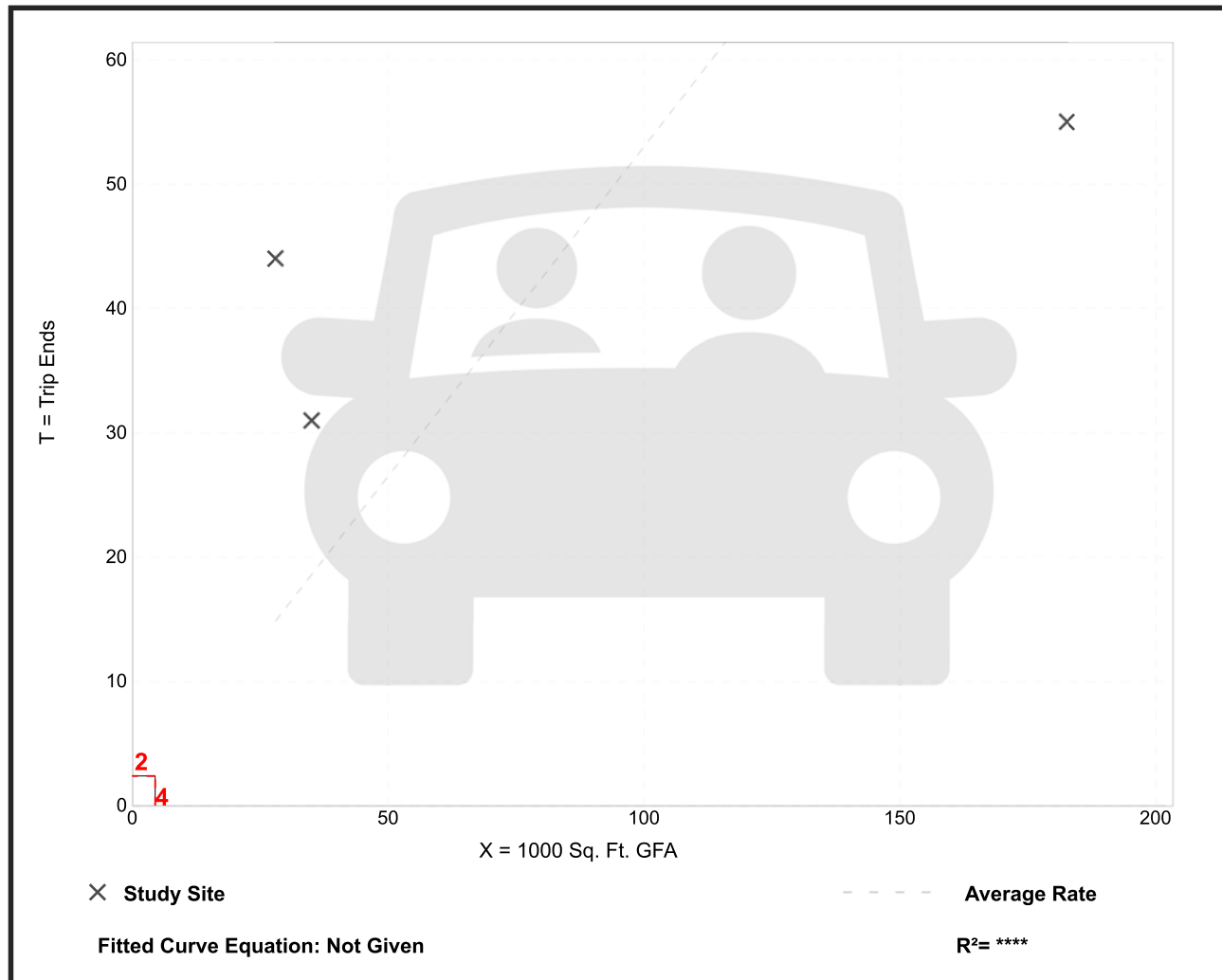
Setting/Location: General Urban/Suburban
 Number of Studies: 3
 Avg. 1000 Sq. Ft. GFA: 82
 Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.53	0.30 - 1.57	0.52

Data Plot and Equation

Caution – Small Sample Size



High-Turnover (Sit-Down) Restaurant (932)

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

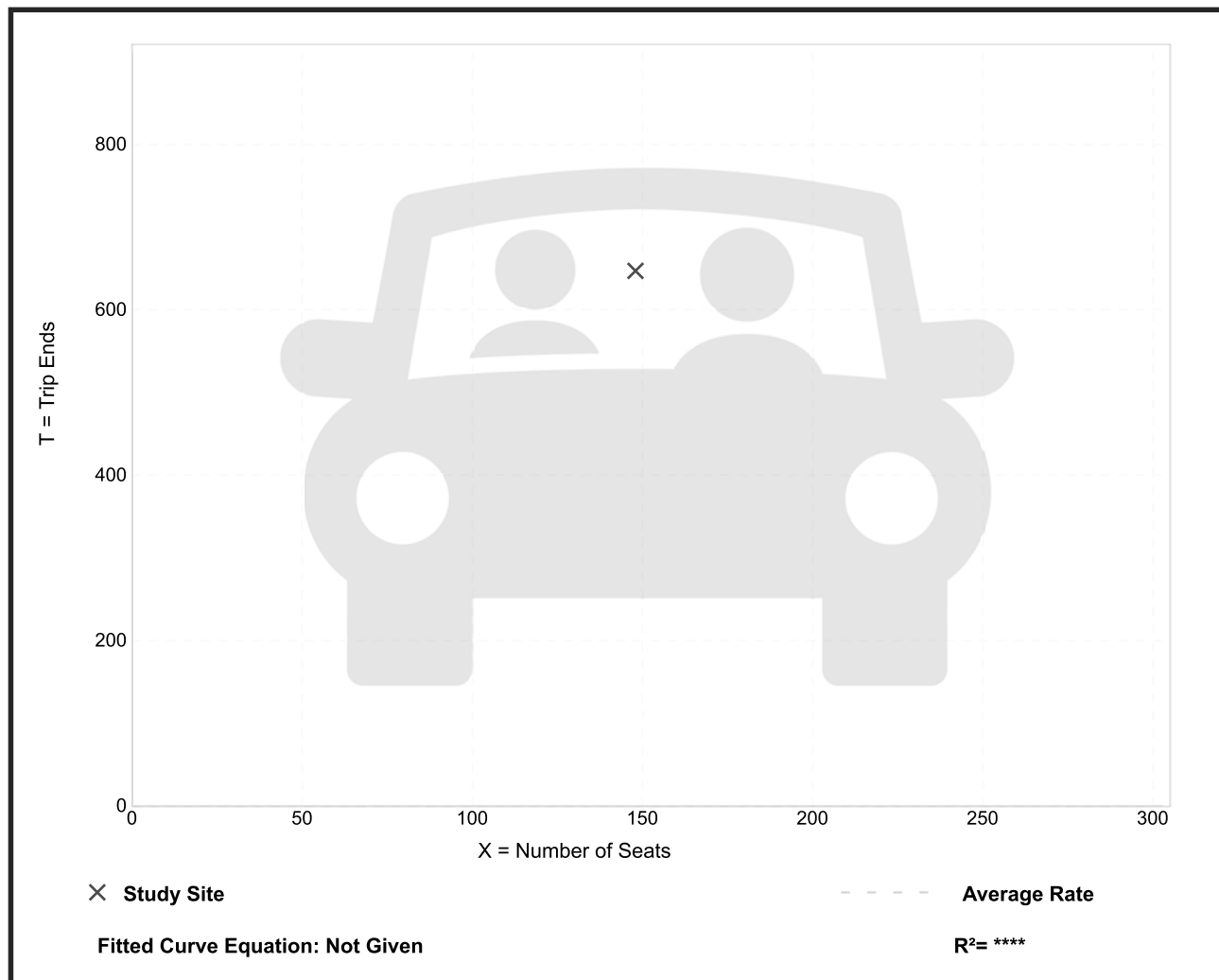
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Seats: 148
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
4.37	4.37 - 4.37	*

Data Plot and Equation

Caution – Small Sample Size



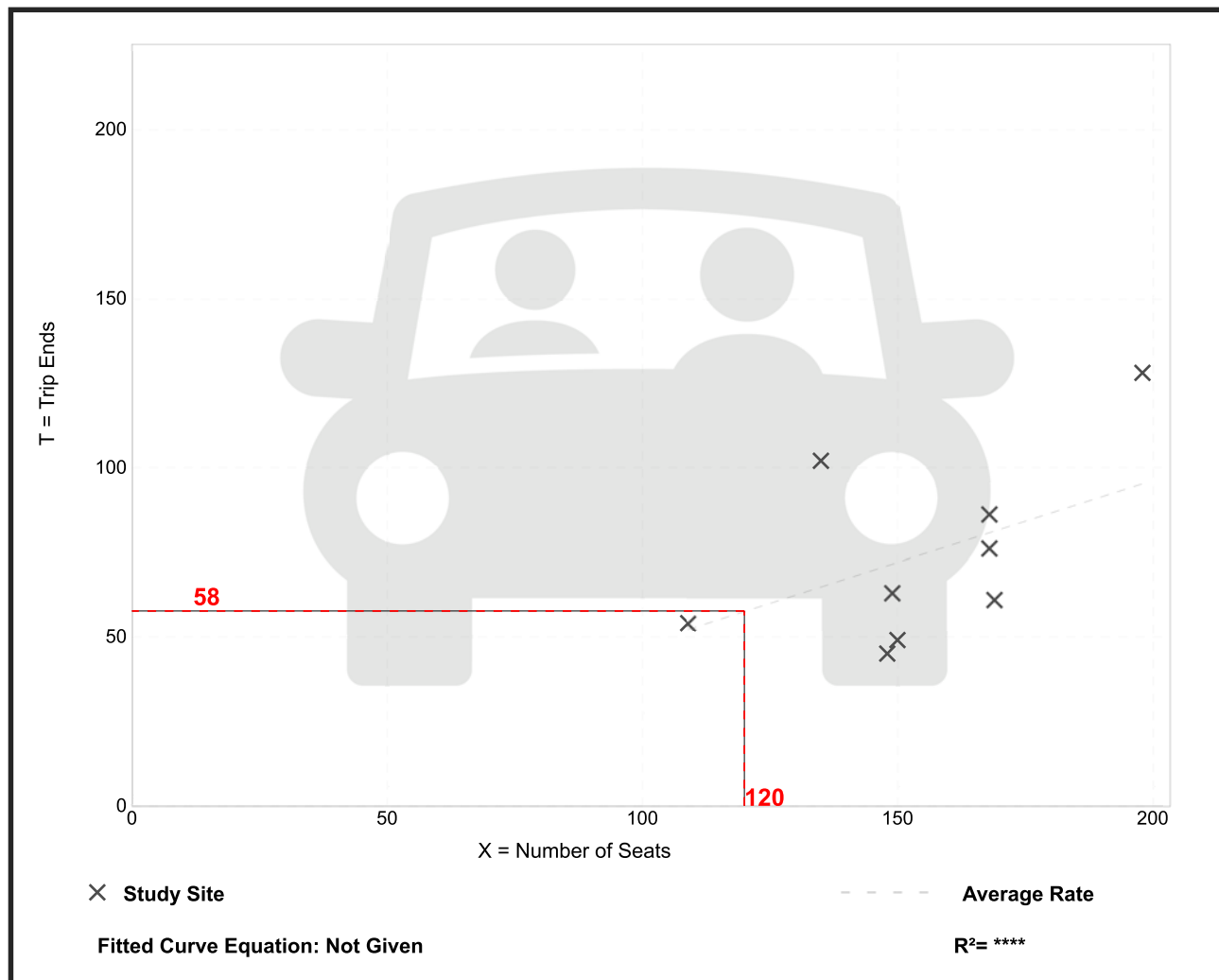
High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: Seats
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Seats: 155
 Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.48	0.30 - 0.76	0.15

Data Plot and Equation



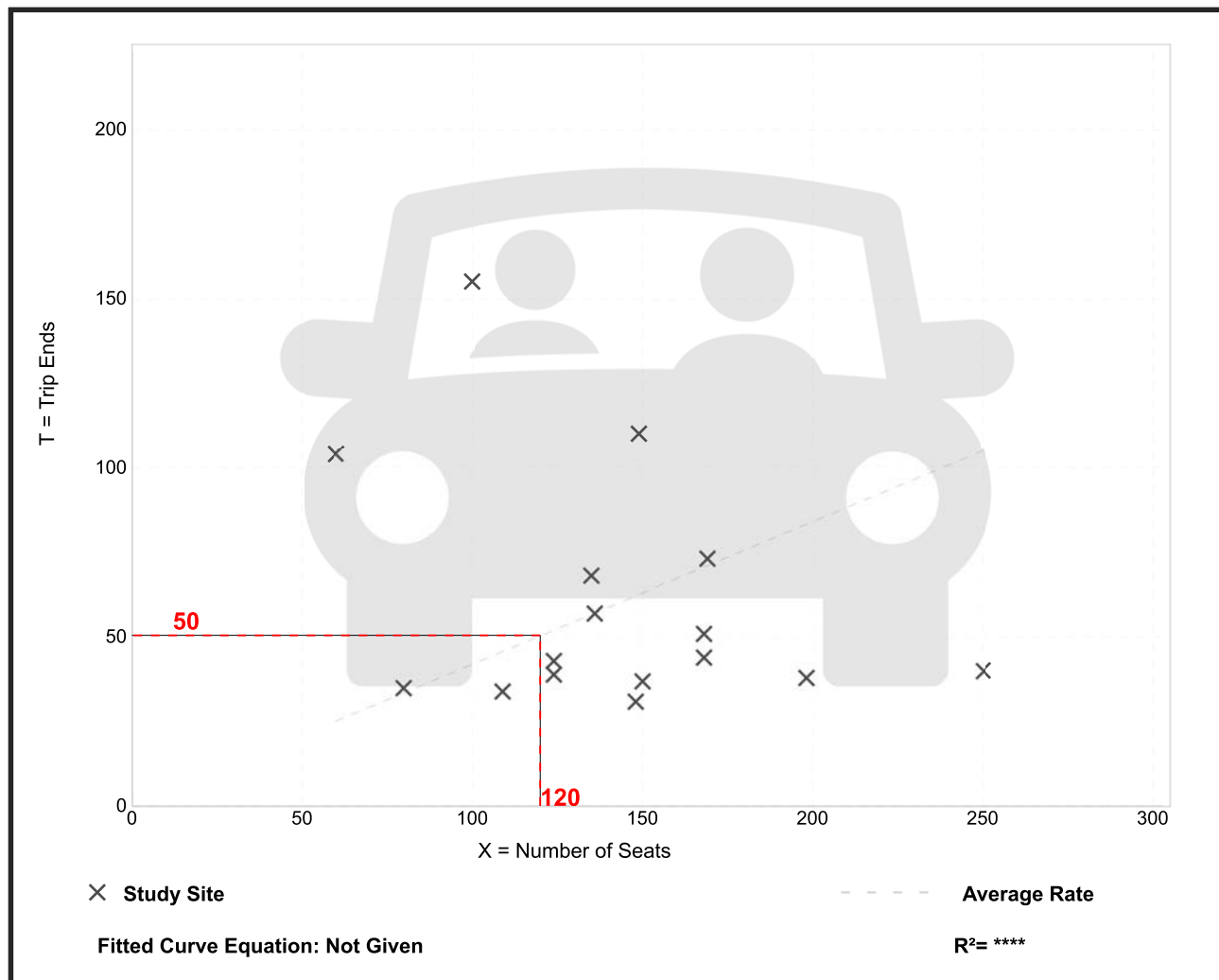
High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: Seats
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 16
 Avg. Num. of Seats: 142
 Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.42	0.16 - 1.73	0.37

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

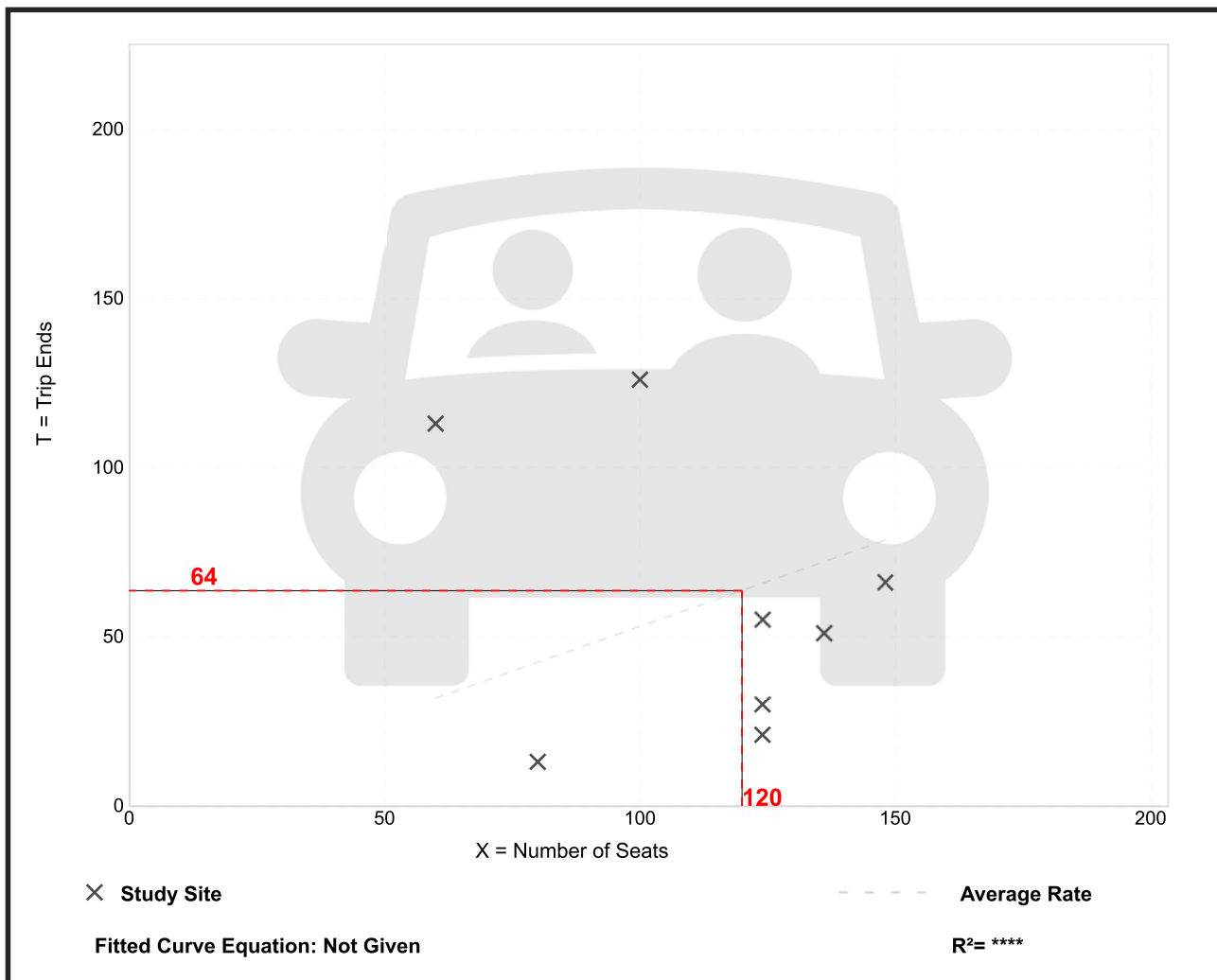
Vehicle Trip Ends vs: **Seats**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 8
Avg. Num. of Seats: 112
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.53	0.16 - 1.88	0.51

Data Plot and Equation



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
12:00 AM	0	3	0	0	0	6	9
12:15 AM	0	0	0	0	0	3	3
12:30 AM	0	3	0	0	0	2	5
12:45 AM	0	3	0	0	0	1	4
Total	0	9	0	0	0	12	21
01:00 AM	0	1	0	0	0	3	4
01:15 AM	0	1	0	0	0	1	2
01:30 AM	0	1	0	0	0	1	2
01:45 AM	0	4	0	0	0	2	6
Total	0	7	0	0	0	7	14
02:00 AM	0	1	0	0	0	2	3
02:15 AM	0	6	0	0	0	1	7
02:30 AM	0	4	0	0	0	7	11
02:45 AM	0	2	0	0	0	2	4
Total	0	13	0	0	0	12	25
03:00 AM	0	3	0	0	0	2	5
03:15 AM	0	3	0	0	0	4	7
03:30 AM	0	3	0	0	0	1	4
03:45 AM	0	5	0	0	0	4	9
Total	0	14	0	0	0	11	25
04:00 AM	0	4	0	0	0	3	7
04:15 AM	0	5	0	0	0	3	8
04:30 AM	0	9	0	0	0	7	16
04:45 AM	0	11	0	0	0	10	21
Total	0	29	0	0	0	23	52
05:00 AM	0	11	0	0	0	9	20
05:15 AM	0	18	0	0	0	10	28
05:30 AM	0	14	0	0	0	18	32
05:45 AM	0	15	0	0	0	16	31
Total	0	58	0	0	0	53	111
06:00 AM	0	16	0	0	0	17	33
06:15 AM	0	21	0	0	0	11	32
06:30 AM	0	12	0	0	0	10	22
06:45 AM	0	27	0	0	0	17	44
Total	0	76	0	0	0	55	131
07:00 AM	0	25	0	0	0	9	34
07:15 AM	0	33	0	0	0	15	48
07:30 AM	0	39	0	0	0	35	74
07:45 AM	0	18	0	0	0	17	35
Total	0	115	0	0	0	76	191
08:00 AM	0	27	0	0	0	15	42
08:15 AM	0	34	0	0	0	19	53
08:30 AM	0	40	0	0	0	32	72
08:45 AM	0	33	0	0	0	35	68
Total	0	134	0	0	0	101	235
09:00 AM	0	36	0	0	0	33	69
09:15 AM	0	19	0	0	0	31	50
09:30 AM	0	24	0	0	0	21	45
09:45 AM	0	29	0	0	0	33	62
Total	0	108	0	0	0	118	226
10:00 AM	0	19	0	0	0	19	38
10:15 AM	0	26	0	0	0	24	50

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 2

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
10:30 AM	0	21	0	0	0	24	45
10:45 AM	0	22	0	0	0	23	45
Total	0	88	0	0	0	90	178
11:00 AM	0	26	0	0	0	24	50
11:15 AM	0	22	0	0	0	29	51
11:30 AM	0	25	0	0	0	15	40
11:45 AM	0	22	0	0	0	25	47
Total	0	95	0	0	0	93	188
12:00 PM	0	23	0	0	0	21	44
12:15 PM	0	27	0	0	0	25	52
12:30 PM	0	26	0	0	0	26	52
12:45 PM	0	26	0	0	0	26	52
Total	0	102	0	0	0	98	200
01:00 PM	0	24	0	0	0	27	51
01:15 PM	0	22	0	0	0	23	45
01:30 PM	0	30	0	0	0	25	55
01:45 PM	0	30	0	0	0	25	55
Total	0	106	0	0	0	100	206
02:00 PM	0	25	0	0	0	33	58
02:15 PM	0	35	0	0	0	29	64
02:30 PM	0	22	0	0	0	29	51
02:45 PM	0	26	0	0	0	34	60
Total	0	108	0	0	0	125	233
03:00 PM	0	32	0	0	0	26	58
03:15 PM	0	36	0	0	0	32	68
03:30 PM	0	22	0	0	0	21	43
03:45 PM	0	34	0	0	0	39	73
Total	0	124	0	0	0	118	242
04:00 PM	0	21	0	0	0	20	41
04:15 PM	0	37	0	0	0	31	68
04:30 PM	0	32	0	0	0	33	65
04:45 PM	0	31	0	0	0	33	64
Total	0	121	0	0	0	117	238
05:00 PM	0	24	0	0	0	6	30
05:15 PM	0	21	0	0	0	9	30
05:30 PM	0	21	0	0	0	15	36
05:45 PM	0	18	0	0	0	10	28
Total	0	84	0	0	0	40	124
06:00 PM	0	19	0	0	0	7	26
06:15 PM	0	12	0	0	0	15	27
06:30 PM	0	15	0	0	0	12	27
06:45 PM	0	15	0	0	0	18	33
Total	0	61	0	0	0	52	113
07:00 PM	0	14	0	0	0	13	27
07:15 PM	0	12	0	0	0	18	30
07:30 PM	0	7	0	0	0	9	16
07:45 PM	0	9	0	0	0	7	16
Total	0	42	0	0	0	47	89
08:00 PM	0	5	0	0	0	6	11
08:15 PM	0	12	0	0	0	10	22
08:30 PM	0	5	0	0	0	4	9
08:45 PM	0	5	0	0	0	7	12
Total	0	27	0	0	0	27	54

Accurate Counts

978-664-2565

N/S Street : Route 146
 E/W Street : Global XtraMart
 City/State : Milbury, MA
 Weather : Clear

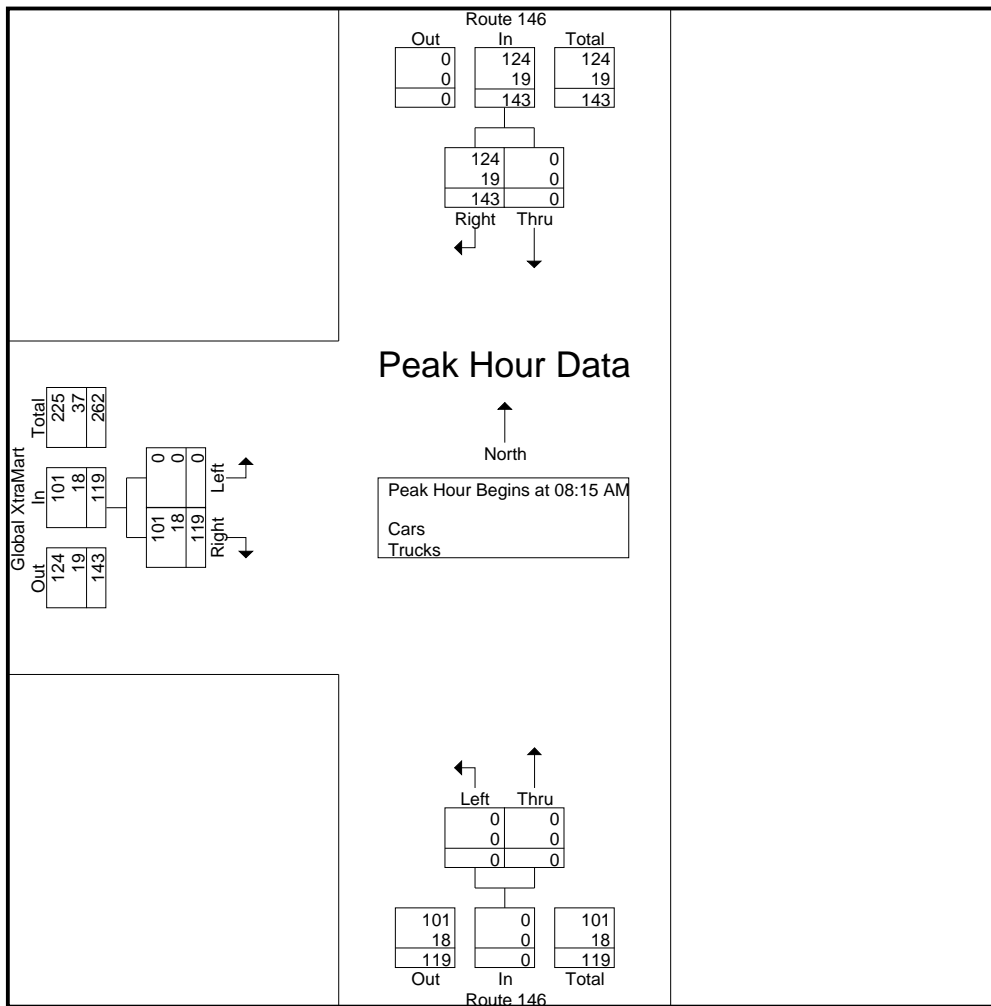
File Name : 87070001
 Site Code : 87070001
 Start Date : 1/8/2021
 Page No : 3

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
09:00 PM	0	7	0	0	0	8	15
09:15 PM	0	11	0	0	0	7	18
09:30 PM	0	7	0	0	0	8	15
09:45 PM	0	5	0	0	0	2	7
Total	0	30	0	0	0	25	55
10:00 PM	0	6	0	0	0	8	14
10:15 PM	0	4	0	0	0	4	8
10:30 PM	0	3	0	0	0	2	5
10:45 PM	0	9	0	0	0	5	14
Total	0	22	0	0	0	19	41
11:00 PM	0	3	0	0	0	7	10
11:15 PM	0	9	0	0	0	9	18
11:30 PM	0	7	0	0	0	4	11
11:45 PM	0	5	0	0	0	5	10
Total	0	24	0	0	0	25	49
Grand Total	0	1597	0	0	0	1444	3041
Apprch %	0	100	0	0	0	100	
Total %	0	52.5	0	0	0	47.5	
Cars	0	1395	0	0	0	1236	2631
% Cars	0	87.4	0	0	0	85.6	86.5
Trucks	0	202	0	0	0	208	410
% Trucks	0	12.6	0	0	0	14.4	13.5

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15 AM										
08:15 AM	0	34	34	0	0	0	0	19	19	53
08:30 AM	0	40	40	0	0	0	0	32	32	72
08:45 AM	0	33	33	0	0	0	0	35	35	68
09:00 AM	0	36	36	0	0	0	0	33	33	69
Total Volume	0	143	143	0	0	0	0	119	119	262
% App. Total	0	100		0	0		0	100		
PHF	.000	.894	.894	.000	.000	.000	.000	.850	.850	.910
Cars	0	124	124	0	0	0	0	101	101	225
% Cars	0	86.7	86.7	0	0	0	0	84.9	84.9	85.9
Trucks	0	19	19	0	0	0	0	18	18	37
% Trucks	0	13.3	13.3	0	0	0	0	15.1	15.1	14.1

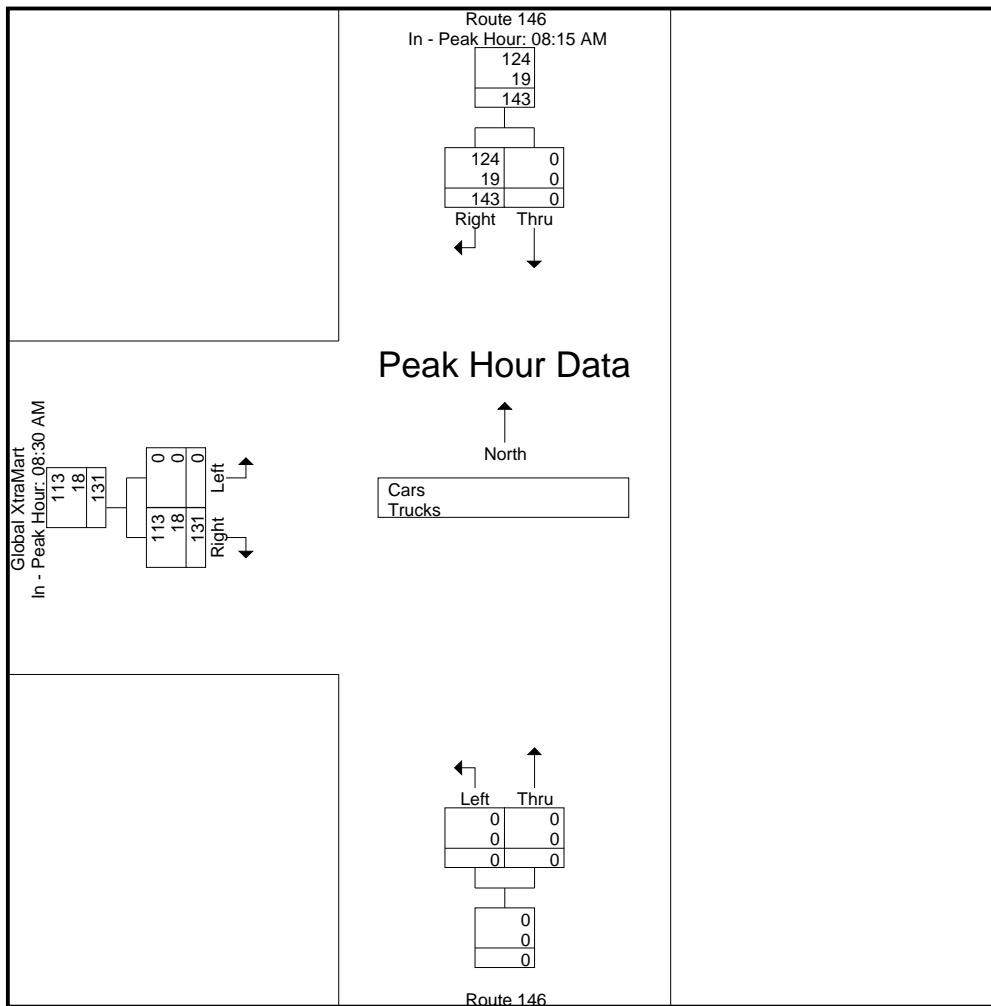
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15 AM			12:00 AM			08:30 AM		
+0 mins.	0	34	34	0	0	0	0	32	32
+15 mins.	0	40	40	0	0	0	0	35	35
+30 mins.	0	33	33	0	0	0	0	33	33
+45 mins.	0	36	36	0	0	0	0	31	31
Total Volume	0	143	143	0	0	0	0	131	131
% App. Total	0	100		0	0		0	100	
PHF	.000	.894	.894	.000	.000	.000	.000	.936	.936
Cars	0	124	124	0	0	0	0	113	113
% Cars	0	86.7	86.7	0	0	0	0	86.3	86.3
Trucks	0	19	19	0	0	0	0	18	18
% Trucks	0	13.3	13.3	0	0	0	0	13.7	13.7

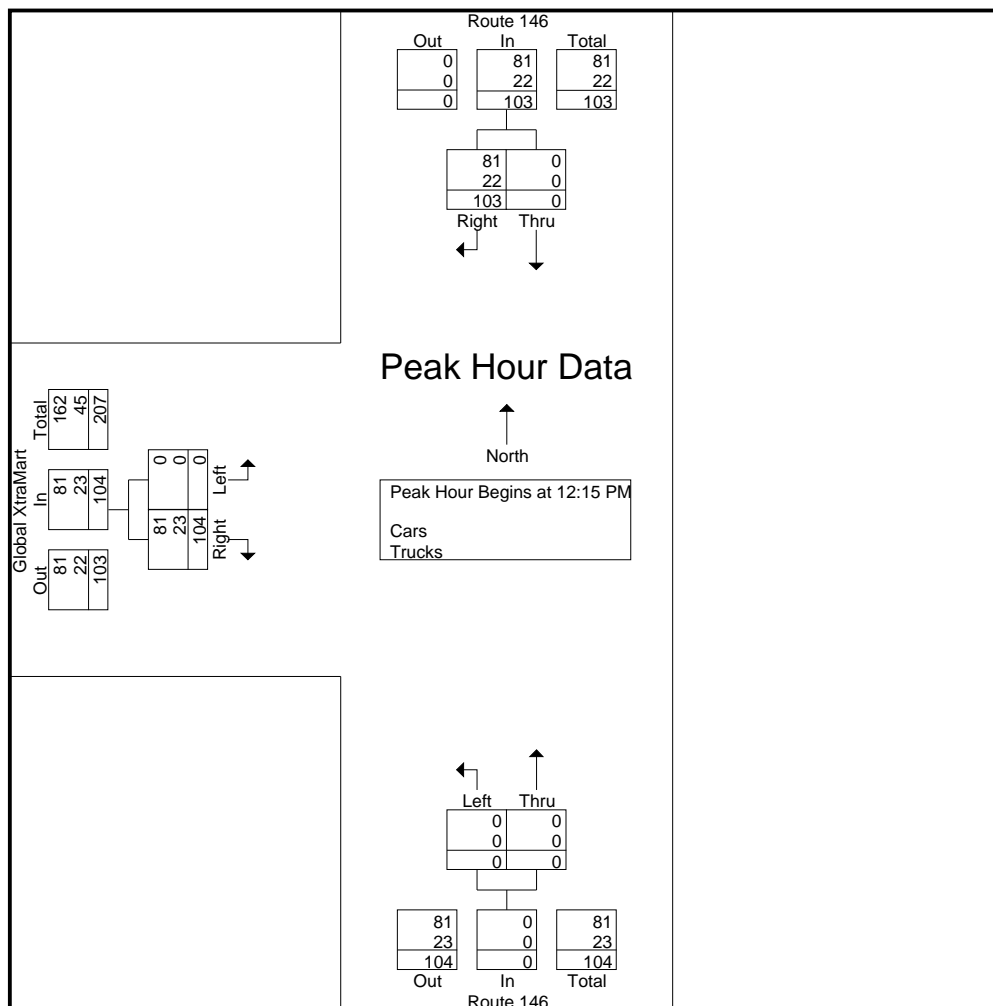
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:15 PM

12:15 PM	0	27	27	0	0	0	0	25	25	52
12:30 PM	0	26	26	0	0	0	0	26	26	52
12:45 PM	0	26	26	0	0	0	0	26	26	52
01:00 PM	0	24	24	0	0	0	0	27	27	51
Total Volume	0	103	103	0	0	0	0	104	104	207
% App. Total	0	100		0	0		0	100		
PHF	.000	.954	.954	.000	.000	.000	.000	.963	.963	.995
Cars	0	81	81	0	0	0	0	81	81	162
% Cars	0	78.6	78.6	0	0	0	0	77.9	77.9	78.3
Trucks	0	22	22	0	0	0	0	23	23	45
% Trucks	0	21.4	21.4	0	0	0	0	22.1	22.1	21.7

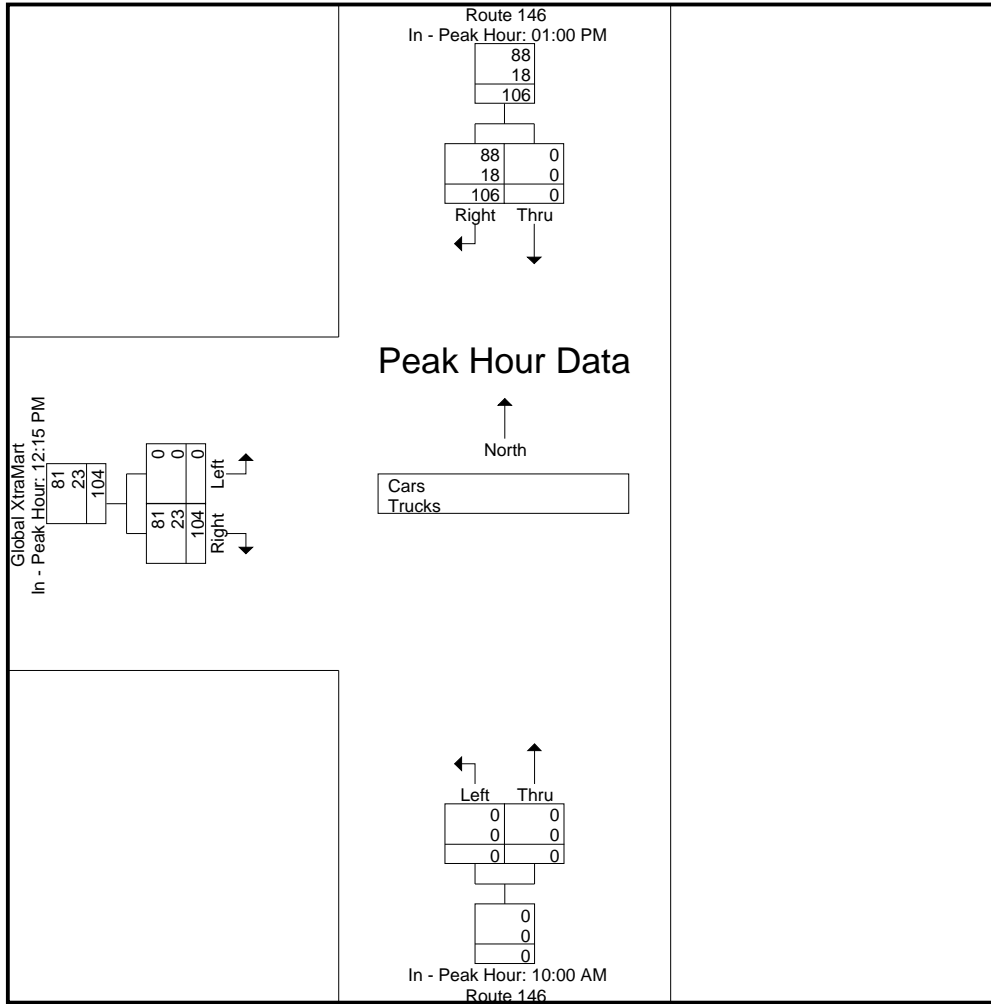
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	01:00 PM			10:00 AM			12:15 PM		
+0 mins.	0	24	24	0	0	0	0	25	25
+15 mins.	0	22	22	0	0	0	0	26	26
+30 mins.	0	30	30	0	0	0	0	26	26
+45 mins.	0	30	30	0	0	0	0	27	27
Total Volume	0	106	106	0	0	0	0	104	104
% App. Total	0	100		0	0		0	100	
PHF	.000	.883	.883	.000	.000	.000	.000	.963	.963
Cars	0	88	88	0	0	0	0	81	81
% Cars	0	83	83	0	0	0	0	77.9	77.9
Trucks	0	18	18	0	0	0	0	23	23
% Trucks	0	17	17	0	0	0	0	22.1	22.1

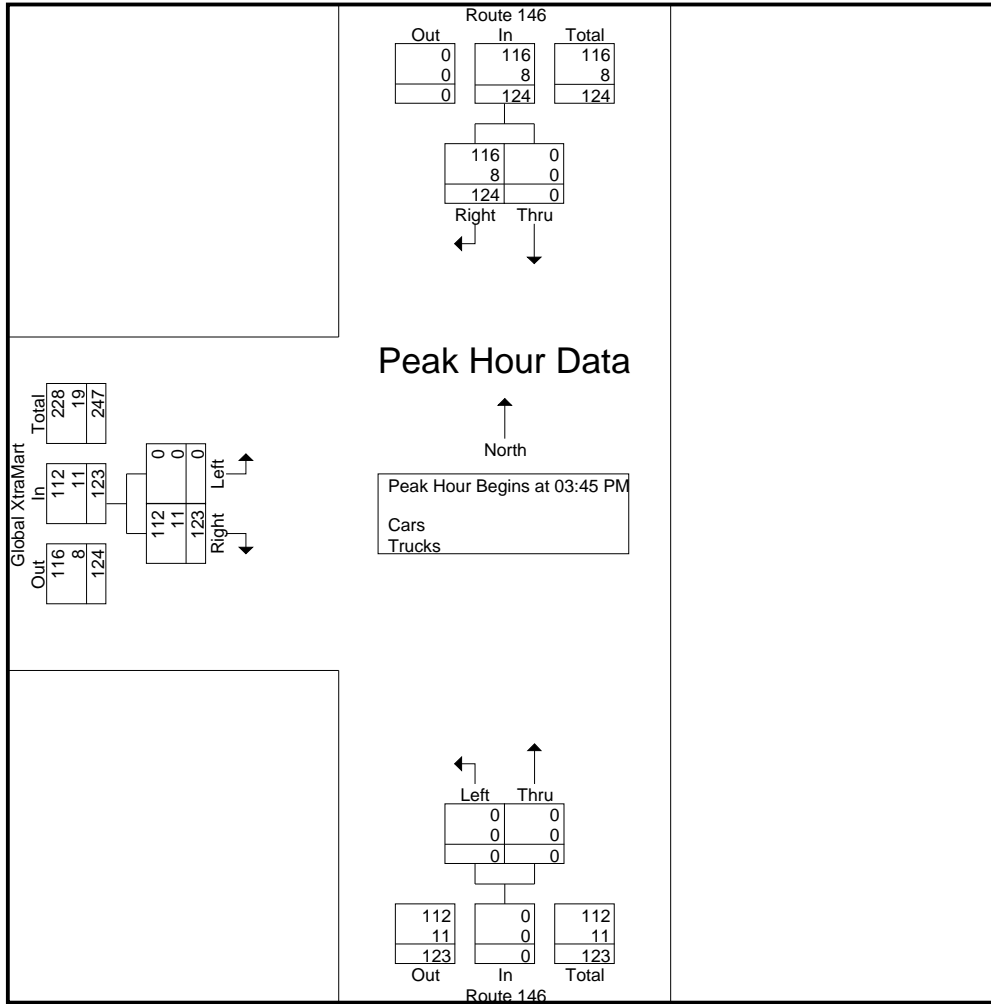
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 03:45 PM

03:45 PM	0	34	34	0	0	0	0	39	39	73
04:00 PM	0	21	21	0	0	0	0	20	20	41
04:15 PM	0	37	37	0	0	0	0	31	31	68
04:30 PM	0	32	32	0	0	0	0	33	33	65
Total Volume	0	124	124	0	0	0	0	123	123	247
% App. Total	0	100		0	0		0	100		
PHF	.000	.838	.838	.000	.000	.000	.000	.788	.788	.846
Cars	0	116	116	0	0	0	0	112	112	228
% Cars	0	93.5	93.5	0	0	0	0	91.1	91.1	92.3
Trucks	0	8	8	0	0	0	0	11	11	19
% Trucks	0	6.5	6.5	0	0	0	0	8.9	8.9	7.7

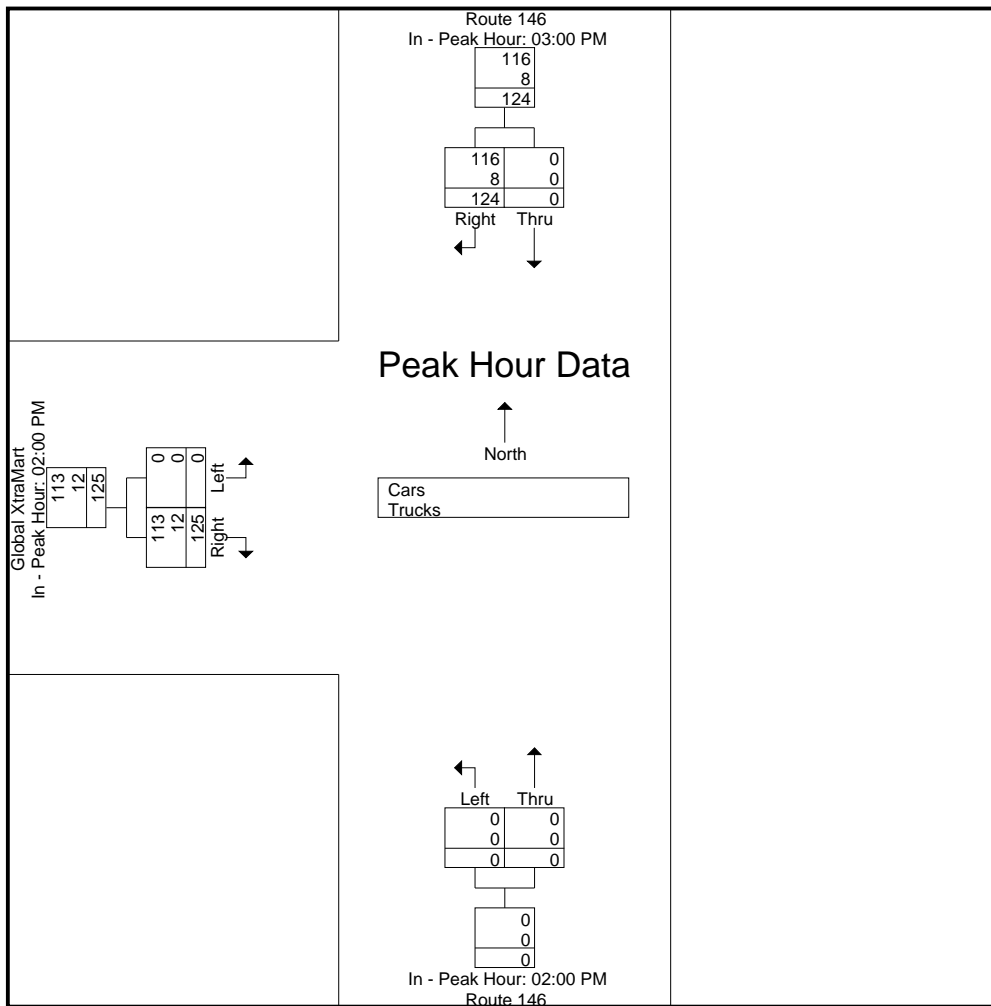
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:00 PM			02:00 PM			02:00 PM		
+0 mins.	0	32	32	0	0	0	0	33	33
+15 mins.	0	36	36	0	0	0	0	29	29
+30 mins.	0	22	22	0	0	0	0	29	29
+45 mins.	0	34	34	0	0	0	0	34	34
Total Volume	0	124	124	0	0	0	0	125	125
% App. Total	0	100		0	0		0	100	
PHF	.000	.861	.861	.000	.000	.000	.000	.919	.919
Cars	0	116	116	0	0	0	0	113	113
% Cars	0	93.5	93.5	0	0	0	0	90.4	90.4
Trucks	0	8	8	0	0	0	0	12	12
% Trucks	0	6.5	6.5	0	0	0	0	9.6	9.6

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 10

Groups Printed- Cars

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
12:00 AM	0	3	0	0	0	4	7
12:15 AM	0	0	0	0	0	2	2
12:30 AM	0	1	0	0	0	0	1
12:45 AM	0	0	0	0	0	0	0
Total	0	4	0	0	0	6	10
01:00 AM	0	0	0	0	0	1	1
01:15 AM	0	0	0	0	0	0	0
01:30 AM	0	0	0	0	0	0	0
01:45 AM	0	3	0	0	0	1	4
Total	0	3	0	0	0	2	5
02:00 AM	0	1	0	0	0	1	2
02:15 AM	0	2	0	0	0	0	2
02:30 AM	0	3	0	0	0	4	7
02:45 AM	0	0	0	0	0	1	1
Total	0	6	0	0	0	6	12
03:00 AM	0	2	0	0	0	1	3
03:15 AM	0	3	0	0	0	3	6
03:30 AM	0	1	0	0	0	1	2
03:45 AM	0	3	0	0	0	1	4
Total	0	9	0	0	0	6	15
04:00 AM	0	2	0	0	0	1	3
04:15 AM	0	1	0	0	0	1	2
04:30 AM	0	8	0	0	0	4	12
04:45 AM	0	11	0	0	0	8	19
Total	0	22	0	0	0	14	36
05:00 AM	0	7	0	0	0	8	15
05:15 AM	0	16	0	0	0	7	23
05:30 AM	0	12	0	0	0	18	30
05:45 AM	0	10	0	0	0	14	24
Total	0	45	0	0	0	47	92
06:00 AM	0	15	0	0	0	12	27
06:15 AM	0	20	0	0	0	10	30
06:30 AM	0	12	0	0	0	9	21
06:45 AM	0	24	0	0	0	16	40
Total	0	71	0	0	0	47	118
07:00 AM	0	24	0	0	0	7	31
07:15 AM	0	30	0	0	0	14	44
07:30 AM	0	34	0	0	0	30	64
07:45 AM	0	16	0	0	0	17	33
Total	0	104	0	0	0	68	172
08:00 AM	0	24	0	0	0	13	37
08:15 AM	0	31	0	0	0	15	46
08:30 AM	0	37	0	0	0	30	67
08:45 AM	0	27	0	0	0	31	58
Total	0	119	0	0	0	89	208
09:00 AM	0	29	0	0	0	25	54
09:15 AM	0	17	0	0	0	27	44
09:30 AM	0	21	0	0	0	16	37
09:45 AM	0	25	0	0	0	32	57
Total	0	92	0	0	0	100	192
10:00 AM	0	17	0	0	0	17	34
10:15 AM	0	22	0	0	0	18	40
10:30 AM	0	18	0	0	0	22	40
10:45 AM	0	19	0	0	0	21	40
Total	0	76	0	0	0	78	154

Accurate Counts

978-664-2565

N/S Street : Route 146
 E/W Street : Global XtraMart
 City/State : Milbury, MA
 Weather : Clear

File Name : 87070001
 Site Code : 87070001
 Start Date : 1/8/2021
 Page No : 11

Groups Printed- Cars

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
11:00 AM	0	25	0	0	0	20	45
11:15 AM	0	20	0	0	0	28	48
11:30 AM	0	21	0	0	0	14	35
11:45 AM	0	17	0	0	0	21	38
Total	0	83	0	0	0	83	166
12:00 PM	0	21	0	0	0	16	37
12:15 PM	0	20	0	0	0	22	42
12:30 PM	0	21	0	0	0	19	40
12:45 PM	0	20	0	0	0	19	39
Total	0	82	0	0	0	76	158
01:00 PM	0	20	0	0	0	21	41
01:15 PM	0	17	0	0	0	17	34
01:30 PM	0	23	0	0	0	22	45
01:45 PM	0	28	0	0	0	17	45
Total	0	88	0	0	0	77	165
02:00 PM	0	24	0	0	0	32	56
02:15 PM	0	31	0	0	0	23	54
02:30 PM	0	19	0	0	0	27	46
02:45 PM	0	26	0	0	0	31	57
Total	0	100	0	0	0	113	213
03:00 PM	0	30	0	0	0	26	56
03:15 PM	0	34	0	0	0	28	62
03:30 PM	0	20	0	0	0	21	41
03:45 PM	0	32	0	0	0	37	69
Total	0	116	0	0	0	112	228
04:00 PM	0	21	0	0	0	17	38
04:15 PM	0	33	0	0	0	29	62
04:30 PM	0	30	0	0	0	29	59
04:45 PM	0	31	0	0	0	32	63
Total	0	115	0	0	0	107	222
05:00 PM	0	23	0	0	0	6	29
05:15 PM	0	21	0	0	0	7	28
05:30 PM	0	21	0	0	0	13	34
05:45 PM	0	18	0	0	0	10	28
Total	0	83	0	0	0	36	119
06:00 PM	0	18	0	0	0	7	25
06:15 PM	0	8	0	0	0	13	21
06:30 PM	0	13	0	0	0	12	25
06:45 PM	0	13	0	0	0	16	29
Total	0	52	0	0	0	48	100
07:00 PM	0	11	0	0	0	10	21
07:15 PM	0	11	0	0	0	14	25
07:30 PM	0	7	0	0	0	8	15
07:45 PM	0	9	0	0	0	7	16
Total	0	38	0	0	0	39	77
08:00 PM	0	5	0	0	0	6	11
08:15 PM	0	8	0	0	0	8	16
08:30 PM	0	5	0	0	0	3	8
08:45 PM	0	5	0	0	0	6	11
Total	0	23	0	0	0	23	46
09:00 PM	0	7	0	0	0	8	15
09:15 PM	0	8	0	0	0	6	14
09:30 PM	0	6	0	0	0	6	12
09:45 PM	0	3	0	0	0	2	5
Total	0	24	0	0	0	22	46

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

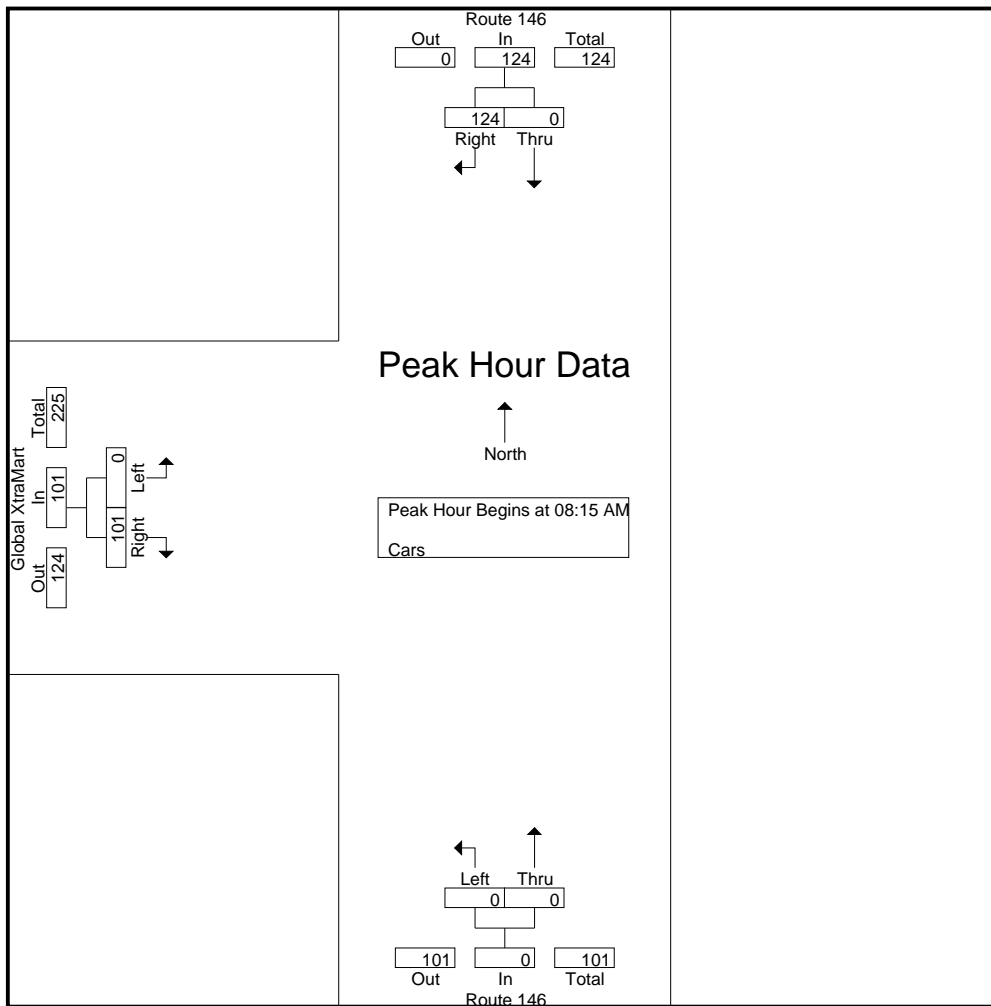
File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 12

Groups Printed- Cars

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
10:00 PM	0	5	0	0	0	5	10
10:15 PM	0	4	0	0	0	3	7
10:30 PM	0	3	0	0	0	2	5
10:45 PM	0	8	0	0	0	5	13
Total	0	20	0	0	0	15	35
11:00 PM	0	3	0	0	0	6	9
11:15 PM	0	8	0	0	0	9	17
11:30 PM	0	5	0	0	0	4	9
11:45 PM	0	4	0	0	0	3	7
Total	0	20	0	0	0	22	42
Grand Total	0	1395	0	0	0	1236	2631
Apprch %	0	100	0	0	0	100	
Total %	0	53	0	0	0	47	

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15 AM										
08:15 AM	0	31	31	0	0	0	0	15	15	46
08:30 AM	0	37	37	0	0	0	0	30	30	67
08:45 AM	0	27	27	0	0	0	0	31	31	58
09:00 AM	0	29	29	0	0	0	0	25	25	54
Total Volume	0	124	124	0	0	0	0	101	101	225
% App. Total	0	100		0	0		0	100		
PHF	.000	.838	.838	.000	.000	.000	.000	.815	.815	.840

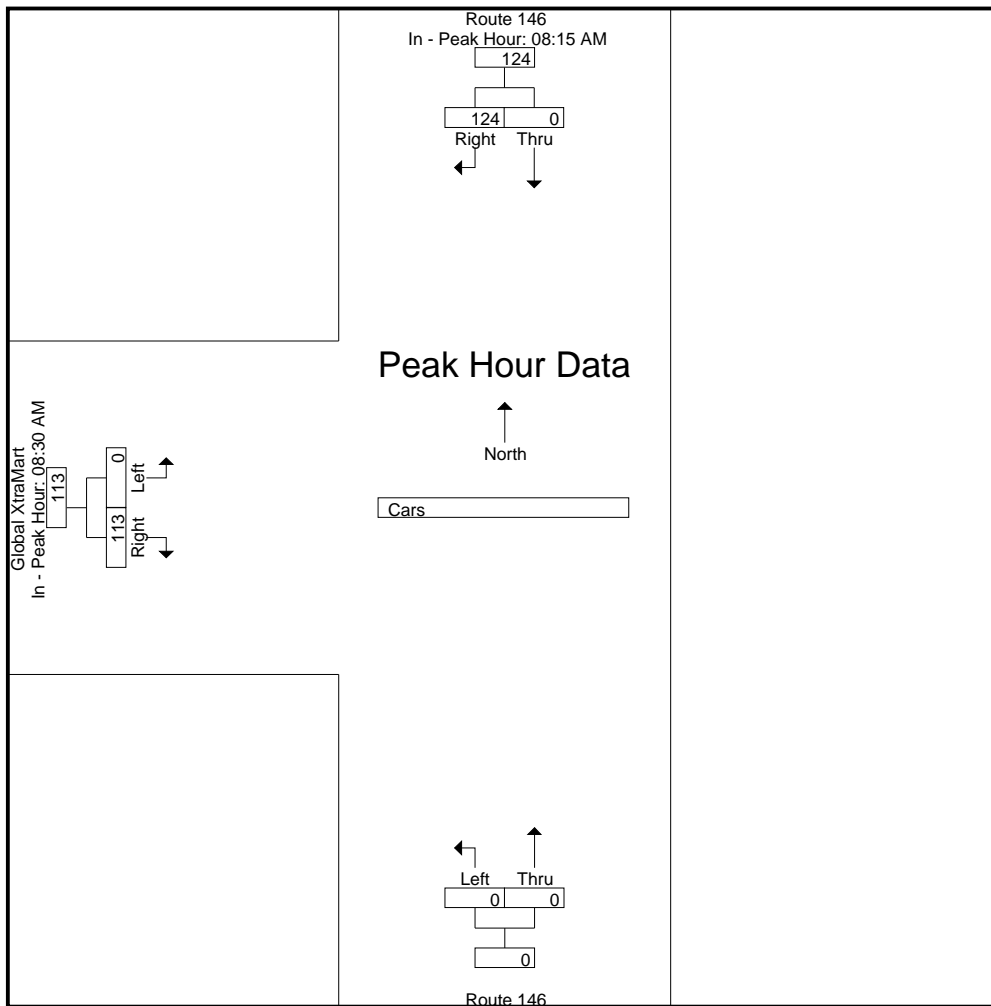
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15 AM			12:00 AM			08:30 AM		
+0 mins.	0	31	31	0	0	0	0	30	30
+15 mins.	0	37	37	0	0	0	0	31	31
+30 mins.	0	27	27	0	0	0	0	25	25
+45 mins.	0	29	29	0	0	0	0	27	27
Total Volume	0	124	124	0	0	0	0	113	113
% App. Total	0	100		0	0		0	100	
PHF	.000	.838	.838	.000	.000	.000	.000	.911	.911

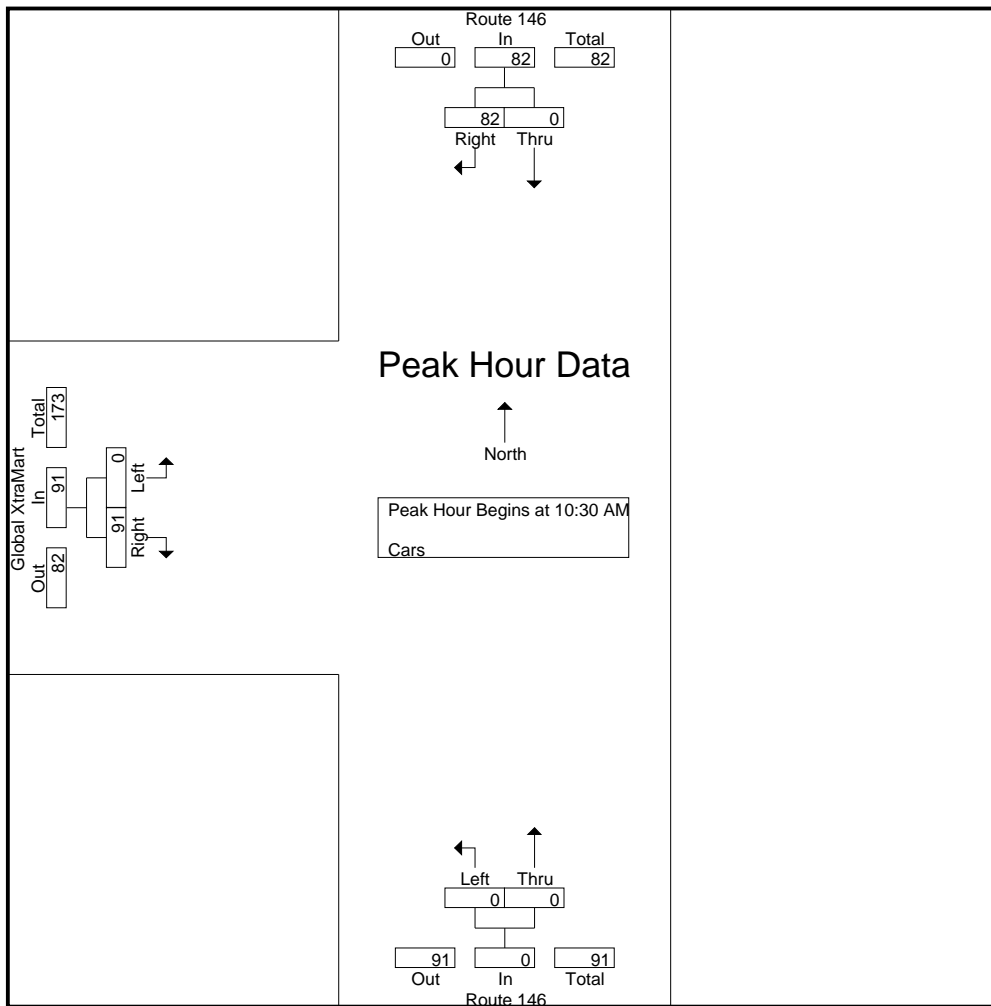
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 10:30 AM

10:30 AM	0	18	18	0	0	0	0	22	22	40
10:45 AM	0	19	19	0	0	0	0	21	21	40
11:00 AM	0	25	25	0	0	0	0	20	20	45
11:15 AM	0	20	20	0	0	0	0	28	28	48
Total Volume	0	82	82	0	0	0	0	91	91	173
% App. Total	0	100		0	0		0	100		
PHF	.000	.820	.820	.000	.000	.000	.000	.813	.813	.901

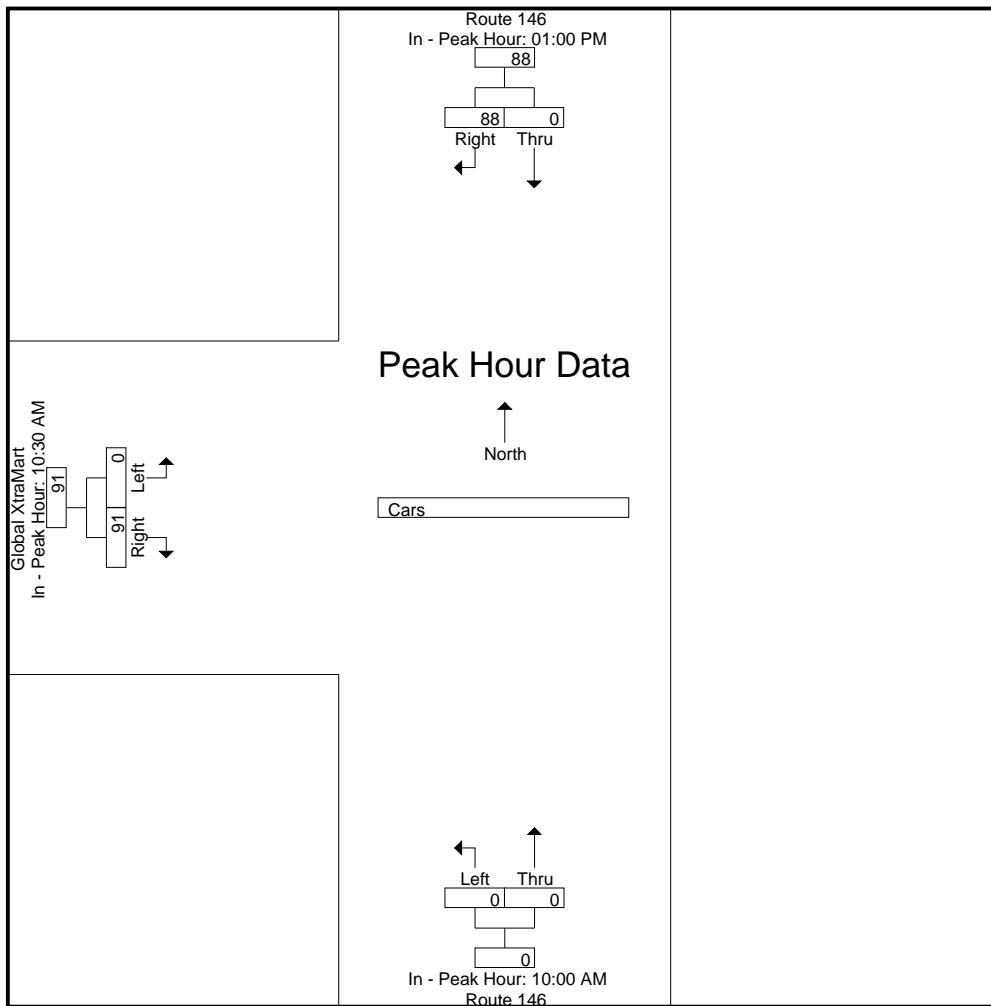
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	01:00 PM			10:00 AM			10:30 AM		
+0 mins.	0	20	20	0	0	0	0	22	22
+15 mins.	0	17	17	0	0	0	0	21	21
+30 mins.	0	23	23	0	0	0	0	20	20
+45 mins.	0	28	28	0	0	0	0	28	28
Total Volume	0	88	88	0	0	0	0	91	91
% App. Total	0	100		0	0		0	100	
PHF	.000	.786	.786	.000	.000	.000	.000	.813	.813

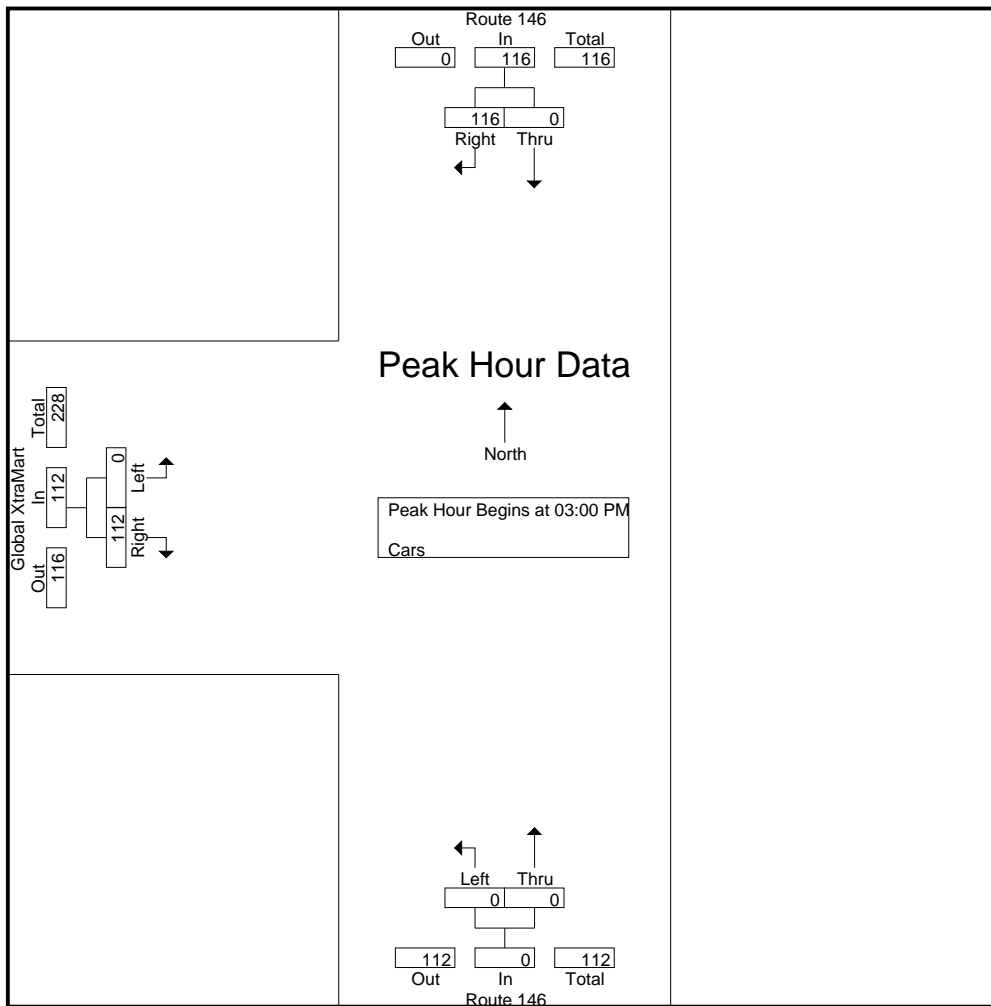
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 03:00 PM

03:00 PM	0	30	30	0	0	0	0	26	26	56
03:15 PM	0	34	34	0	0	0	0	28	28	62
03:30 PM	0	20	20	0	0	0	0	21	21	41
03:45 PM	0	32	32	0	0	0	0	37	37	69
Total Volume	0	116	116	0	0	0	0	112	112	228
% App. Total	0	100		0	0		0	100		
PHF	.000	.853	.853	.000	.000	.000	.000	.757	.757	.826

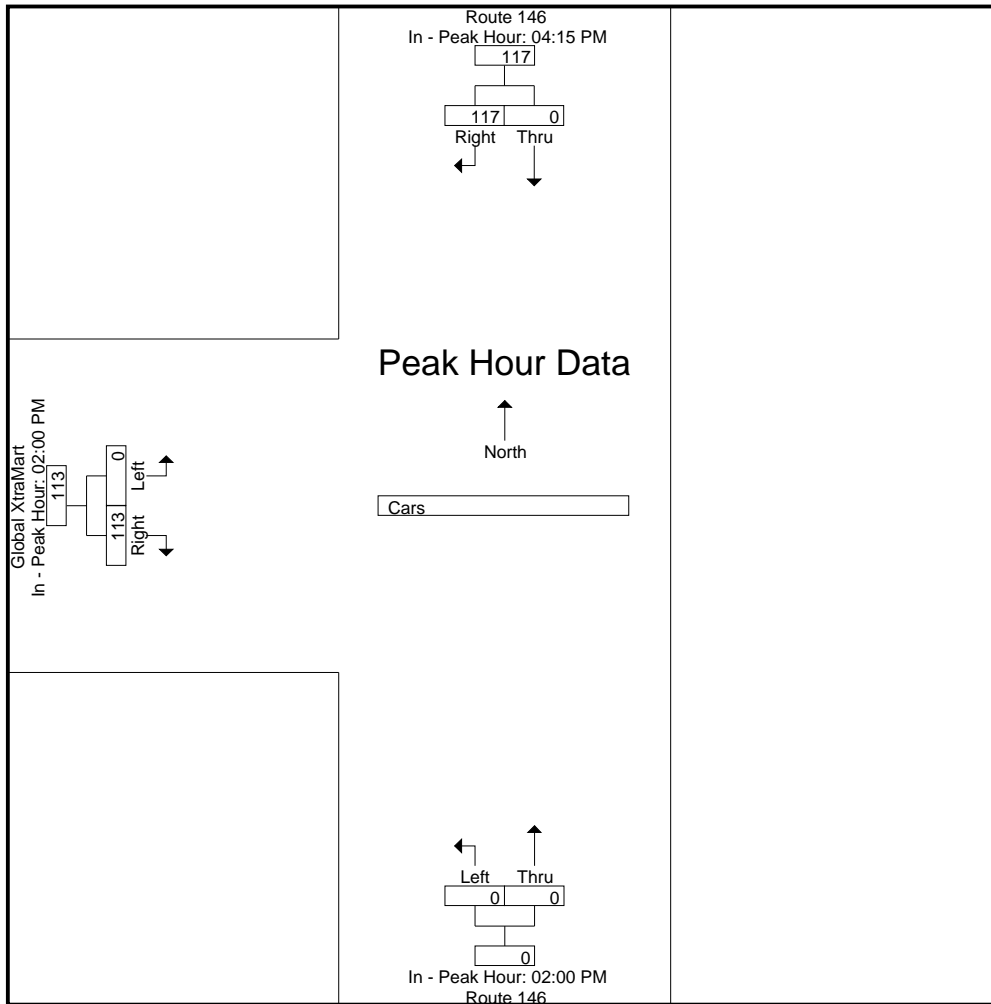
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			02:00 PM			02:00 PM		
+0 mins.	0	33	33	0	0	0	0	32	32
+15 mins.	0	30	30	0	0	0	0	23	23
+30 mins.	0	31	31	0	0	0	0	27	27
+45 mins.	0	23	23	0	0	0	0	31	31
Total Volume	0	117	117	0	0	0	0	113	113
% App. Total	0	100		0	0		0	100	
PHF	.000	.886	.886	.000	.000	.000	.000	.883	.883

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 19

Groups Printed- Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
12:00 AM	0	0	0	0	0	2	2
12:15 AM	0	0	0	0	0	1	1
12:30 AM	0	2	0	0	0	2	4
12:45 AM	0	3	0	0	0	1	4
Total	0	5	0	0	0	6	11
01:00 AM	0	1	0	0	0	2	3
01:15 AM	0	1	0	0	0	1	2
01:30 AM	0	1	0	0	0	1	2
01:45 AM	0	1	0	0	0	1	2
Total	0	4	0	0	0	5	9
02:00 AM	0	0	0	0	0	1	1
02:15 AM	0	4	0	0	0	1	5
02:30 AM	0	1	0	0	0	3	4
02:45 AM	0	2	0	0	0	1	3
Total	0	7	0	0	0	6	13
03:00 AM	0	1	0	0	0	1	2
03:15 AM	0	0	0	0	0	1	1
03:30 AM	0	2	0	0	0	0	2
03:45 AM	0	2	0	0	0	3	5
Total	0	5	0	0	0	5	10
04:00 AM	0	2	0	0	0	2	4
04:15 AM	0	4	0	0	0	2	6
04:30 AM	0	1	0	0	0	3	4
04:45 AM	0	0	0	0	0	2	2
Total	0	7	0	0	0	9	16
05:00 AM	0	4	0	0	0	1	5
05:15 AM	0	2	0	0	0	3	5
05:30 AM	0	2	0	0	0	0	2
05:45 AM	0	5	0	0	0	2	7
Total	0	13	0	0	0	6	19
06:00 AM	0	1	0	0	0	5	6
06:15 AM	0	1	0	0	0	1	2
06:30 AM	0	0	0	0	0	1	1
06:45 AM	0	3	0	0	0	1	4
Total	0	5	0	0	0	8	13
07:00 AM	0	1	0	0	0	2	3
07:15 AM	0	3	0	0	0	1	4
07:30 AM	0	5	0	0	0	5	10
07:45 AM	0	2	0	0	0	0	2
Total	0	11	0	0	0	8	19
08:00 AM	0	3	0	0	0	2	5
08:15 AM	0	3	0	0	0	4	7
08:30 AM	0	3	0	0	0	2	5
08:45 AM	0	6	0	0	0	4	10
Total	0	15	0	0	0	12	27
09:00 AM	0	7	0	0	0	8	15
09:15 AM	0	2	0	0	0	4	6
09:30 AM	0	3	0	0	0	5	8
09:45 AM	0	4	0	0	0	1	5
Total	0	16	0	0	0	18	34
10:00 AM	0	2	0	0	0	2	4
10:15 AM	0	4	0	0	0	6	10
10:30 AM	0	3	0	0	0	2	5
10:45 AM	0	3	0	0	0	2	5
Total	0	12	0	0	0	12	24

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 20

Groups Printed- Trucks

Start Time	Route 146 From North		Route 146 From South			Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right		
11:00 AM	0	1	0	0	0	4	5	
11:15 AM	0	2	0	0	0	1	3	
11:30 AM	0	4	0	0	0	1	5	
11:45 AM	0	5	0	0	0	4	9	
Total	0	12	0	0	0	10	22	
12:00 PM	0	2	0	0	0	5	7	
12:15 PM	0	7	0	0	0	3	10	
12:30 PM	0	5	0	0	0	7	12	
12:45 PM	0	6	0	0	0	7	13	
Total	0	20	0	0	0	22	42	
01:00 PM	0	4	0	0	0	6	10	
01:15 PM	0	5	0	0	0	6	11	
01:30 PM	0	7	0	0	0	3	10	
01:45 PM	0	2	0	0	0	8	10	
Total	0	18	0	0	0	23	41	
02:00 PM	0	1	0	0	0	1	2	
02:15 PM	0	4	0	0	0	6	10	
02:30 PM	0	3	0	0	0	2	5	
02:45 PM	0	0	0	0	0	3	3	
Total	0	8	0	0	0	12	20	
03:00 PM	0	2	0	0	0	0	2	
03:15 PM	0	2	0	0	0	4	6	
03:30 PM	0	2	0	0	0	0	2	
03:45 PM	0	2	0	0	0	2	4	
Total	0	8	0	0	0	6	14	
04:00 PM	0	0	0	0	0	3	3	
04:15 PM	0	4	0	0	0	2	6	
04:30 PM	0	2	0	0	0	4	6	
04:45 PM	0	0	0	0	0	1	1	
Total	0	6	0	0	0	10	16	
05:00 PM	0	1	0	0	0	0	1	
05:15 PM	0	0	0	0	0	2	2	
05:30 PM	0	0	0	0	0	2	2	
05:45 PM	0	0	0	0	0	0	0	
Total	0	1	0	0	0	4	5	
06:00 PM	0	1	0	0	0	0	1	
06:15 PM	0	4	0	0	0	2	6	
06:30 PM	0	2	0	0	0	0	2	
06:45 PM	0	2	0	0	0	2	4	
Total	0	9	0	0	0	4	13	
07:00 PM	0	3	0	0	0	3	6	
07:15 PM	0	1	0	0	0	4	5	
07:30 PM	0	0	0	0	0	1	1	
07:45 PM	0	0	0	0	0	0	0	
Total	0	4	0	0	0	8	12	
08:00 PM	0	0	0	0	0	0	0	
08:15 PM	0	4	0	0	0	2	6	
08:30 PM	0	0	0	0	0	1	1	
08:45 PM	0	0	0	0	0	1	1	
Total	0	4	0	0	0	4	8	
09:00 PM	0	0	0	0	0	0	0	
09:15 PM	0	3	0	0	0	1	4	
09:30 PM	0	1	0	0	0	2	3	
09:45 PM	0	2	0	0	0	0	2	
Total	0	6	0	0	0	3	9	

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

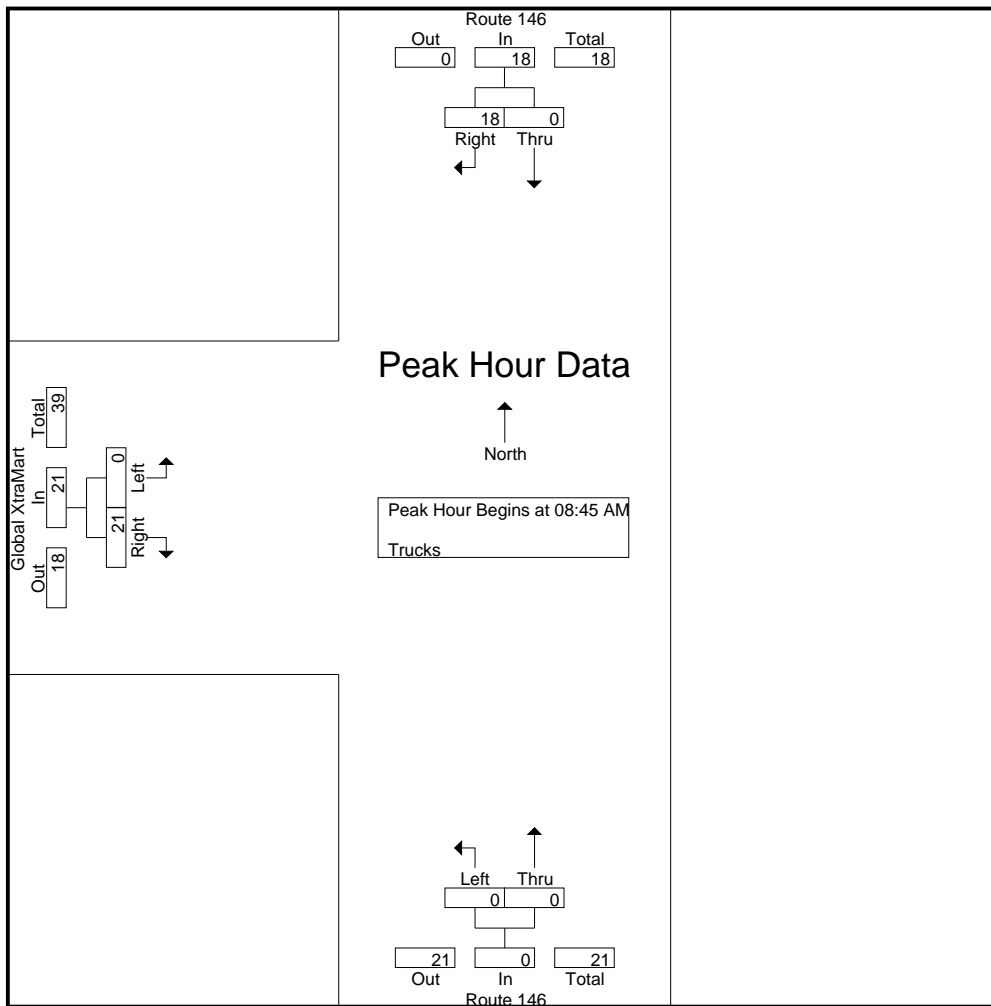
File Name : 87070001
Site Code : 87070001
Start Date : 1/8/2021
Page No : 21

Groups Printed- Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
10:00 PM	0	1	0	0	0	3	4
10:15 PM	0	0	0	0	0	1	1
10:30 PM	0	0	0	0	0	0	0
10:45 PM	0	1	0	0	0	0	1
Total	0	2	0	0	0	4	6
11:00 PM	0	0	0	0	0	1	1
11:15 PM	0	1	0	0	0	0	1
11:30 PM	0	2	0	0	0	0	2
11:45 PM	0	1	0	0	0	2	3
Total	0	4	0	0	0	3	7
Grand Total	0	202	0	0	0	208	410
Apprch %	0	100	0	0	0	100	
Total %	0	49.3	0	0	0	50.7	

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:45 AM										
08:45 AM	0	6	6	0	0	0	0	4	4	10
09:00 AM	0	7	7	0	0	0	0	8	8	15
09:15 AM	0	2	2	0	0	0	0	4	4	6
09:30 AM	0	3	3	0	0	0	0	5	5	8
Total Volume	0	18	18	0	0	0	0	21	21	39
% App. Total	0	100		0	0		0	100		
PHF	.000	.643	.643	.000	.000	.000	.000	.656	.656	.650

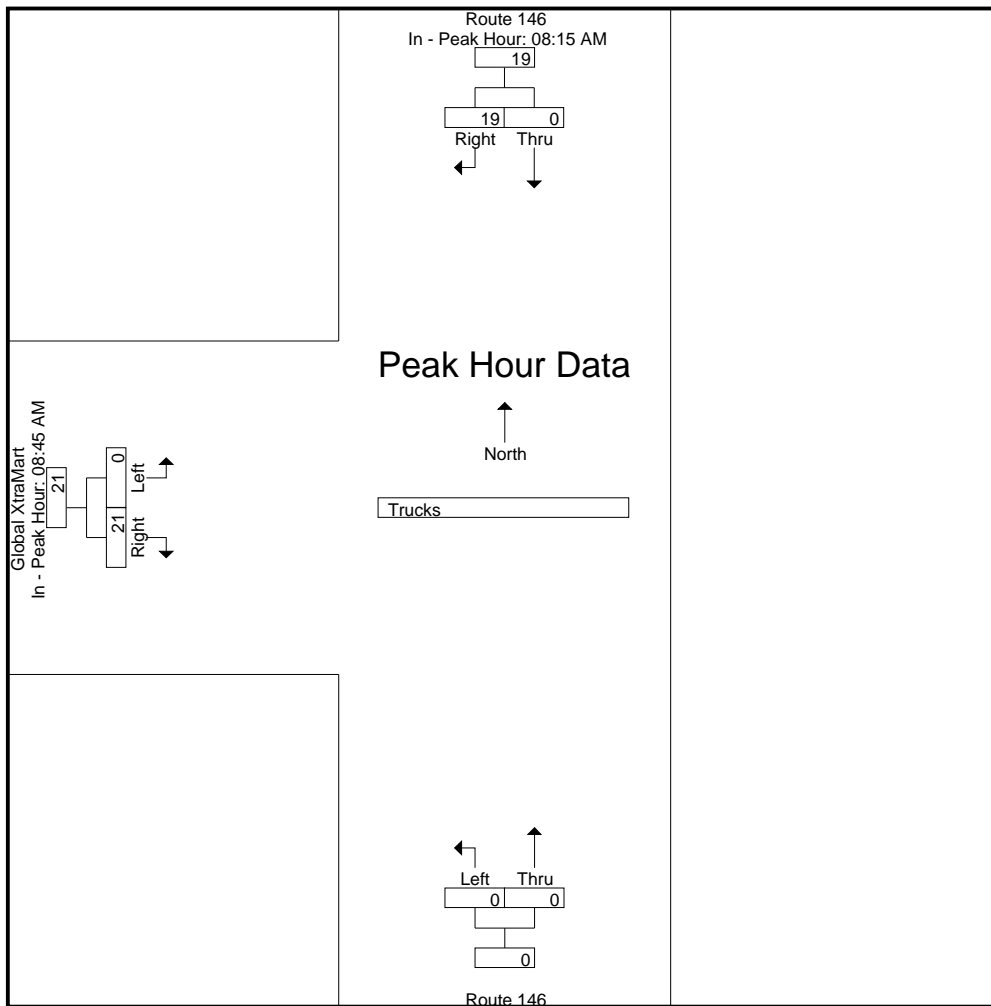
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:15 AM			12:00 AM			08:45 AM		
+0 mins.	0	3	3	0	0	0	0	4	4
+15 mins.	0	3	3	0	0	0	0	8	8
+30 mins.	0	6	6	0	0	0	0	4	4
+45 mins.	0	7	7	0	0	0	0	5	5
Total Volume	0	19	19	0	0	0	0	21	21
% App. Total	0	100		0	0		0	100	
PHF	.000	.679	.679	.000	.000	.000	.000	.656	.656

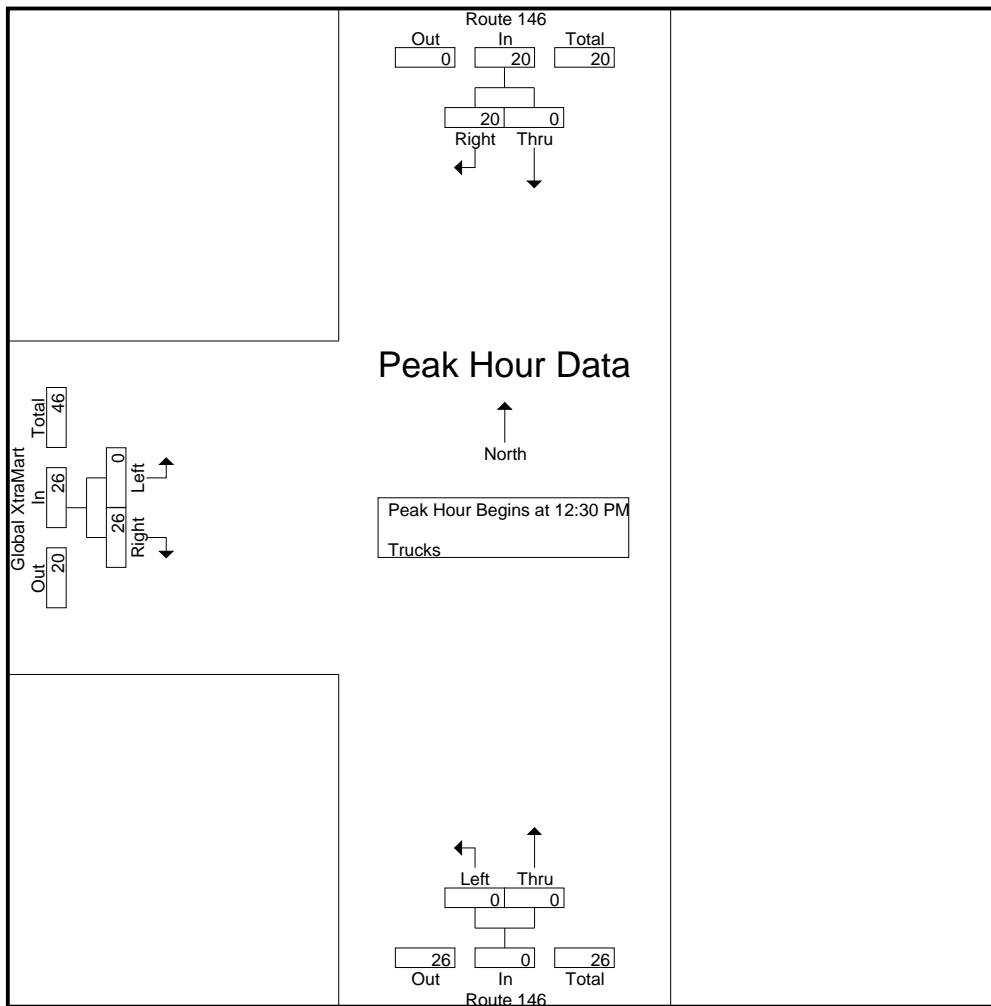
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:30 PM

12:30 PM	0	5	5	0	0	0	0	7	7	12
12:45 PM	0	6	6	0	0	0	0	7	7	13
01:00 PM	0	4	4	0	0	0	0	6	6	10
01:15 PM	0	5	5	0	0	0	0	6	6	11
Total Volume	0	20	20	0	0	0	0	26	26	46
% App. Total	0	100		0	0		0	100		
PHF	.000	.833	.833	.000	.000	.000	.000	.929	.929	.885

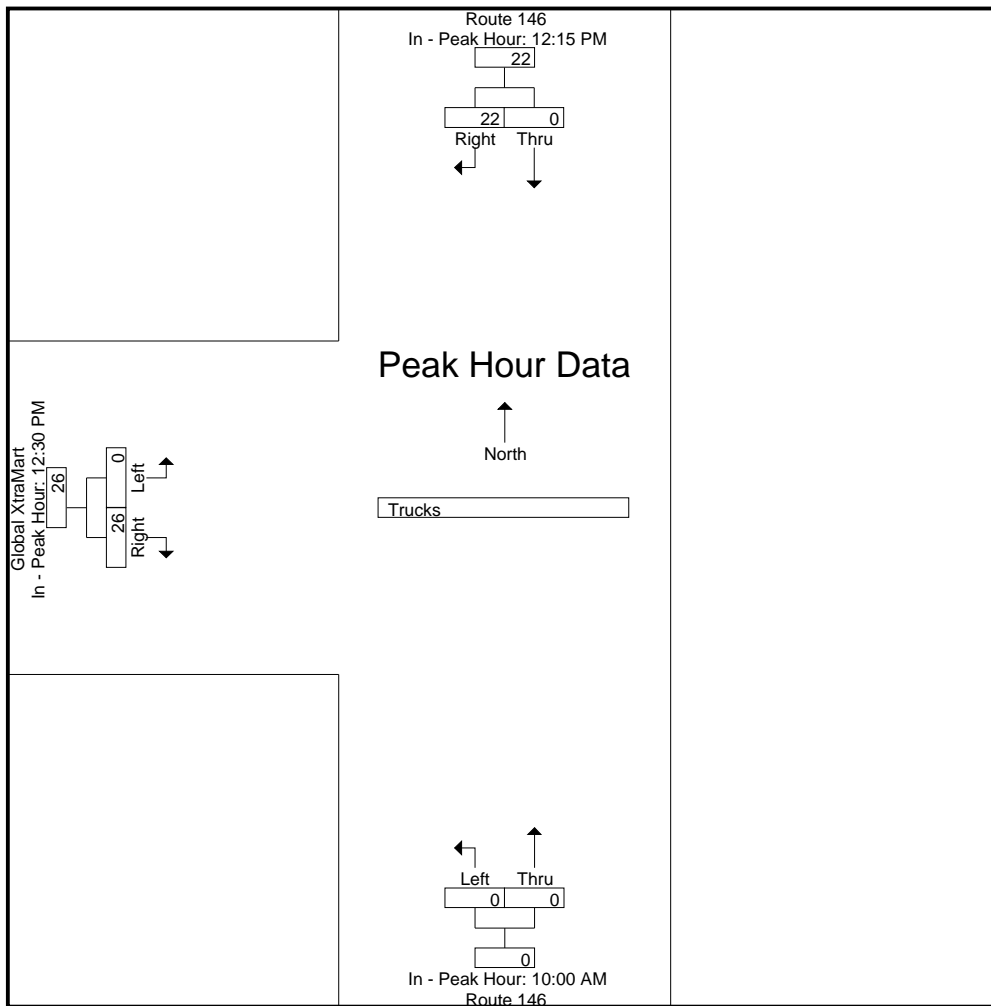
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:15 PM			10:00 AM			12:30 PM		
+0 mins.	0	7	7	0	0	0	0	7	7
+15 mins.	0	5	5	0	0	0	0	7	7
+30 mins.	0	6	6	0	0	0	0	6	6
+45 mins.	0	4	4	0	0	0	0	6	6
Total Volume	0	22	22	0	0	0	0	26	26
% App. Total	0	100		0	0		0	100	
PHF	.000	.786	.786	.000	.000	.000	.000	.929	.929

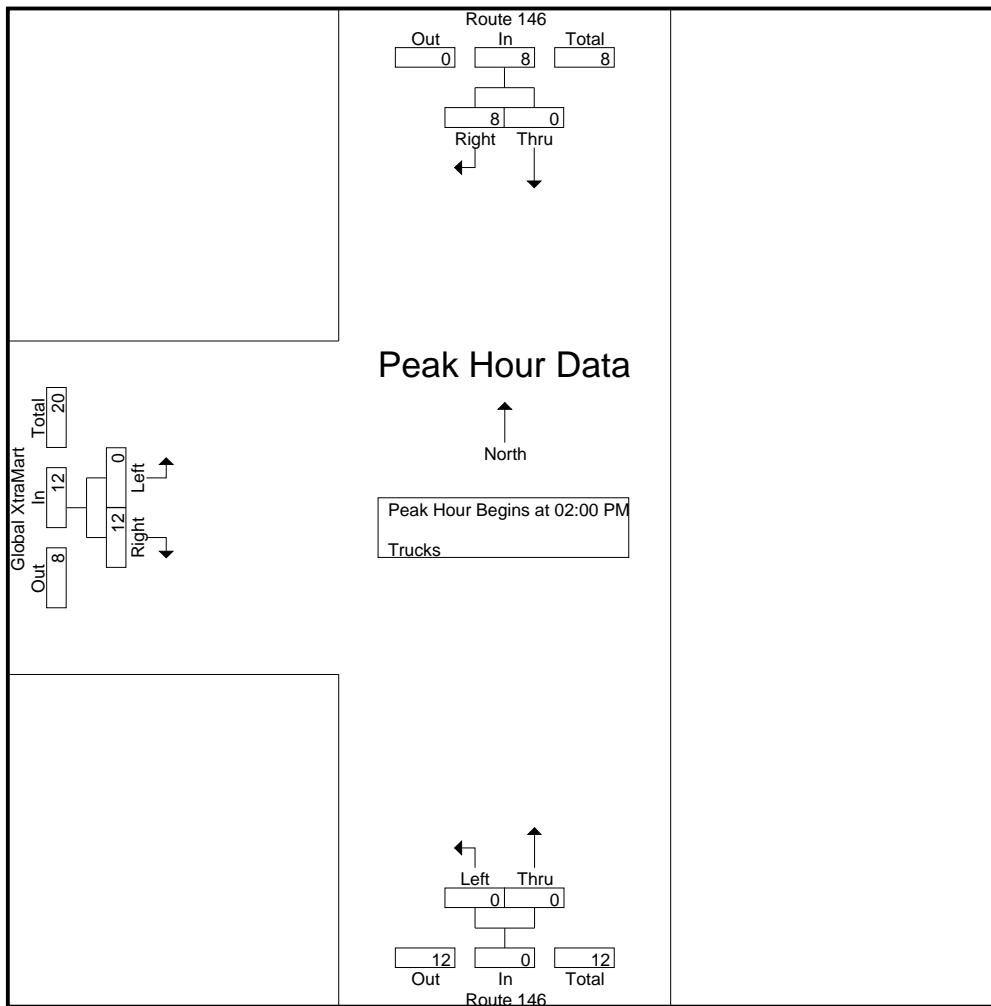
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:00 PM

02:00 PM	0	1	1	0	0	0	0	1	1	2
02:15 PM	0	4	4	0	0	0	0	6	6	10
02:30 PM	0	3	3	0	0	0	0	2	2	5
02:45 PM	0	0	0	0	0	0	0	3	3	3
Total Volume	0	8	8	0	0	0	0	12	12	20
% App. Total	0	100		0	0		0	100		
PHF	.000	.500	.500	.000	.000	.000	.000	.500	.500	.500

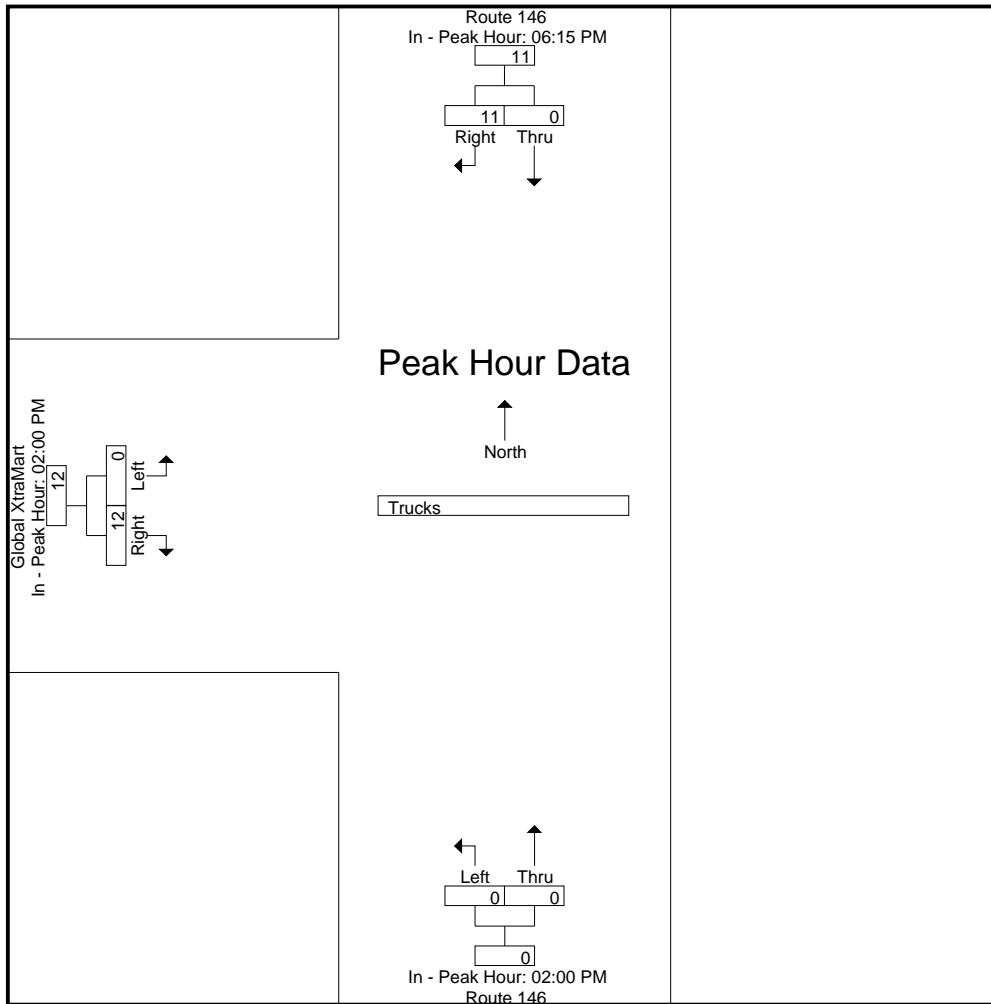
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



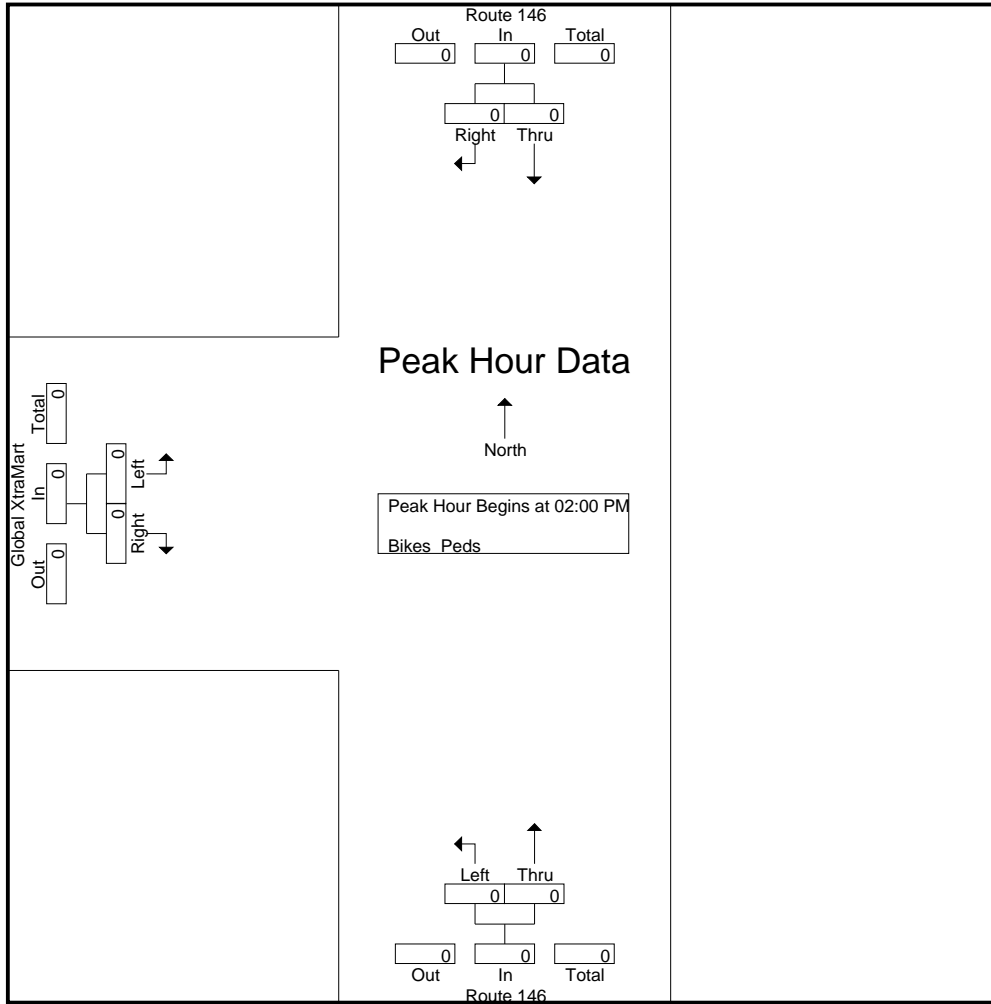
Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	06:15 PM			02:00 PM			02:00 PM		
+0 mins.	0	4	4	0	0	0	0	1	1
+15 mins.	0	2	2	0	0	0	0	6	6
+30 mins.	0	2	2	0	0	0	0	2	2
+45 mins.	0	3	3	0	0	0	0	3	3
Total Volume	0	11	11	0	0	0	0	12	12
% App. Total	0	100		0	0		0	100	
PHF	.000	.688	.688	.000	.000	.000	.000	.500	.500

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



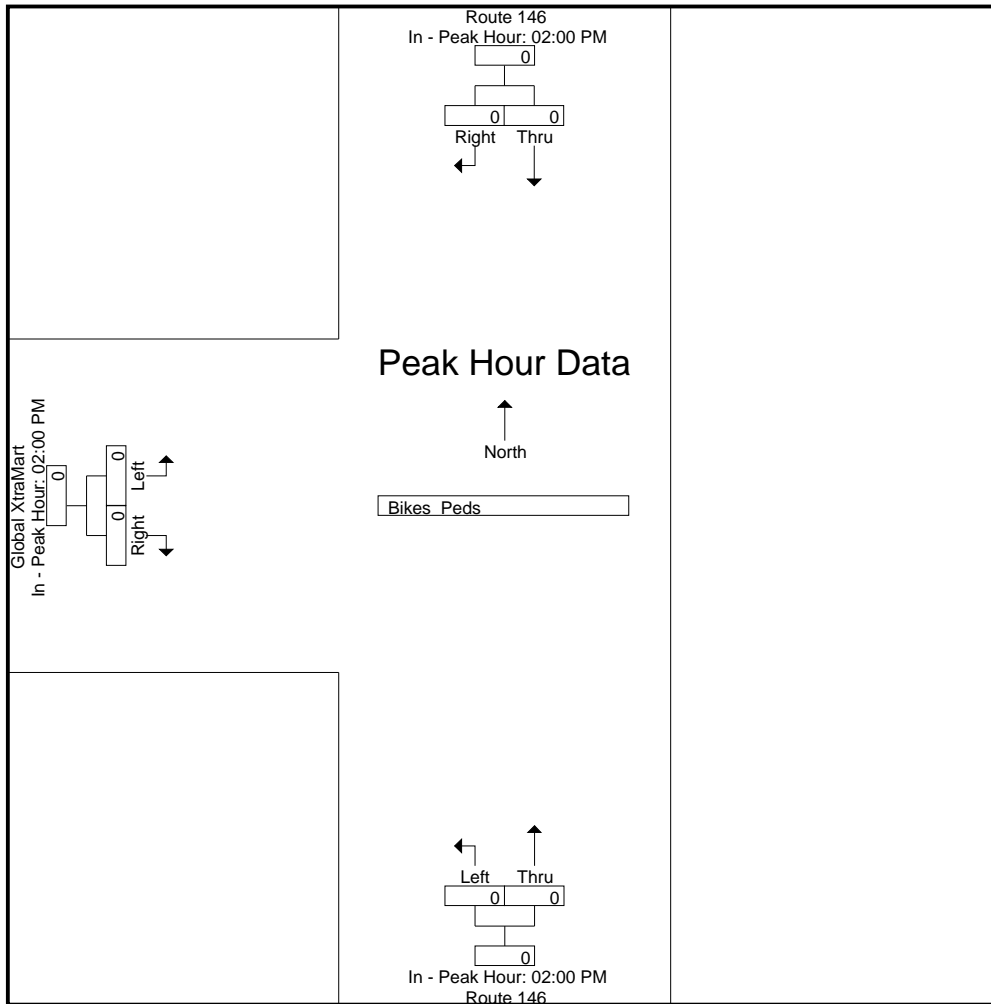
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:00 PM			02:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

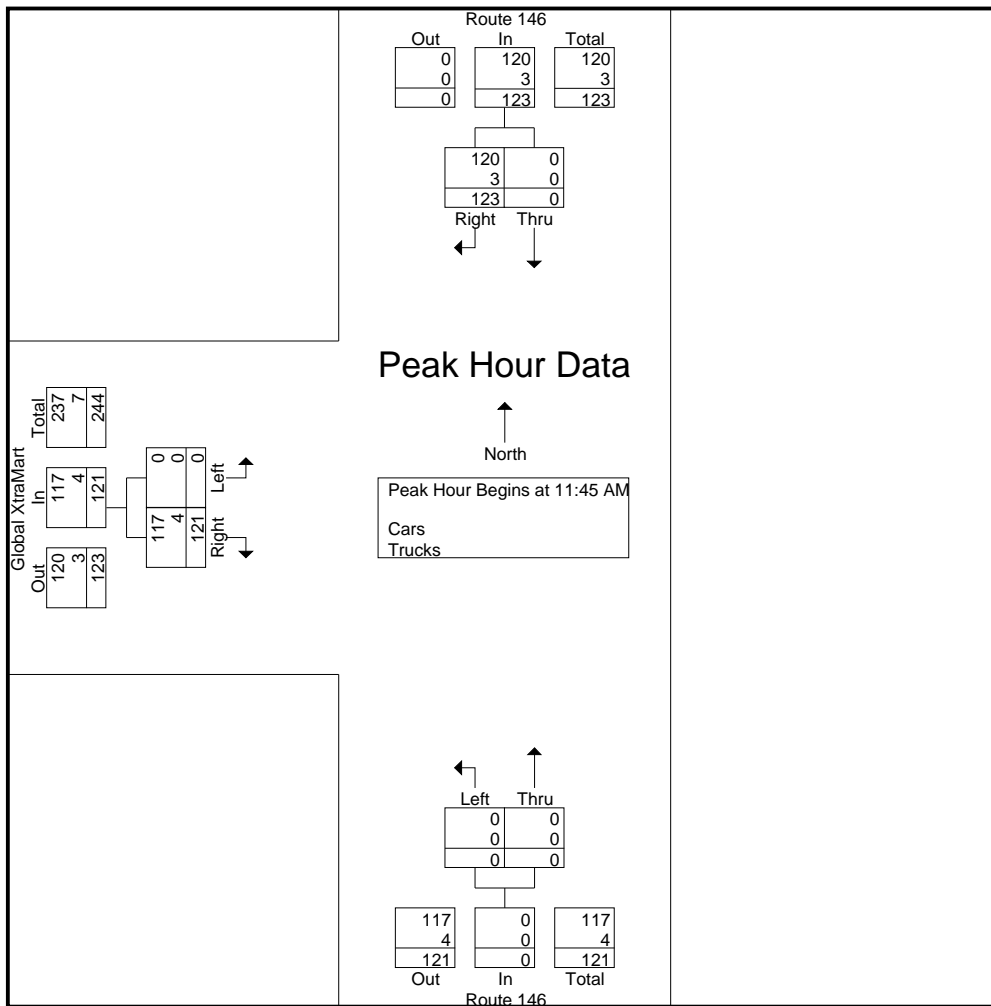
File Name : 870700S1
Site Code : 87070001
Start Date : 1/9/2021
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
11:00 AM	0	32	0	0	0	23	55
11:15 AM	0	28	0	0	0	30	58
11:30 AM	0	33	0	0	0	29	62
11:45 AM	0	24	0	0	0	32	56
Total	0	117	0	0	0	114	231
12:00 PM	0	27	0	0	0	22	49
12:15 PM	0	31	0	0	0	30	61
12:30 PM	0	41	0	0	0	37	78
12:45 PM	0	22	0	0	0	30	52
Total	0	121	0	0	0	119	240
01:00 PM	0	21	0	0	0	19	40
01:15 PM	0	22	0	0	0	25	47
01:30 PM	0	22	0	0	0	17	39
01:45 PM	0	24	0	0	0	17	41
Total	0	89	0	0	0	78	167
Grand Total	0	327	0	0	0	311	638
Apprch %	0	100	0	0	0	100	
Total %	0	51.3	0	0	0	48.7	
Cars	0	317	0	0	0	302	619
% Cars	0	96.9	0	0	0	97.1	97
Trucks	0	10	0	0	0	9	19
% Trucks	0	3.1	0	0	0	2.9	3

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:45 AM										
11:45 AM	0	24	24	0	0	0	0	32	32	56
12:00 PM	0	27	27	0	0	0	0	22	22	49
12:15 PM	0	31	31	0	0	0	0	30	30	61
12:30 PM	0	41	41	0	0	0	0	37	37	78
Total Volume	0	123	123	0	0	0	0	121	121	244
% App. Total	0	100		0	0		0	100		
PHF	.000	.750	.750	.000	.000	.000	.000	.818	.818	.782
Cars	0	120	120	0	0	0	0	117	117	237
% Cars	0	97.6	97.6	0	0	0	0	96.7	96.7	97.1
Trucks	0	3	3	0	0	0	0	4	4	7
% Trucks	0	2.4	2.4	0	0	0	0	3.3	3.3	2.9

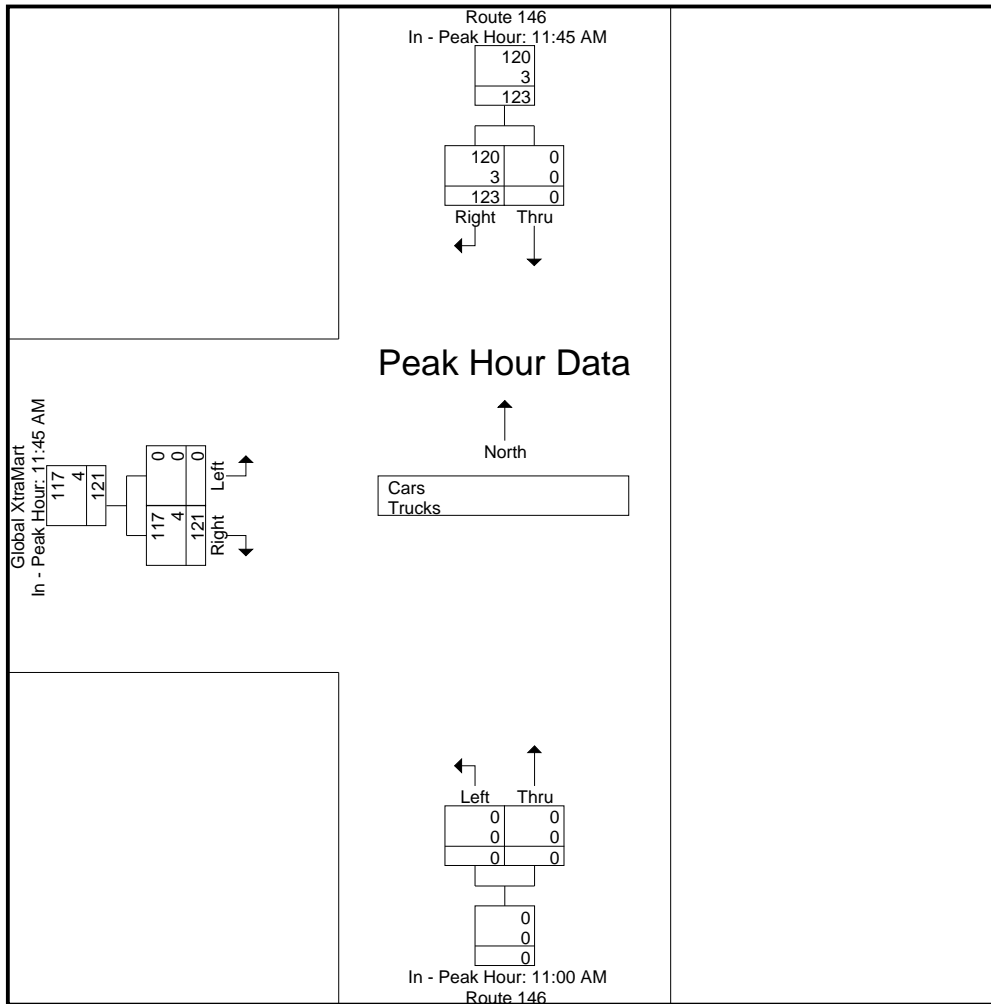
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



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

	11:45 AM			11:00 AM			11:45 AM		
+0 mins.	0	24	24	0	0	0	0	32	32
+15 mins.	0	27	27	0	0	0	0	22	22
+30 mins.	0	31	31	0	0	0	0	30	30
+45 mins.	0	41	41	0	0	0	0	37	37
Total Volume	0	123	123	0	0	0	0	121	121
% App. Total	0	100		0	0		0	100	
PHF	.000	.750	.750	.000	.000	.000	.000	.818	.818
Cars	0	120	120	0	0	0	0	117	117
% Cars	0	97.6	97.6	0	0	0	0	96.7	96.7
Trucks	0	3	3	0	0	0	0	4	4
% Trucks	0	2.4	2.4	0	0	0	0	3.3	3.3

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 870700S1
Site Code : 87070001
Start Date : 1/9/2021
Page No : 4

Groups Printed- Cars

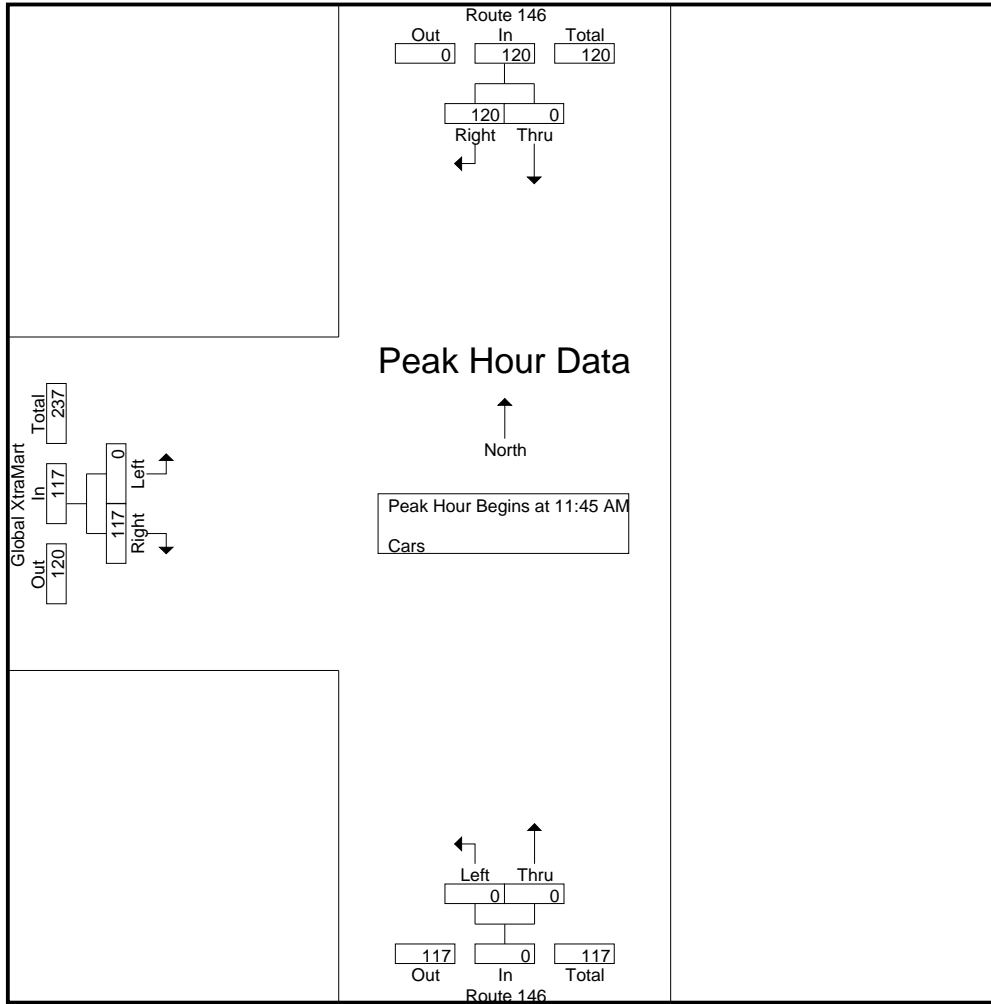
Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
11:00 AM	0	32	0	0	0	23	55
11:15 AM	0	26	0	0	0	29	55
11:30 AM	0	31	0	0	0	29	60
11:45 AM	0	24	0	0	0	30	54
Total	0	113	0	0	0	111	224
12:00 PM	0	27	0	0	0	22	49
12:15 PM	0	29	0	0	0	30	59
12:30 PM	0	40	0	0	0	35	75
12:45 PM	0	21	0	0	0	29	50
Total	0	117	0	0	0	116	233
01:00 PM	0	19	0	0	0	17	36
01:15 PM	0	22	0	0	0	24	46
01:30 PM	0	22	0	0	0	17	39
01:45 PM	0	24	0	0	0	17	41
Total	0	87	0	0	0	75	162
Grand Total	0	317	0	0	0	302	619
Apprch %	0	100	0	0	0	100	
Total %	0	51.2	0	0	0	48.8	

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
11:45 AM	0	24	24	0	0	0	0	30	30	54
12:00 PM	0	27	27	0	0	0	0	22	22	49
12:15 PM	0	29	29	0	0	0	0	30	30	59
12:30 PM	0	40	40	0	0	0	0	35	35	75
Total Volume	0	120	120	0	0	0	0	117	117	237
% App. Total	0	100		0	0		0	100		
PHF	.000	.750	.750	.000	.000	.000	.000	.836	.836	.790

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

Peak Hour for Entire Intersection Begins at 11:45 AM

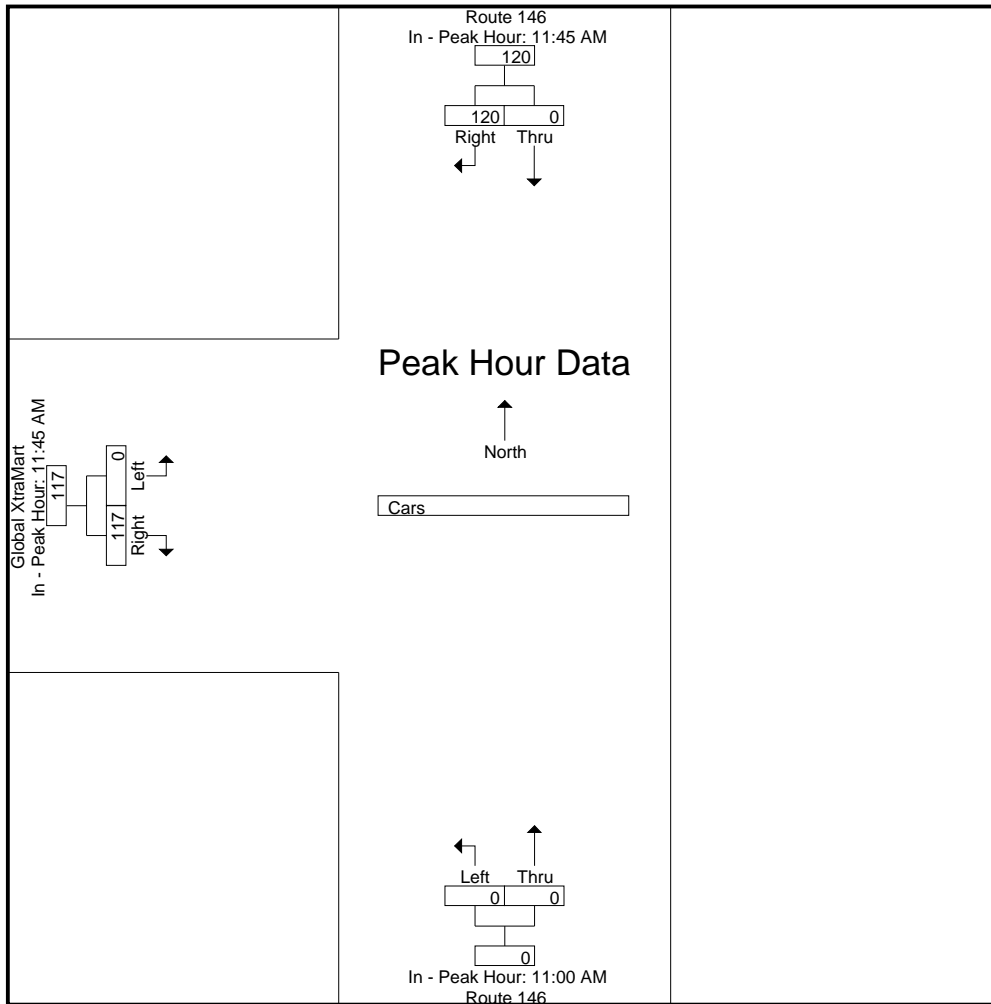
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



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

	11:45 AM			11:00 AM			11:45 AM		
+0 mins.	0	24	24	0	0	0	0	30	30
+15 mins.	0	27	27	0	0	0	0	22	22
+30 mins.	0	29	29	0	0	0	0	30	30
+45 mins.	0	40	40	0	0	0	0	35	35
Total Volume	0	120	120	0	0	0	0	117	117
% App. Total	0	100		0	0		0	100	
PHF	.000	.750	.750	.000	.000	.000	.000	.836	.836

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear

File Name : 870700S1
Site Code : 87070001
Start Date : 1/9/2021
Page No : 7

Groups Printed- Trucks

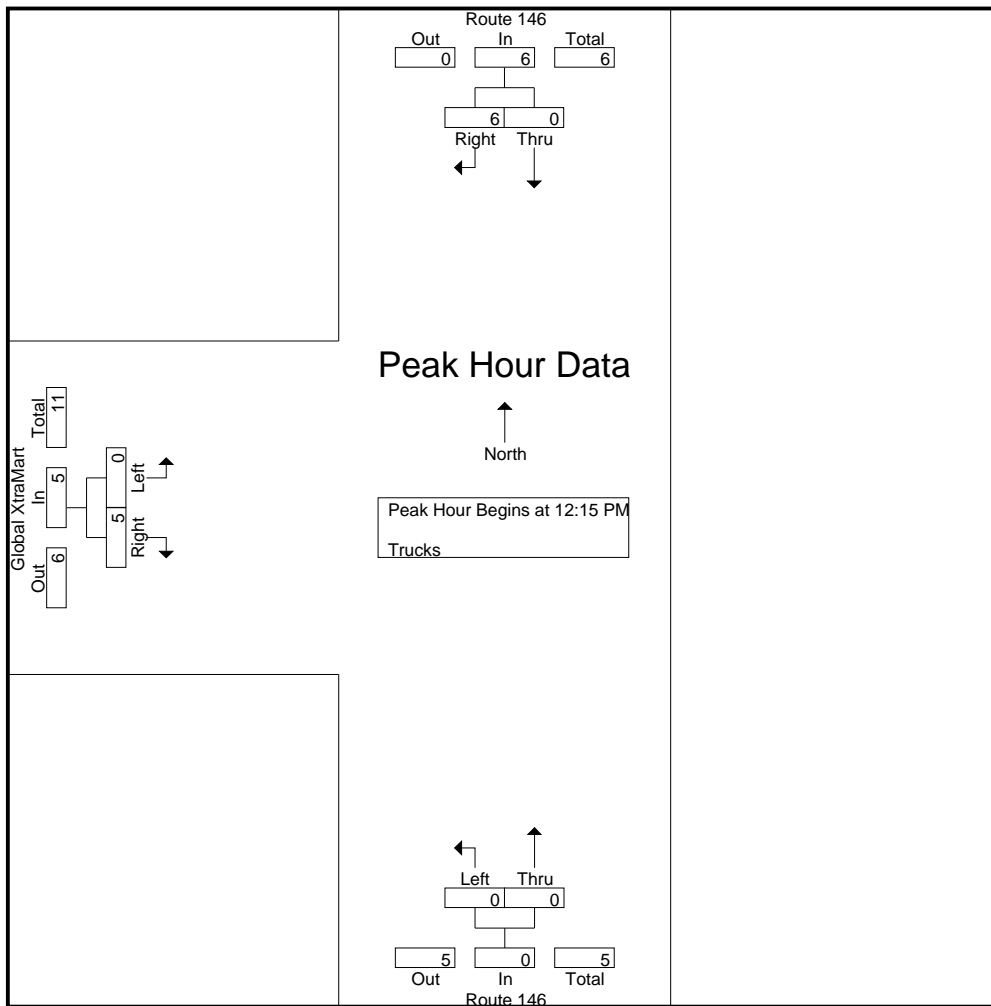
Start Time	Route 146 From North		Route 146 From South		Global XtraMart From West		Int. Total
	Thru	Right	Left	Thru	Left	Right	
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	2	0	0	0	1	3
11:30 AM	0	2	0	0	0	0	2
11:45 AM	0	0	0	0	0	2	2
Total	0	4	0	0	0	3	7
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	2	0	0	0	0	2
12:30 PM	0	1	0	0	0	2	3
12:45 PM	0	1	0	0	0	1	2
Total	0	4	0	0	0	3	7
01:00 PM	0	2	0	0	0	2	4
01:15 PM	0	0	0	0	0	1	1
01:30 PM	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0
Total	0	2	0	0	0	3	5
Grand Total	0	10	0	0	0	9	19
Apprch %	0	100	0	0	0	100	
Total %	0	52.6	0	0	0	47.4	

Start Time	Route 146 From North			Route 146 From South			Global XtraMart From West			Int. Total
	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	
12:15 PM	0	2	2	0	0	0	0	0	0	2
12:30 PM	0	1	1	0	0	0	0	2	2	3
12:45 PM	0	1	1	0	0	0	0	1	1	2
01:00 PM	0	2	2	0	0	0	0	2	2	4
Total Volume	0	6	6	0	0	0	0	5	5	11
% App. Total	0	100		0	0		0	100		
PHF	.000	.750	.750	.000	.000	.000	.000	.625	.625	.688

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

Peak Hour for Entire Intersection Begins at 12:15 PM

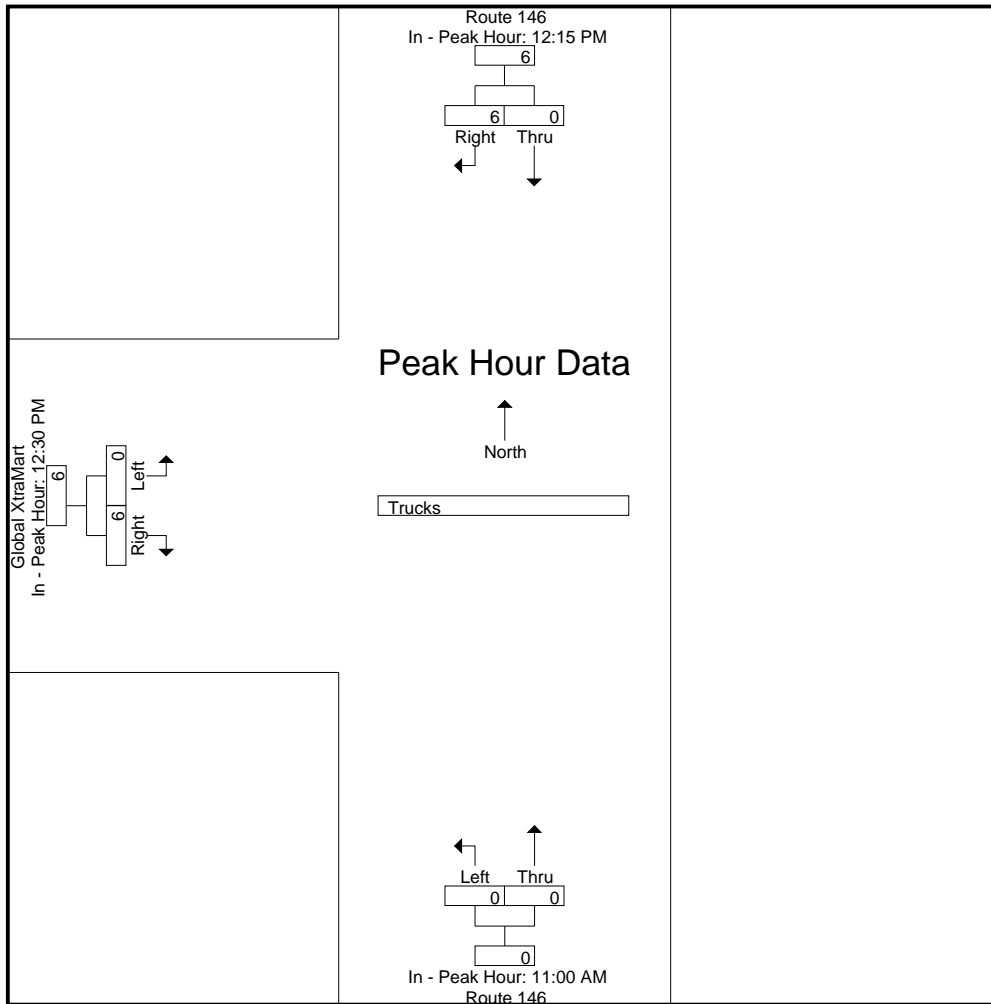
N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



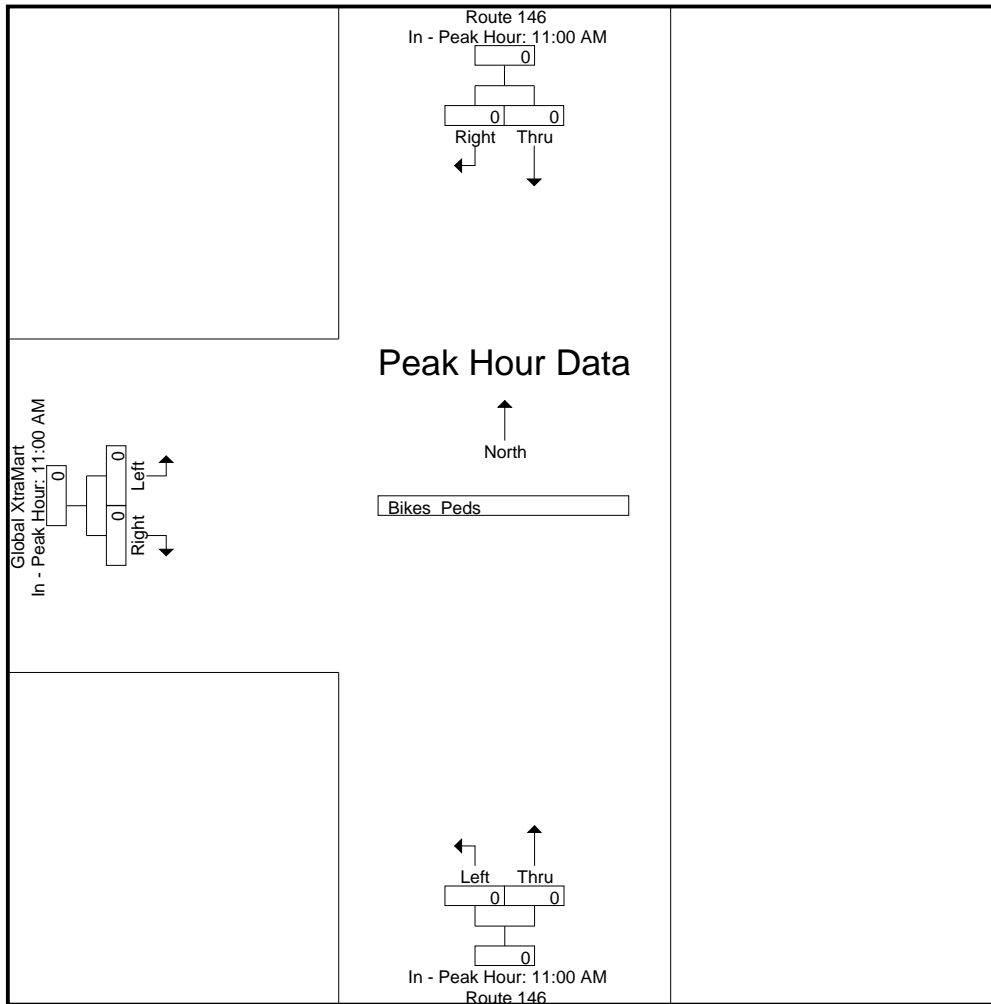
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:15 PM			11:00 AM			12:30 PM		
+0 mins.	0	2	2	0	0	0	0	2	2
+15 mins.	0	1	1	0	0	0	0	1	1
+30 mins.	0	1	1	0	0	0	0	2	2
+45 mins.	0	2	2	0	0	0	0	1	1
Total Volume	0	6	6	0	0	0	0	6	6
% App. Total	0	100		0	0		0	100	
PHF	.000	.750	.750	.000	.000	.000	.000	.750	.750

N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



N/S Street : Route 146
E/W Street : Global XtraMart
City/State : Milbury, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 1

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
12:00 AM	0	0	0	0	0	1	1
12:15 AM	0	0	0	3	0	1	4
12:30 AM	0	0	0	1	0	1	2
12:45 AM	0	0	0	0	0	0	0
Total	0	0	0	4	0	3	7
01:00 AM	0	0	0	0	0	0	0
01:15 AM	0	0	0	0	0	1	1
01:30 AM	0	0	0	1	0	1	2
01:45 AM	0	0	0	1	0	0	1
Total	0	0	0	2	0	2	4
02:00 AM	0	0	0	0	0	0	0
02:15 AM	0	0	0	0	0	1	1
02:30 AM	0	0	0	3	0	3	6
02:45 AM	0	0	0	1	0	0	1
Total	0	0	0	4	0	4	8
03:00 AM	0	0	0	0	0	0	0
03:15 AM	0	0	0	1	0	0	1
03:30 AM	0	0	0	5	0	4	9
03:45 AM	0	0	0	6	0	9	15
Total	0	0	0	12	0	13	25
04:00 AM	0	0	0	5	0	5	10
04:15 AM	0	0	0	3	0	5	8
04:30 AM	0	0	0	4	0	6	10
04:45 AM	0	0	0	11	0	11	22
Total	0	0	0	23	0	27	50
05:00 AM	0	0	0	23	0	31	54
05:15 AM	0	0	0	34	0	24	58
05:30 AM	0	0	0	34	0	37	71
05:45 AM	0	0	0	28	0	30	58
Total	0	0	0	119	0	122	241
06:00 AM	0	0	0	41	0	58	99
06:15 AM	0	0	0	54	0	44	98
06:30 AM	0	0	0	41	0	39	80
06:45 AM	0	0	0	41	0	46	87
Total	0	0	0	177	0	187	364
07:00 AM	0	0	0	41	0	42	83
07:15 AM	0	0	0	50	1	49	100
07:30 AM	0	0	0	40	0	47	87
07:45 AM	0	0	0	51	0	47	98
Total	0	0	0	182	1	185	368
08:00 AM	0	0	0	46	0	45	91
08:15 AM	0	0	0	39	0	37	76
08:30 AM	0	0	0	39	0	36	75
08:45 AM	0	0	0	39	0	31	70
Total	0	0	0	163	0	149	312
09:00 AM	0	0	0	31	0	30	61
09:15 AM	0	0	0	41	0	38	79
09:30 AM	0	0	0	36	0	28	64
09:45 AM	0	0	0	20	0	25	45
Total	0	0	0	128	0	121	249
10:00 AM	0	0	0	24	0	23	47
10:15 AM	0	0	0	20	0	19	39

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 2

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
10:30 AM	0	0	0	21	0	25	46
10:45 AM	0	0	0	21	0	21	42
Total	0	0	0	86	0	88	174
11:00 AM	0	0	0	25	0	25	50
11:15 AM	0	0	0	25	0	23	48
11:30 AM	0	0	0	24	0	22	46
11:45 AM	0	0	0	18	0	17	35
Total	0	0	0	92	0	87	179
12:00 PM	0	0	0	27	0	26	53
12:15 PM	0	0	0	28	0	16	44
12:30 PM	0	0	0	21	0	22	43
12:45 PM	0	0	0	29	0	23	52
Total	0	0	0	105	0	87	192
01:00 PM	0	0	0	18	0	19	37
01:15 PM	0	0	0	23	0	29	52
01:30 PM	0	0	0	27	0	23	50
01:45 PM	0	0	0	22	0	28	50
Total	0	0	0	90	0	99	189
02:00 PM	0	0	0	28	0	18	46
02:15 PM	0	0	0	8	0	9	17
02:30 PM	0	0	0	17	0	26	43
02:45 PM	0	0	0	31	0	23	54
Total	0	0	0	84	0	76	160
03:00 PM	0	0	0	19	0	24	43
03:15 PM	0	0	0	24	0	22	46
03:30 PM	0	0	0	22	0	24	46
03:45 PM	0	0	0	23	0	24	47
Total	0	0	0	88	0	94	182
04:00 PM	0	0	0	23	0	18	41
04:15 PM	0	0	0	21	0	19	40
04:30 PM	0	0	0	20	0	16	36
04:45 PM	0	0	0	23	0	18	41
Total	0	0	0	87	0	71	158
05:00 PM	0	0	0	18	0	17	35
05:15 PM	0	0	0	17	0	15	32
05:30 PM	0	0	0	11	0	18	29
05:45 PM	0	0	0	20	0	18	38
Total	0	0	0	66	0	68	134
06:00 PM	0	0	0	17	0	16	33
06:15 PM	0	0	0	11	0	9	20
06:30 PM	0	0	0	12	0	10	22
06:45 PM	0	0	0	7	0	6	13
Total	0	0	0	47	0	41	88
07:00 PM	0	0	0	9	0	10	19
07:15 PM	0	0	0	15	0	11	26
07:30 PM	0	0	0	6	0	7	13
07:45 PM	0	0	0	6	0	4	10
Total	0	0	0	36	0	32	68
08:00 PM	0	0	0	4	0	7	11
08:15 PM	0	0	0	7	0	7	14
08:30 PM	0	0	0	4	0	2	6
08:45 PM	0	0	0	6	0	3	9
Total	0	0	0	21	0	19	40

Accurate Counts

978-664-2565

N/S Street : Route 146
 E/W Street : XtraMart
 City/State : Sutton, MA
 Weather : Clear

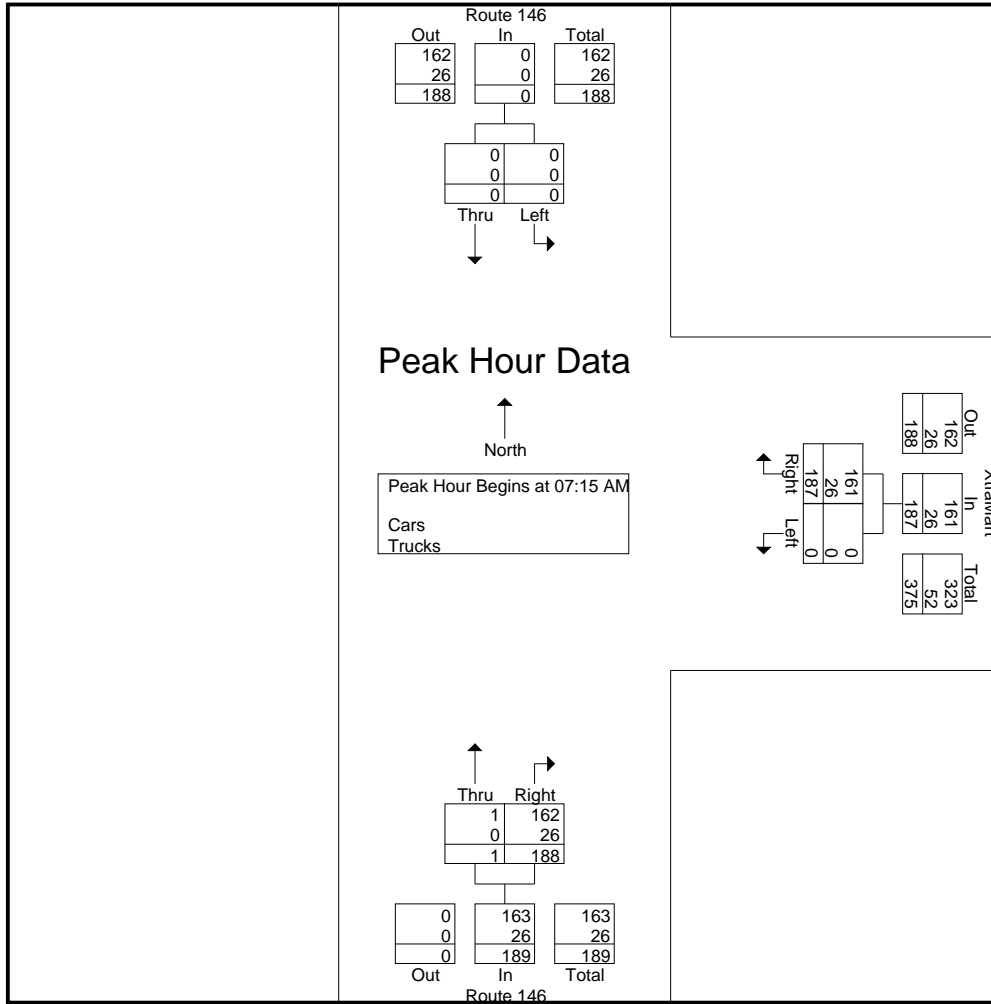
File Name : 87070002
 Site Code : 87070002
 Start Date : 1/8/2021
 Page No : 3

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
09:00 PM	0	0	0	2	0	3	5
09:15 PM	0	0	0	3	0	4	7
09:30 PM	0	0	0	2	0	3	5
09:45 PM	0	0	0	4	0	4	8
Total	0	0	0	11	0	14	25
10:00 PM	0	0	0	5	0	2	7
10:15 PM	0	0	0	7	0	8	15
10:30 PM	0	0	0	2	0	3	5
10:45 PM	0	0	0	4	0	4	8
Total	0	0	0	18	0	17	35
11:00 PM	0	0	0	8	0	4	12
11:15 PM	0	0	0	0	0	2	2
11:30 PM	0	0	0	3	0	1	4
11:45 PM	0	0	0	3	0	4	7
Total	0	0	0	14	0	11	25
Grand Total	0	0	0	1659	1	1617	3277
Apprch %	0	0	0	100	0.1	99.9	
Total %	0	0	0	50.6	0	49.3	
Cars	0	0	0	1475	1	1442	2918
% Cars	0	0	0	88.9	100	89.2	89
Trucks	0	0	0	184	0	175	359
% Trucks	0	0	0	11.1	0	10.8	11

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	50	50	1	49	50	100
07:30 AM	0	0	0	0	40	40	0	47	47	87
07:45 AM	0	0	0	0	51	51	0	47	47	98
08:00 AM	0	0	0	0	46	46	0	45	45	91
Total Volume	0	0	0	0	187	187	1	188	189	376
% App. Total	0	0		0	100		0.5	99.5		
PHF	.000	.000	.000	.000	.917	.917	.250	.959	.945	.940
Cars	0	0	0	0	161	161	1	162	163	324
% Cars	0	0	0	0	86.1	86.1	100	86.2	86.2	86.2
Trucks	0	0	0	0	26	26	0	26	26	52
% Trucks	0	0	0	0	13.9	13.9	0	13.8	13.8	13.8

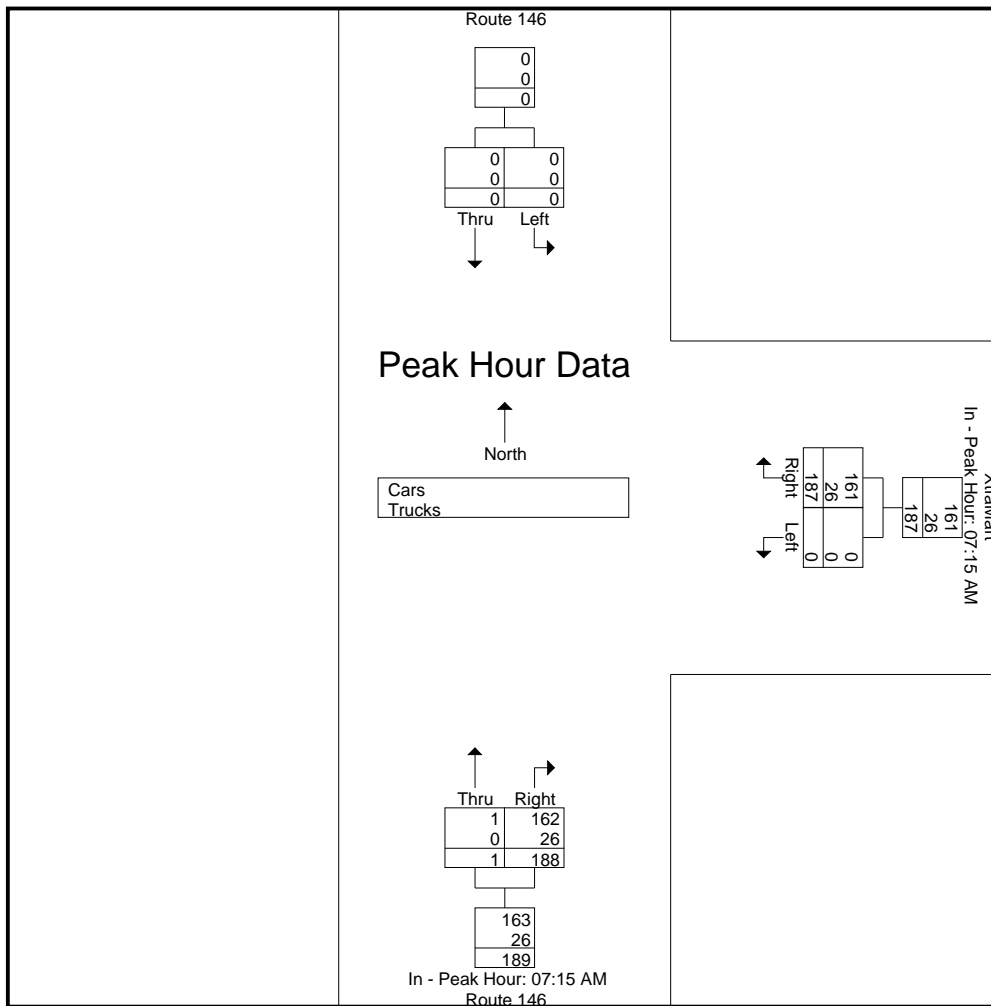
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	50	50	1	49	50
+15 mins.	0	0	0	0	40	40	0	47	47
+30 mins.	0	0	0	0	51	51	0	47	47
+45 mins.	0	0	0	0	46	46	0	45	45
Total Volume	0	0	0	0	187	187	1	188	189
% App. Total	0	0	0	0	100	100	0.5	99.5	100
PHF	.000	.000	.000	.000	.917	.917	.250	.959	.945
Cars	0	0	0	0	161	161	1	162	163
% Cars	0	0	0	0	86.1	86.1	100	86.2	86.2
Trucks	0	0	0	0	26	26	0	26	26
% Trucks	0	0	0	0	13.9	13.9	0	13.8	13.8

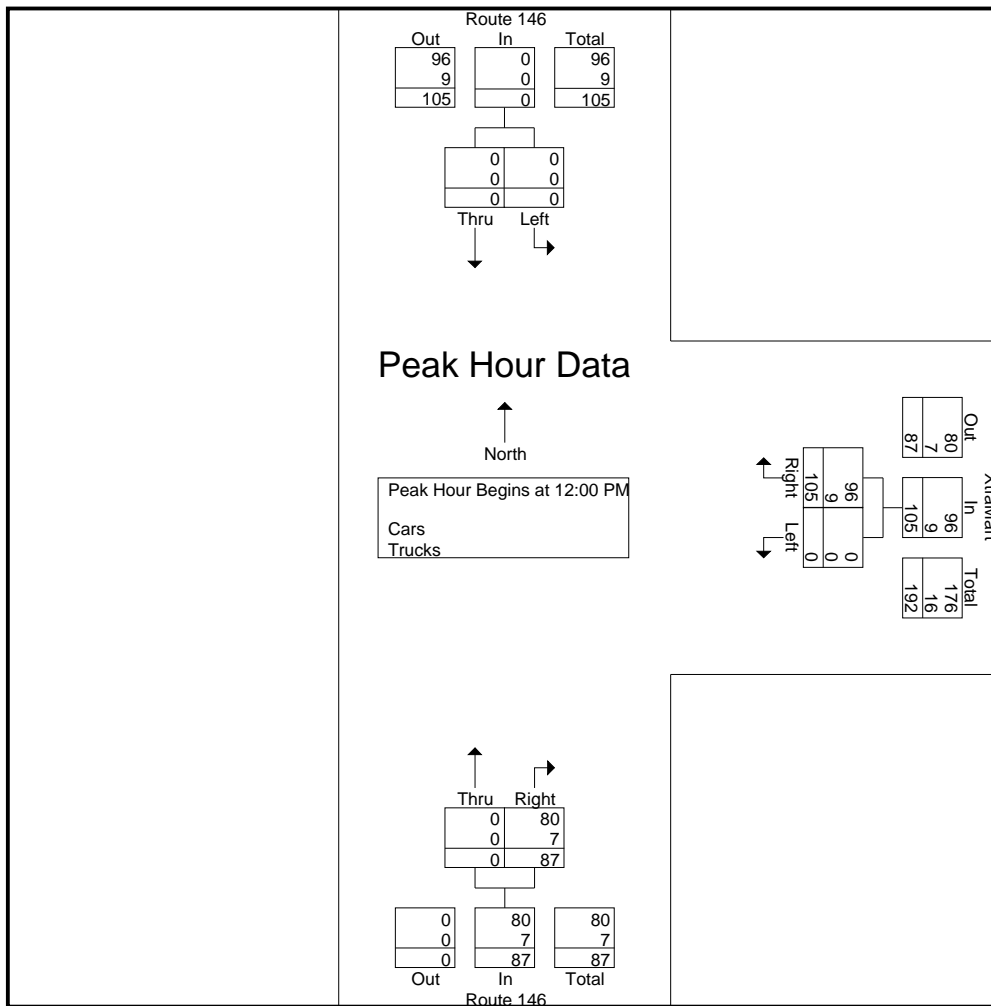
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:00 PM

12:00 PM	0	0	0	0	27	27	0	26	26	53
12:15 PM	0	0	0	0	28	28	0	16	16	44
12:30 PM	0	0	0	0	21	21	0	22	22	43
12:45 PM	0	0	0	0	29	29	0	23	23	52
Total Volume	0	0	0	0	105	105	0	87	87	192
% App. Total	0	0	0	0	100	100	0	100	100	100
PHF	.000	.000	.000	.000	.905	.905	.000	.837	.837	.906
Cars	0	0	0	0	96	96	0	80	80	176
% Cars	0	0	0	0	91.4	91.4	0	92.0	92.0	91.7
Trucks	0	0	0	0	9	9	0	7	7	16
% Trucks	0	0	0	0	8.6	8.6	0	8.0	8.0	8.3

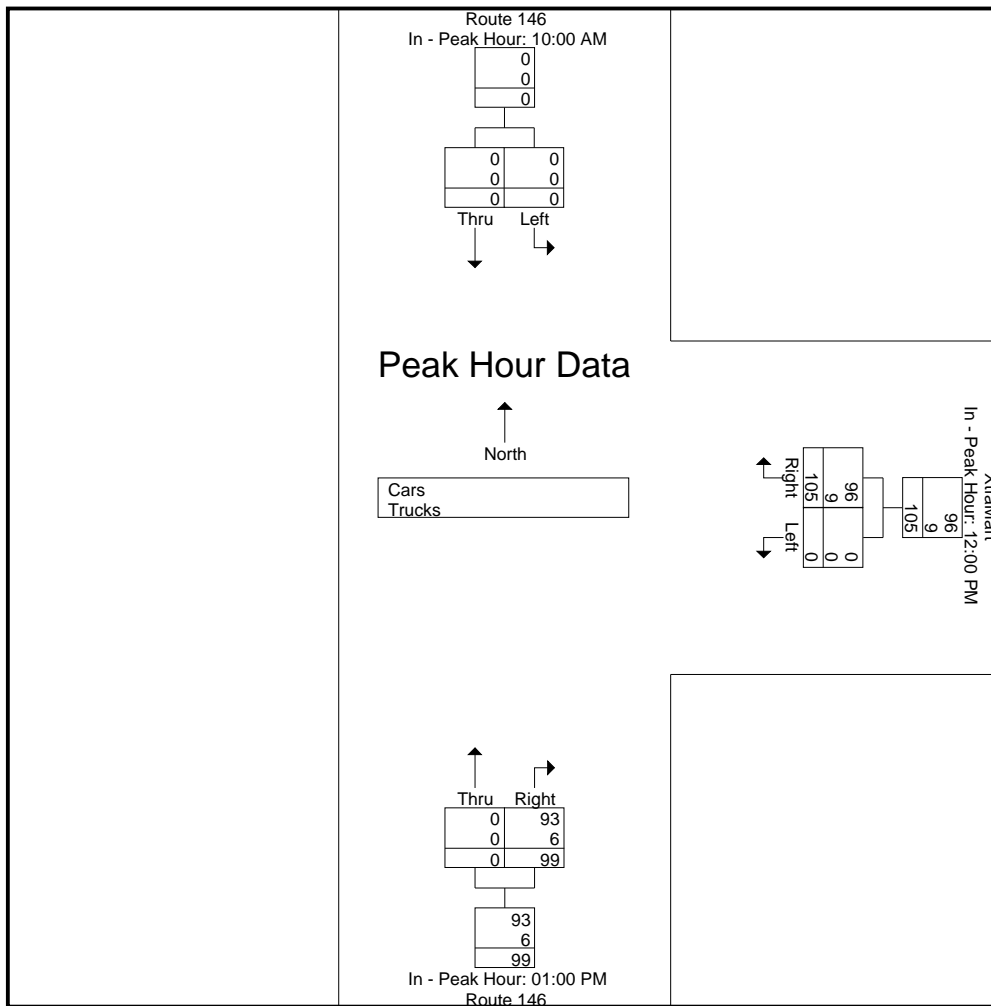
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:00 AM			12:00 PM			01:00 PM		
+0 mins.	0	0	0	0	27	27	0	19	19
+15 mins.	0	0	0	0	28	28	0	29	29
+30 mins.	0	0	0	0	21	21	0	23	23
+45 mins.	0	0	0	0	29	29	0	28	28
Total Volume	0	0	0	0	105	105	0	99	99
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.905	.905	.000	.853	.853
Cars	0	0	0	0	96	96	0	93	93
% Cars	0	0	0	0	91.4	91.4	0	93.9	93.9
Trucks	0	0	0	0	9	9	0	6	6
% Trucks	0	0	0	0	8.6	8.6	0	6.1	6.1

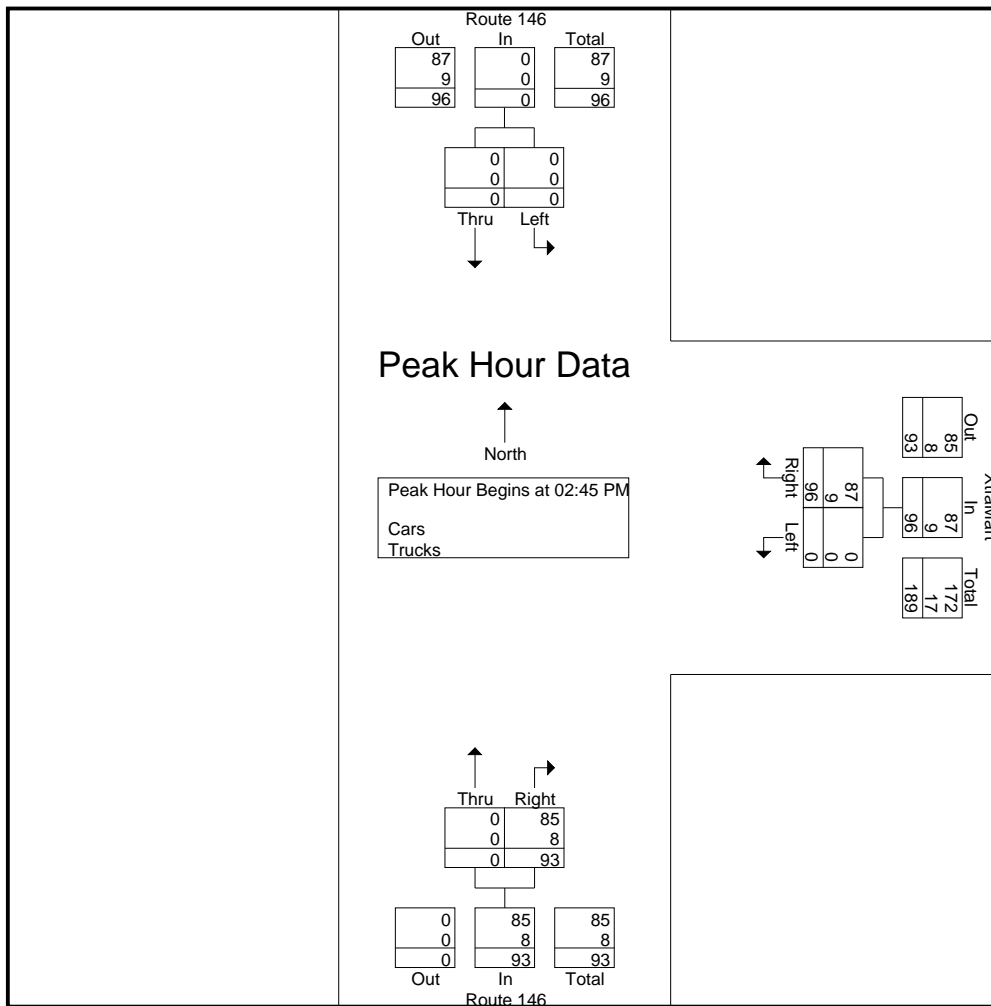
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:45 PM

02:45 PM	0	0	0	0	31	31	0	23	23	54
03:00 PM	0	0	0	0	19	19	0	24	24	43
03:15 PM	0	0	0	0	24	24	0	22	22	46
03:30 PM	0	0	0	0	22	22	0	24	24	46
Total Volume	0	0	0	0	96	96	0	93	93	189
% App. Total	0	0	0	0	100	100	0	100	100	100
PHF	.000	.000	.000	.000	.774	.774	.000	.969	.969	.875
Cars	0	0	0	0	87	87	0	85	85	172
% Cars	0	0	0	0	90.6	90.6	0	91.4	91.4	91.0
Trucks	0	0	0	0	9	9	0	8	8	17
% Trucks	0	0	0	0	9.4	9.4	0	8.6	8.6	9.0

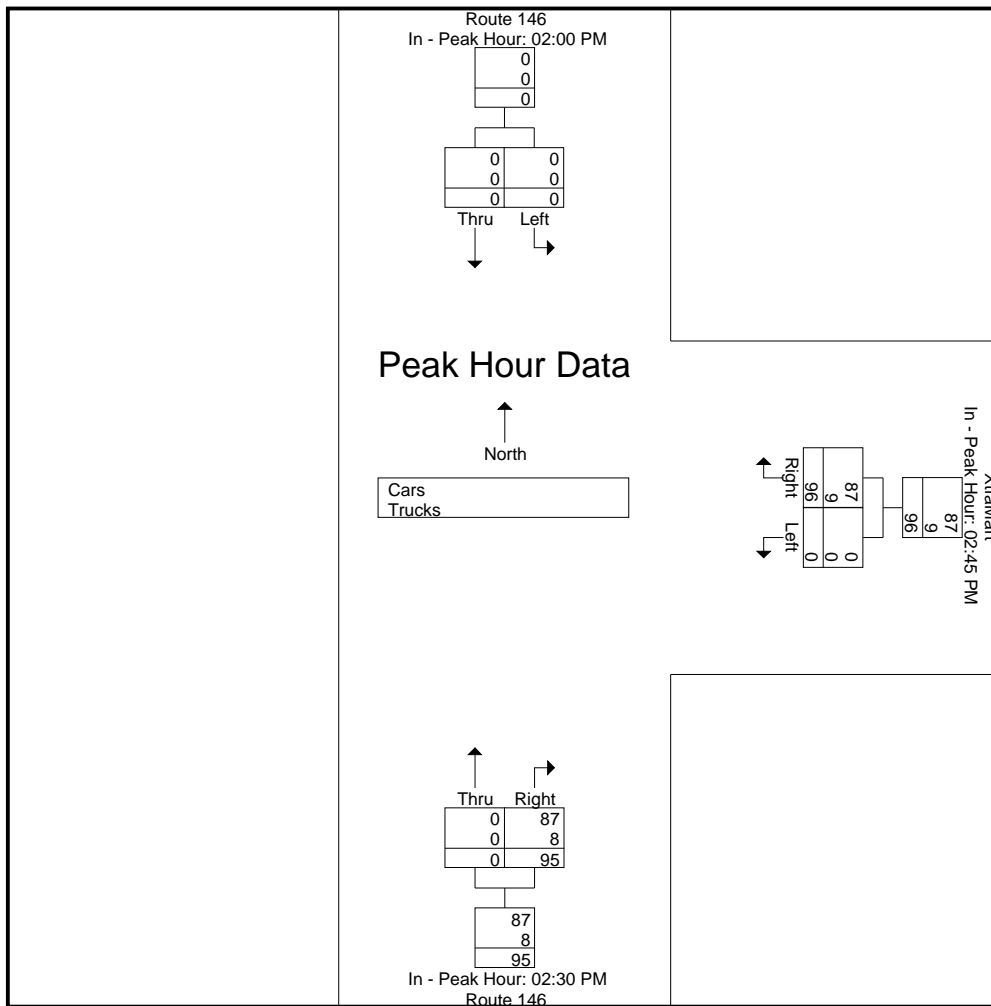
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:45 PM			02:30 PM		
+0 mins.	0	0	0	0	31	31	0	26	26
+15 mins.	0	0	0	0	19	19	0	23	23
+30 mins.	0	0	0	0	24	24	0	24	24
+45 mins.	0	0	0	0	22	22	0	22	22
Total Volume	0	0	0	0	96	96	0	95	95
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.774	.774	.000	.913	.913
Cars	0	0	0	0	87	87	0	87	87
% Cars	0	0	0	0	90.6	90.6	0	91.6	91.6
Trucks	0	0	0	0	9	9	0	8	8
% Trucks	0	0	0	0	9.4	9.4	0	8.4	8.4

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 10

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

Groups Printed- Cars

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
12:00 AM	0	0	0	0	0	1	1
12:15 AM	0	0	0	2	0	1	3
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	4
01:00 AM	0	0	0	0	0	0	0
01:15 AM	0	0	0	0	0	0	0
01:30 AM	0	0	0	0	0	1	1
01:45 AM	0	0	0	1	0	0	1
Total	0	0	0	1	0	1	2
02:00 AM	0	0	0	0	0	0	0
02:15 AM	0	0	0	0	0	1	1
02:30 AM	0	0	0	3	0	2	5
02:45 AM	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	6
03:00 AM	0	0	0	0	0	0	0
03:15 AM	0	0	0	1	0	0	1
03:30 AM	0	0	0	5	0	4	9
03:45 AM	0	0	0	5	0	6	11
Total	0	0	0	11	0	10	21
04:00 AM	0	0	0	3	0	4	7
04:15 AM	0	0	0	1	0	3	4
04:30 AM	0	0	0	3	0	3	6
04:45 AM	0	0	0	8	0	7	15
Total	0	0	0	15	0	17	32
05:00 AM	0	0	0	15	0	25	40
05:15 AM	0	0	0	30	0	23	53
05:30 AM	0	0	0	33	0	36	69
05:45 AM	0	0	0	28	0	29	57
Total	0	0	0	106	0	113	219
06:00 AM	0	0	0	35	0	51	86
06:15 AM	0	0	0	48	0	40	88
06:30 AM	0	0	0	38	0	37	75
06:45 AM	0	0	0	37	0	40	77
Total	0	0	0	158	0	168	326
07:00 AM	0	0	0	38	0	40	78
07:15 AM	0	0	0	45	1	41	87
07:30 AM	0	0	0	33	0	40	73
07:45 AM	0	0	0	43	0	40	83
Total	0	0	0	159	1	161	321
08:00 AM	0	0	0	40	0	41	81
08:15 AM	0	0	0	33	0	33	66
08:30 AM	0	0	0	33	0	31	64
08:45 AM	0	0	0	34	0	28	62
Total	0	0	0	140	0	133	273
09:00 AM	0	0	0	30	0	26	56
09:15 AM	0	0	0	35	0	31	66
09:30 AM	0	0	0	30	0	28	58
09:45 AM	0	0	0	19	0	23	42
Total	0	0	0	114	0	108	222
10:00 AM	0	0	0	21	0	20	41
10:15 AM	0	0	0	19	0	19	38
10:30 AM	0	0	0	18	0	19	37
10:45 AM	0	0	0	17	0	16	33
Total	0	0	0	75	0	74	149

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 11

Groups Printed- Cars

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	24	0	24	48
11:15 AM	0	0	0	24	0	22	46
11:30 AM	0	0	0	22	0	20	42
11:45 AM	0	0	0	14	0	15	29
Total	0	0	0	84	0	81	165
12:00 PM	0	0	0	26	0	26	52
12:15 PM	0	0	0	28	0	14	42
12:30 PM	0	0	0	20	0	19	39
12:45 PM	0	0	0	22	0	21	43
Total	0	0	0	96	0	80	176
01:00 PM	0	0	0	18	0	16	34
01:15 PM	0	0	0	20	0	28	48
01:30 PM	0	0	0	26	0	23	49
01:45 PM	0	0	0	22	0	26	48
Total	0	0	0	86	0	93	179
02:00 PM	0	0	0	26	0	17	43
02:15 PM	0	0	0	8	0	7	15
02:30 PM	0	0	0	15	0	24	39
02:45 PM	0	0	0	27	0	20	47
Total	0	0	0	76	0	68	144
03:00 PM	0	0	0	17	0	22	39
03:15 PM	0	0	0	21	0	21	42
03:30 PM	0	0	0	22	0	22	44
03:45 PM	0	0	0	23	0	21	44
Total	0	0	0	83	0	86	169
04:00 PM	0	0	0	17	0	17	34
04:15 PM	0	0	0	21	0	18	39
04:30 PM	0	0	0	19	0	15	34
04:45 PM	0	0	0	22	0	17	39
Total	0	0	0	79	0	67	146
05:00 PM	0	0	0	17	0	17	34
05:15 PM	0	0	0	17	0	14	31
05:30 PM	0	0	0	10	0	16	26
05:45 PM	0	0	0	18	0	16	34
Total	0	0	0	62	0	63	125
06:00 PM	0	0	0	15	0	15	30
06:15 PM	0	0	0	10	0	8	18
06:30 PM	0	0	0	11	0	9	20
06:45 PM	0	0	0	6	0	5	11
Total	0	0	0	42	0	37	79
07:00 PM	0	0	0	7	0	8	15
07:15 PM	0	0	0	14	0	11	25
07:30 PM	0	0	0	5	0	6	11
07:45 PM	0	0	0	6	0	4	10
Total	0	0	0	32	0	29	61
08:00 PM	0	0	0	4	0	6	10
08:15 PM	0	0	0	6	0	3	9
08:30 PM	0	0	0	0	0	1	1
08:45 PM	0	0	0	4	0	2	6
Total	0	0	0	14	0	12	26
09:00 PM	0	0	0	2	0	2	4
09:15 PM	0	0	0	2	0	3	5
09:30 PM	0	0	0	1	0	3	4
09:45 PM	0	0	0	3	0	3	6
Total	0	0	0	8	0	11	19

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

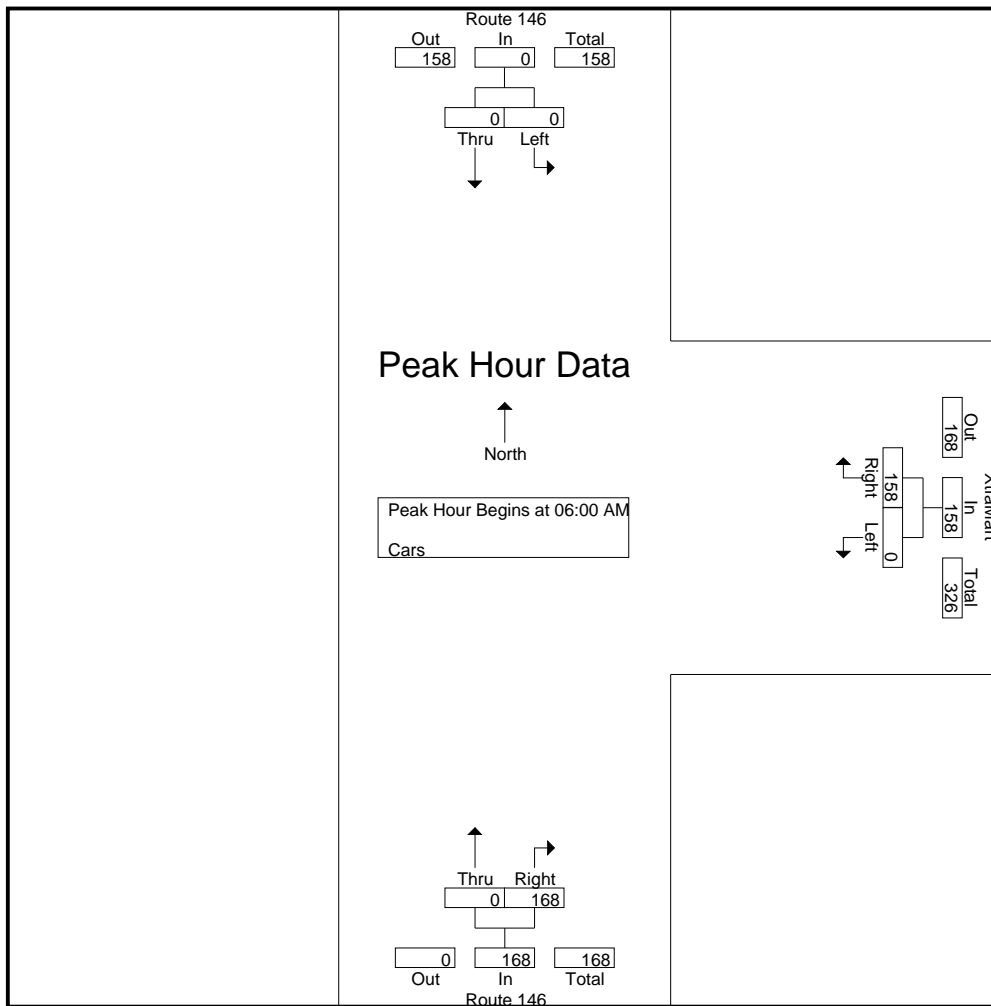
File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 12

Groups Printed- Cars

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
10:00 PM	0	0	0	4	0	2	6
10:15 PM	0	0	0	6	0	7	13
10:30 PM	0	0	0	2	0	3	5
10:45 PM	0	0	0	4	0	3	7
Total	0	0	0	16	0	15	31
11:00 PM	0	0	0	7	0	4	11
11:15 PM	0	0	0	0	0	2	2
11:30 PM	0	0	0	3	0	1	4
11:45 PM	0	0	0	3	0	3	6
Total	0	0	0	13	0	10	23
Grand Total	0	0	0	1475	1	1442	2918
Apprch %	0	0	0	100	0.1	99.9	
Total %	0	0	0	50.5	0	49.4	

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 06:00 AM										
06:00 AM	0	0	0	0	35	35	0	51	51	86
06:15 AM	0	0	0	0	48	48	0	40	40	88
06:30 AM	0	0	0	0	38	38	0	37	37	75
06:45 AM	0	0	0	0	37	37	0	40	40	77
Total Volume	0	0	0	0	158	158	0	168	168	326
% App. Total	0	0		0	100		0	100		
PHF	.000	.000	.000	.000	.823	.823	.000	.824	.824	.926

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



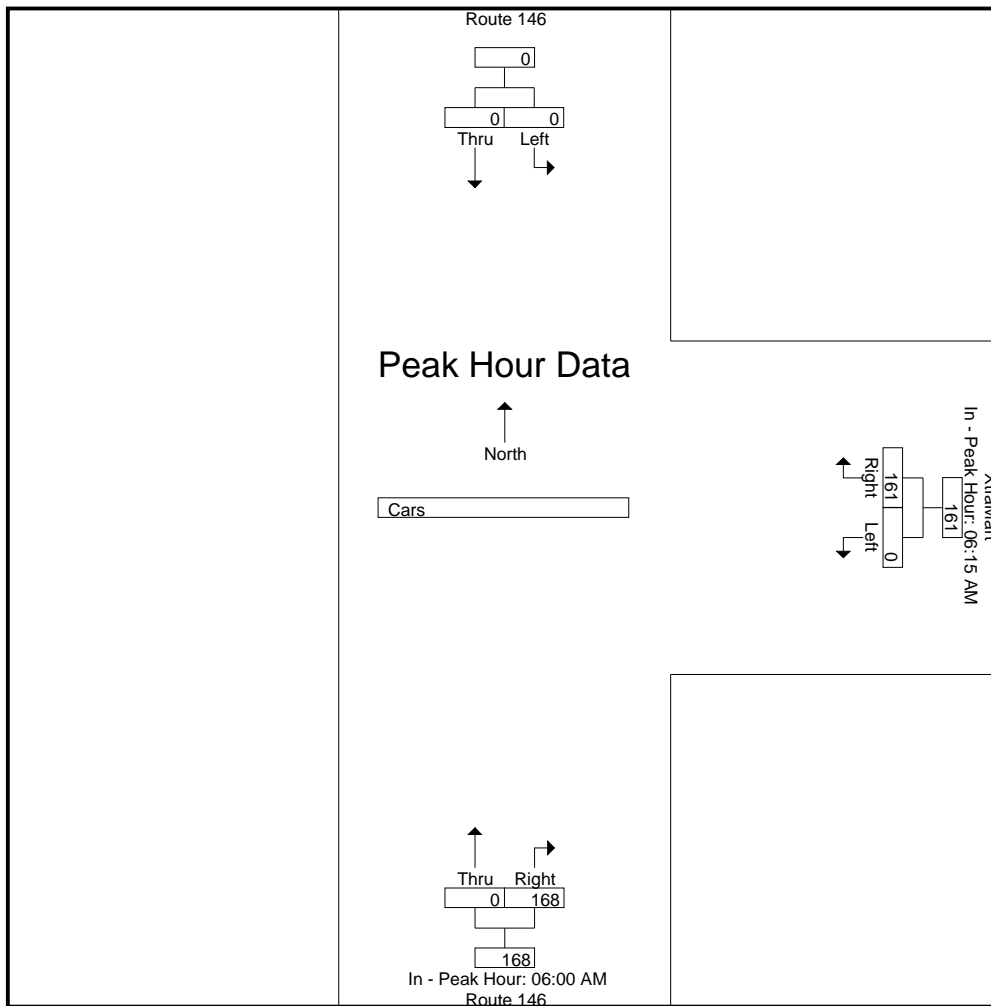
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 AM			06:15 AM			06:00 AM		
+0 mins.	0	0	0	0	48	48	0	51	51
+15 mins.	0	0	0	0	38	38	0	40	40
+30 mins.	0	0	0	0	37	37	0	37	37
+45 mins.	0	0	0	0	38	38	0	40	40
Total Volume	0	0	0	0	161	161	0	168	168
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.839	.839	.000	.824	.824

Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 14

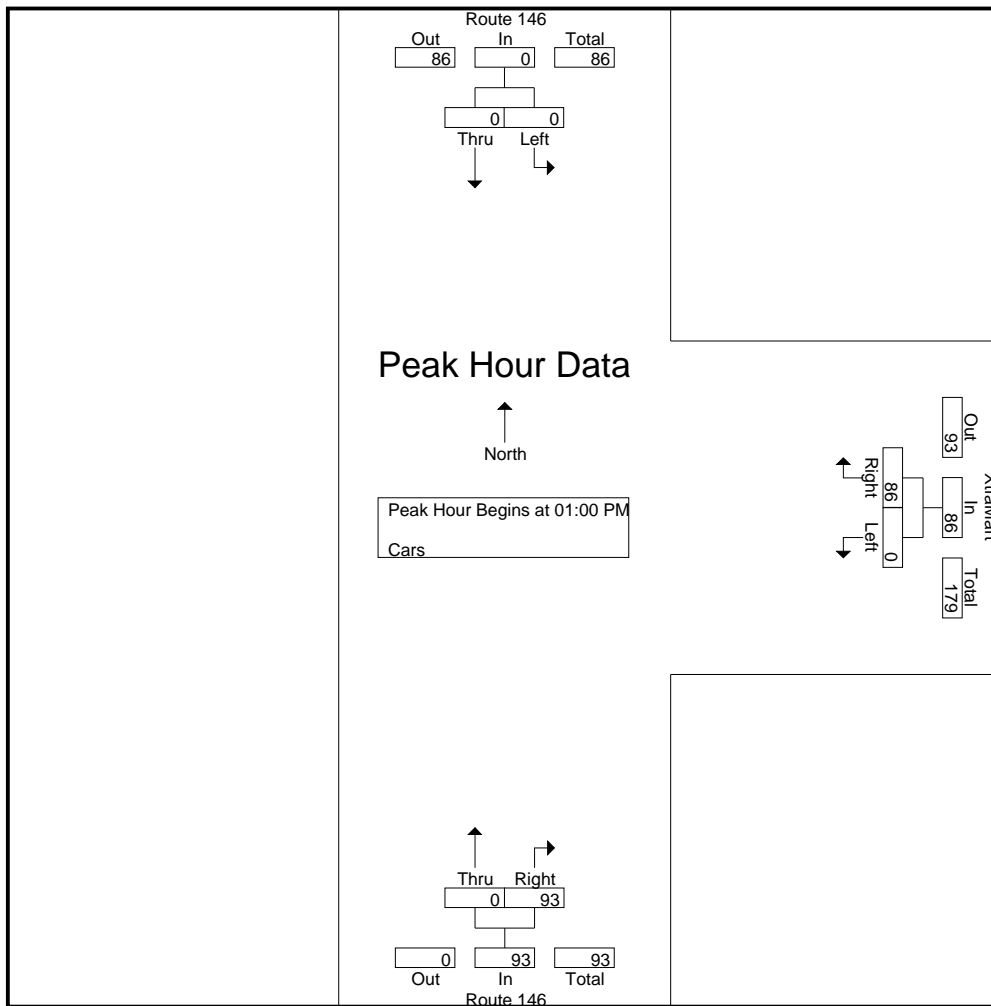
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 01:00 PM

01:00 PM	0	0	0	0	18	18	0	16	16	34
01:15 PM	0	0	0	0	20	20	0	28	28	48
01:30 PM	0	0	0	0	26	26	0	23	23	49
01:45 PM	0	0	0	0	22	22	0	26	26	48
Total Volume	0	0	0	0	86	86	0	93	93	179
% App. Total	0	0	0	0	100	100	0	100	100	100
PHF	.000	.000	.000	.000	.827	.827	.000	.830	.830	.913

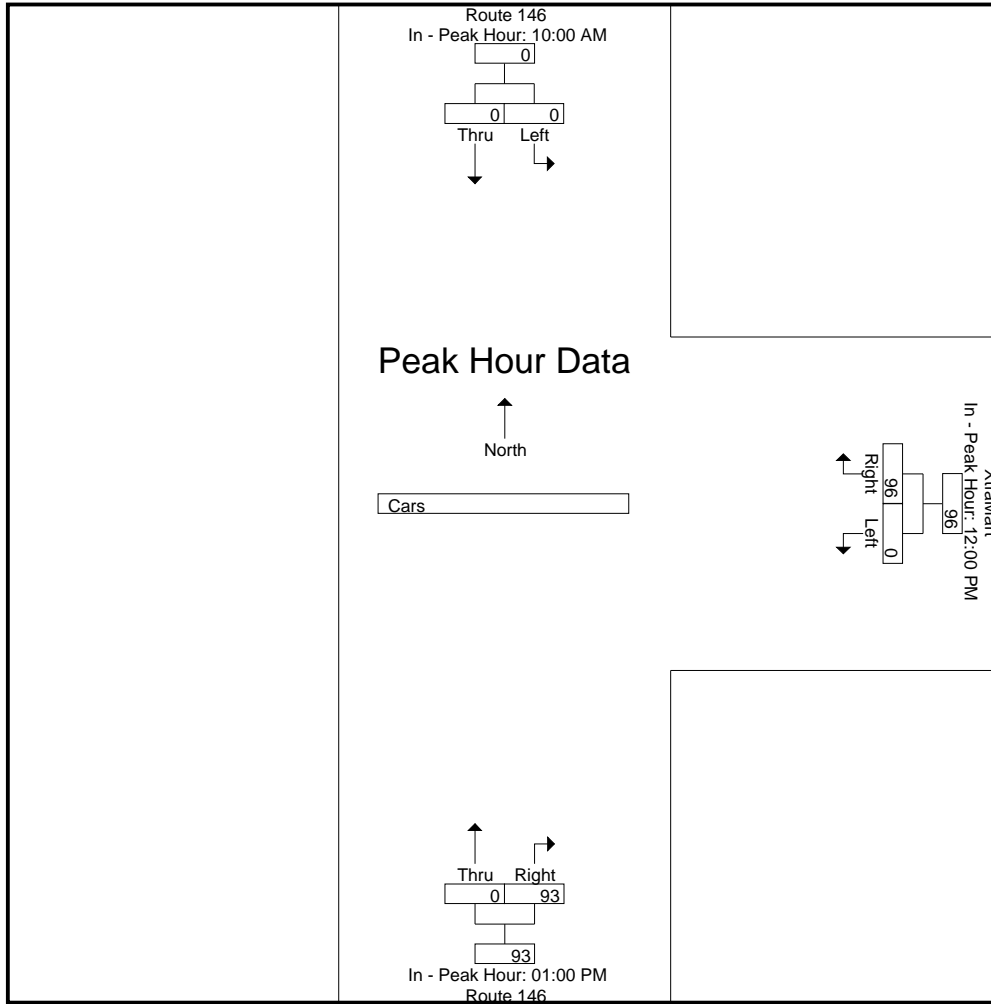
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:00 AM			12:00 PM			01:00 PM		
+0 mins.	0	0	0	0	26	26	0	16	16
+15 mins.	0	0	0	0	28	28	0	28	28
+30 mins.	0	0	0	0	20	20	0	23	23
+45 mins.	0	0	0	0	22	22	0	26	26
Total Volume	0	0	0	0	96	96	0	93	93
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.857	.857	.000	.830	.830

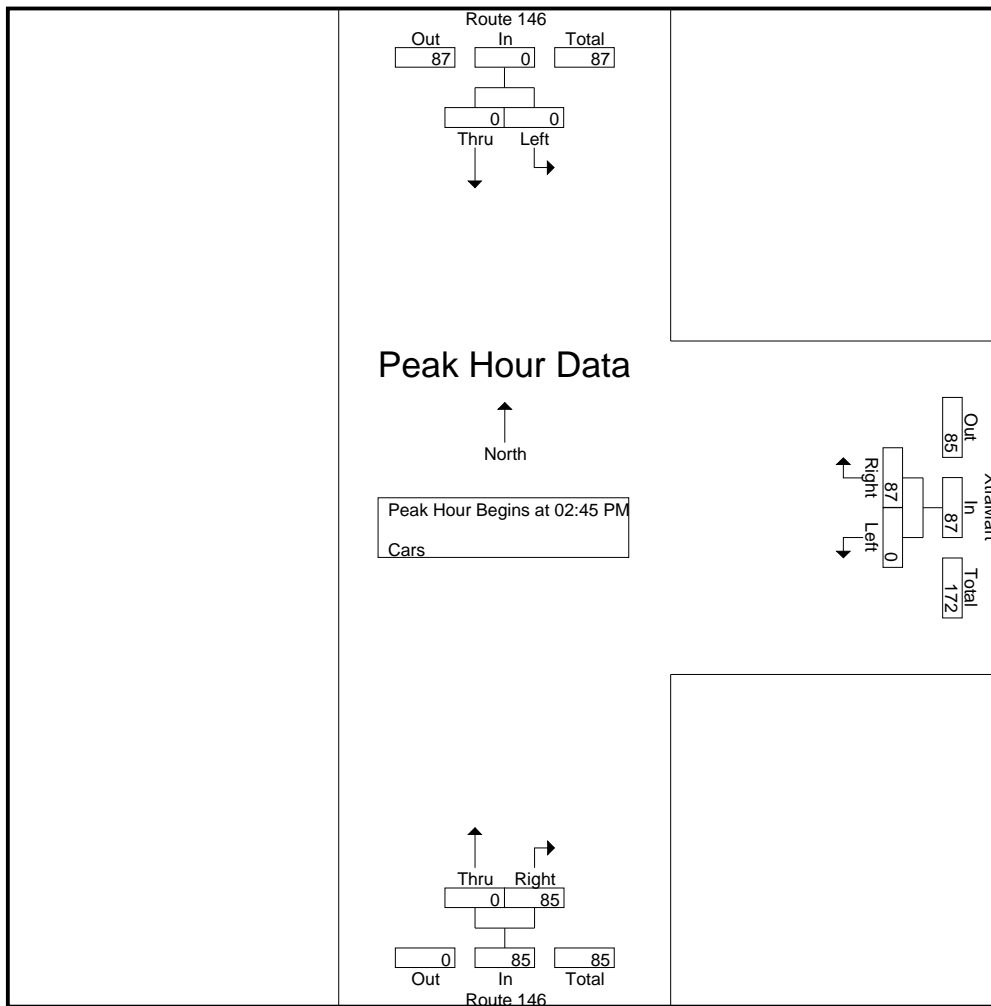
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:45 PM

02:45 PM	0	0	0	0	27	27	0	20	20	47
03:00 PM	0	0	0	0	17	17	0	22	22	39
03:15 PM	0	0	0	0	21	21	0	21	21	42
03:30 PM	0	0	0	0	22	22	0	22	22	44
Total Volume	0	0	0	0	87	87	0	85	85	172
% App. Total	0	0	0	0	100	100	0	100	100	100
PHF	.000	.000	.000	.000	.806	.806	.000	.966	.966	.915

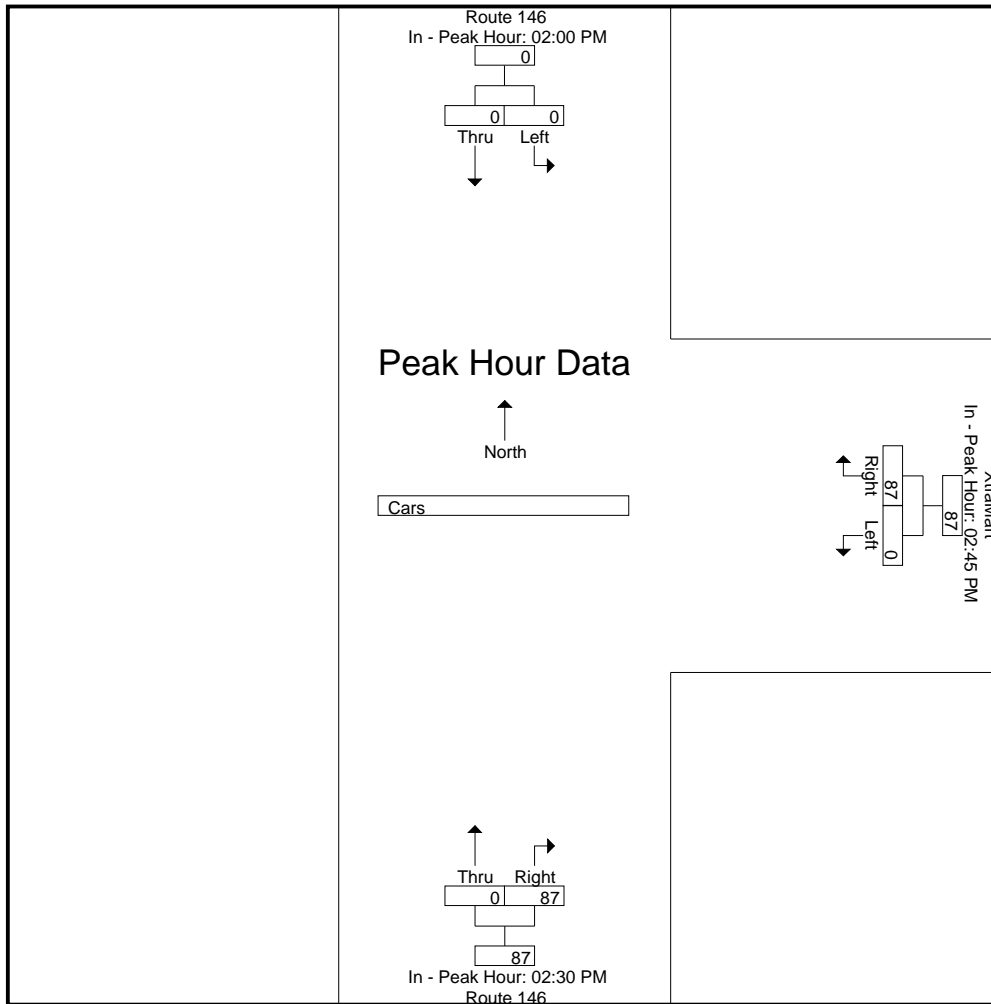
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:45 PM			02:30 PM		
+0 mins.	0	0	0	0	27	27	0	24	24
+15 mins.	0	0	0	0	17	17	0	20	20
+30 mins.	0	0	0	0	21	21	0	22	22
+45 mins.	0	0	0	0	22	22	0	21	21
Total Volume	0	0	0	0	87	87	0	87	87
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.806	.806	.000	.906	.906

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 19

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

Groups Printed- Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	1	0	0	1
12:30 AM	0	0	0	1	0	1	2
12:45 AM	0	0	0	0	0	0	0
Total	0	0	0	2	0	1	3
01:00 AM	0	0	0	0	0	0	0
01:15 AM	0	0	0	0	0	1	1
01:30 AM	0	0	0	1	0	0	1
01:45 AM	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	2
02:00 AM	0	0	0	0	0	0	0
02:15 AM	0	0	0	0	0	0	0
02:30 AM	0	0	0	0	0	1	1
02:45 AM	0	0	0	1	0	0	1
Total	0	0	0	1	0	1	2
03:00 AM	0	0	0	0	0	0	0
03:15 AM	0	0	0	0	0	0	0
03:30 AM	0	0	0	0	0	0	0
03:45 AM	0	0	0	1	0	3	4
Total	0	0	0	1	0	3	4
04:00 AM	0	0	0	2	0	1	3
04:15 AM	0	0	0	2	0	2	4
04:30 AM	0	0	0	1	0	3	4
04:45 AM	0	0	0	3	0	4	7
Total	0	0	0	8	0	10	18
05:00 AM	0	0	0	8	0	6	14
05:15 AM	0	0	0	4	0	1	5
05:30 AM	0	0	0	1	0	1	2
05:45 AM	0	0	0	0	0	1	1
Total	0	0	0	13	0	9	22
06:00 AM	0	0	0	6	0	7	13
06:15 AM	0	0	0	6	0	4	10
06:30 AM	0	0	0	3	0	2	5
06:45 AM	0	0	0	4	0	6	10
Total	0	0	0	19	0	19	38
07:00 AM	0	0	0	3	0	2	5
07:15 AM	0	0	0	5	0	8	13
07:30 AM	0	0	0	7	0	7	14
07:45 AM	0	0	0	8	0	7	15
Total	0	0	0	23	0	24	47
08:00 AM	0	0	0	6	0	4	10
08:15 AM	0	0	0	6	0	4	10
08:30 AM	0	0	0	6	0	5	11
08:45 AM	0	0	0	5	0	3	8
Total	0	0	0	23	0	16	39
09:00 AM	0	0	0	1	0	4	5
09:15 AM	0	0	0	6	0	7	13
09:30 AM	0	0	0	6	0	0	6
09:45 AM	0	0	0	1	0	2	3
Total	0	0	0	14	0	13	27
10:00 AM	0	0	0	3	0	3	6
10:15 AM	0	0	0	1	0	0	1
10:30 AM	0	0	0	3	0	6	9
10:45 AM	0	0	0	4	0	5	9
Total	0	0	0	11	0	14	25

Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 20

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

Groups Printed- Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	1	0	1	2
11:15 AM	0	0	0	1	0	1	2
11:30 AM	0	0	0	2	0	2	4
11:45 AM	0	0	0	4	0	2	6
Total	0	0	0	8	0	6	14
12:00 PM	0	0	0	1	0	0	1
12:15 PM	0	0	0	0	0	2	2
12:30 PM	0	0	0	1	0	3	4
12:45 PM	0	0	0	7	0	2	9
Total	0	0	0	9	0	7	16
01:00 PM	0	0	0	0	0	3	3
01:15 PM	0	0	0	3	0	1	4
01:30 PM	0	0	0	1	0	0	1
01:45 PM	0	0	0	0	0	2	2
Total	0	0	0	4	0	6	10
02:00 PM	0	0	0	2	0	1	3
02:15 PM	0	0	0	0	0	2	2
02:30 PM	0	0	0	2	0	2	4
02:45 PM	0	0	0	4	0	3	7
Total	0	0	0	8	0	8	16
03:00 PM	0	0	0	2	0	2	4
03:15 PM	0	0	0	3	0	1	4
03:30 PM	0	0	0	0	0	2	2
03:45 PM	0	0	0	0	0	3	3
Total	0	0	0	5	0	8	13
04:00 PM	0	0	0	6	0	1	7
04:15 PM	0	0	0	0	0	1	1
04:30 PM	0	0	0	1	0	1	2
04:45 PM	0	0	0	1	0	1	2
Total	0	0	0	8	0	4	12
05:00 PM	0	0	0	1	0	0	1
05:15 PM	0	0	0	0	0	1	1
05:30 PM	0	0	0	1	0	2	3
05:45 PM	0	0	0	2	0	2	4
Total	0	0	0	4	0	5	9
06:00 PM	0	0	0	2	0	1	3
06:15 PM	0	0	0	1	0	1	2
06:30 PM	0	0	0	1	0	1	2
06:45 PM	0	0	0	1	0	1	2
Total	0	0	0	5	0	4	9
07:00 PM	0	0	0	2	0	2	4
07:15 PM	0	0	0	1	0	0	1
07:30 PM	0	0	0	1	0	1	2
07:45 PM	0	0	0	0	0	0	0
Total	0	0	0	4	0	3	7
08:00 PM	0	0	0	0	0	1	1
08:15 PM	0	0	0	1	0	4	5
08:30 PM	0	0	0	4	0	1	5
08:45 PM	0	0	0	2	0	1	3
Total	0	0	0	7	0	7	14
09:00 PM	0	0	0	0	0	1	1
09:15 PM	0	0	0	1	0	1	2
09:30 PM	0	0	0	1	0	0	1
09:45 PM	0	0	0	1	0	1	2
Total	0	0	0	3	0	3	6

Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

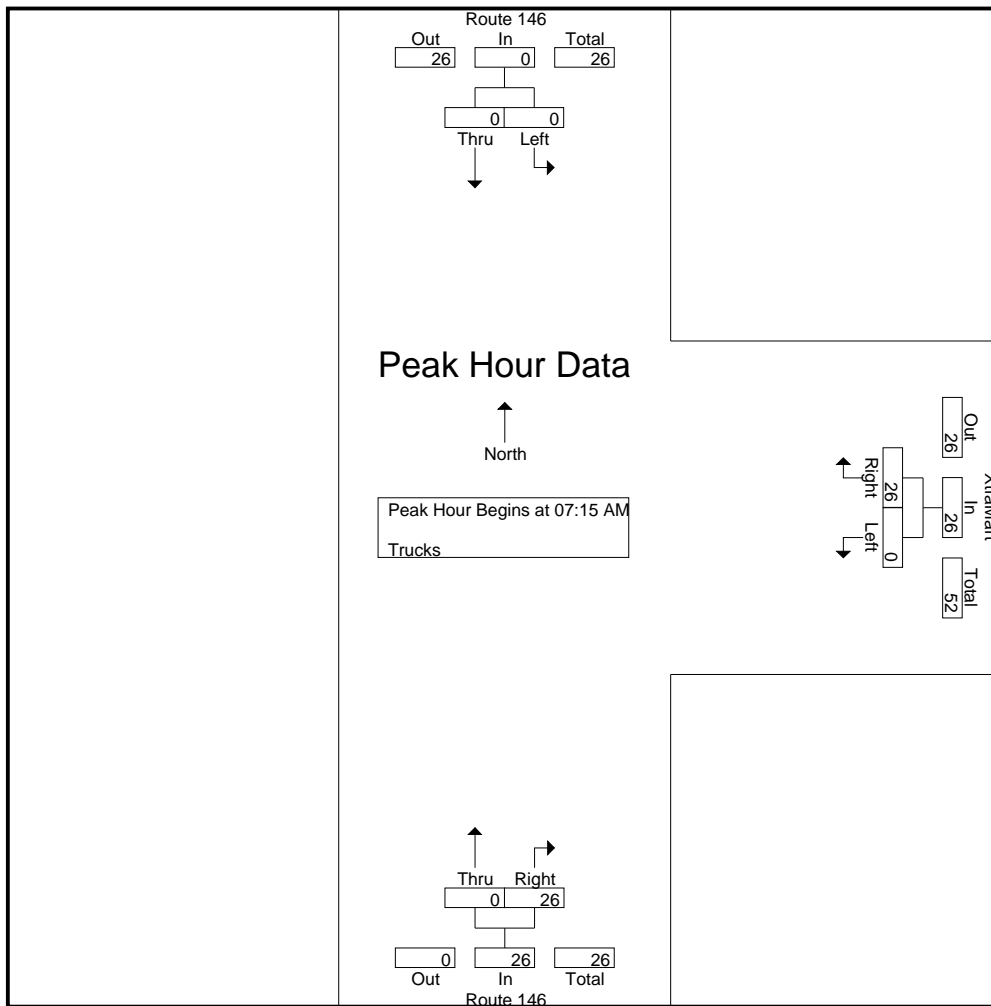
File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 21

Groups Printed- Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
10:00 PM	0	0	0	1	0	0	1
10:15 PM	0	0	0	1	0	1	2
10:30 PM	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	1	1
Total	0	0	0	2	0	2	4
11:00 PM	0	0	0	1	0	0	1
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	1	1
Total	0	0	0	1	0	1	2
Grand Total	0	0	0	184	0	175	359
Apprch %	0	0	0	100	0	100	
Total %	0	0	0	51.3	0	48.7	

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	5	5	0	8	8	13
07:30 AM	0	0	0	0	7	7	0	7	7	14
07:45 AM	0	0	0	0	8	8	0	7	7	15
08:00 AM	0	0	0	0	6	6	0	4	4	10
Total Volume	0	0	0	0	26	26	0	26	26	52
% App. Total	0	0		0	100		0	100		
PHF	.000	.000	.000	.000	.813	.813	.000	.813	.813	.867

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



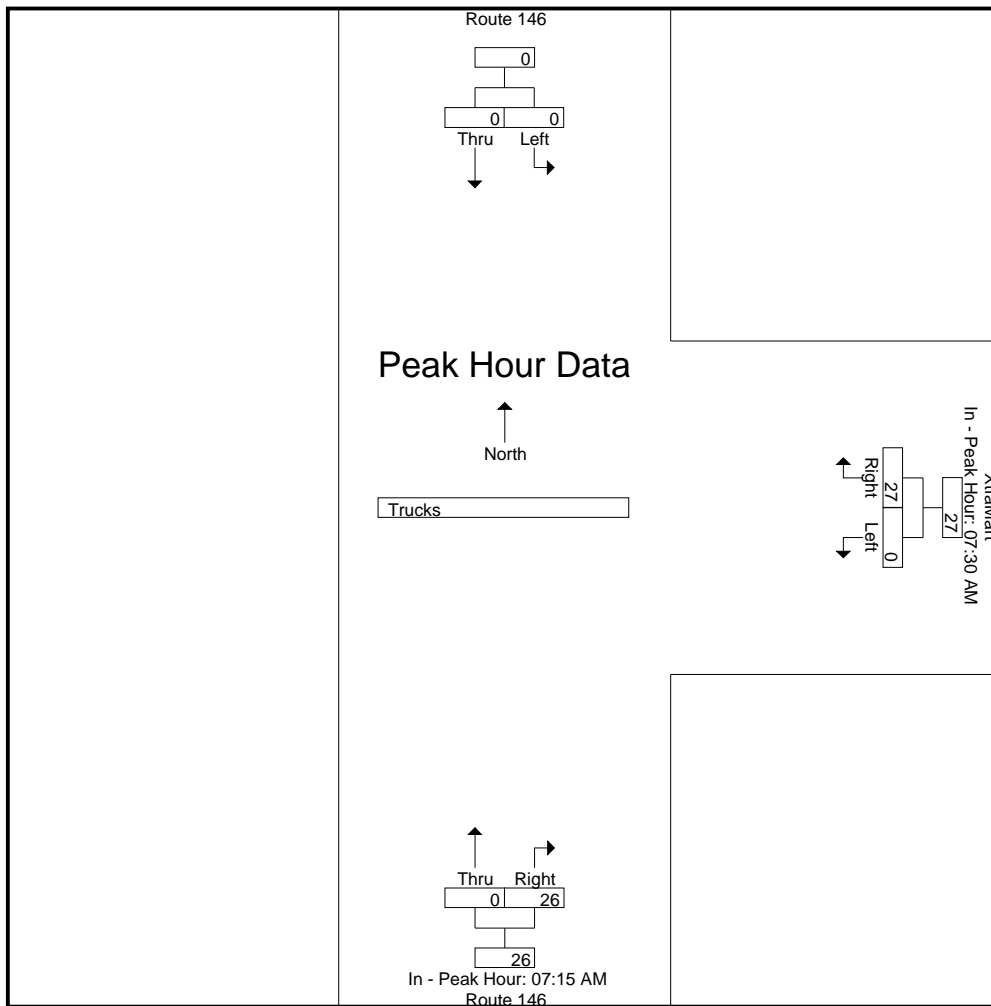
Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 AM			07:30 AM			07:15 AM		
+0 mins.	0	0	0	0	7	7	0	8	8
+15 mins.	0	0	0	0	8	8	0	7	7
+30 mins.	0	0	0	0	6	6	0	7	7
+45 mins.	0	0	0	0	6	6	0	4	4
Total Volume	0	0	0	0	27	27	0	26	26
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.844	.844	.000	.813	.813

Accurate Counts
978-664-2565

File Name : 87070002
Site Code : 87070002
Start Date : 1/8/2021
Page No : 23

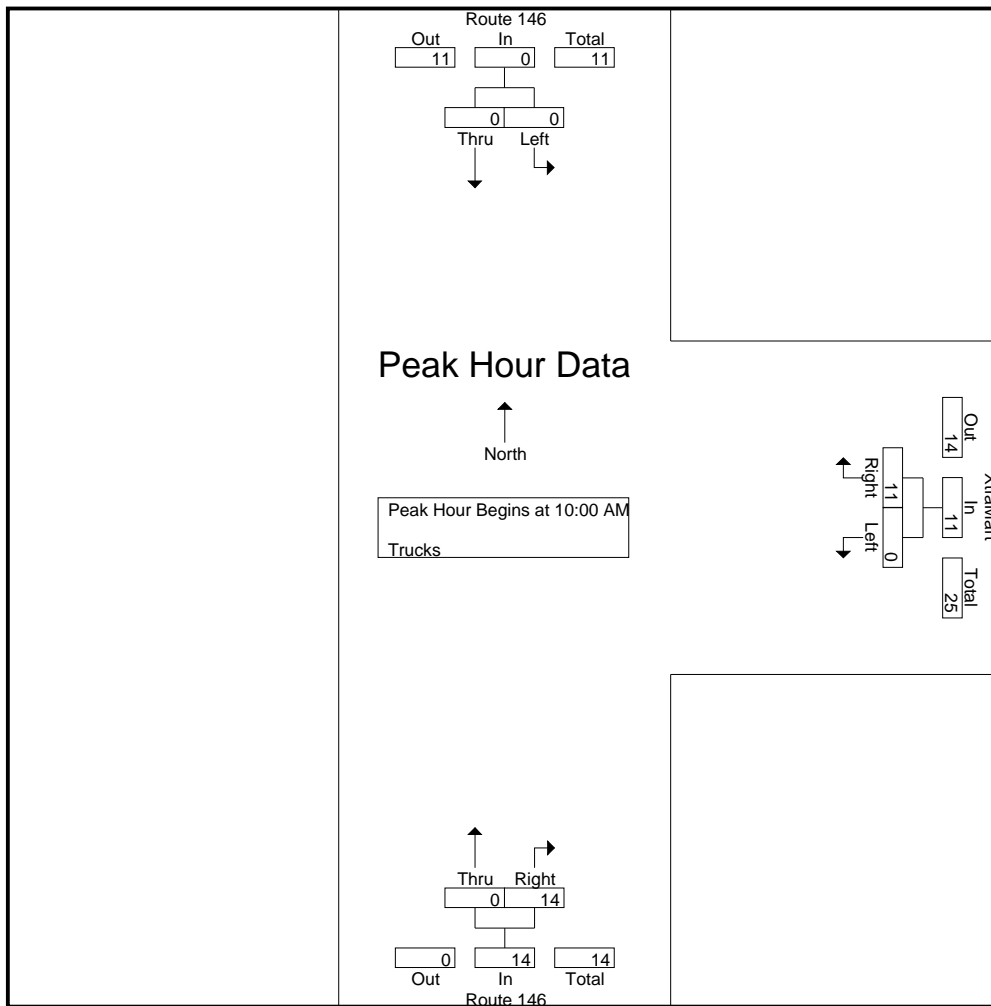
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 10:00 AM

10:00 AM	0	0	0	0	3	3	0	3	3	6
10:15 AM	0	0	0	0	1	1	0	0	0	1
10:30 AM	0	0	0	0	3	3	0	6	6	9
10:45 AM	0	0	0	0	4	4	0	5	5	9
Total Volume	0	0	0	0	11	11	0	14	14	25
% App. Total	0	0	0	0	100		0	100		
PHF	.000	.000	.000	.000	.688	.688	.000	.583	.583	.694

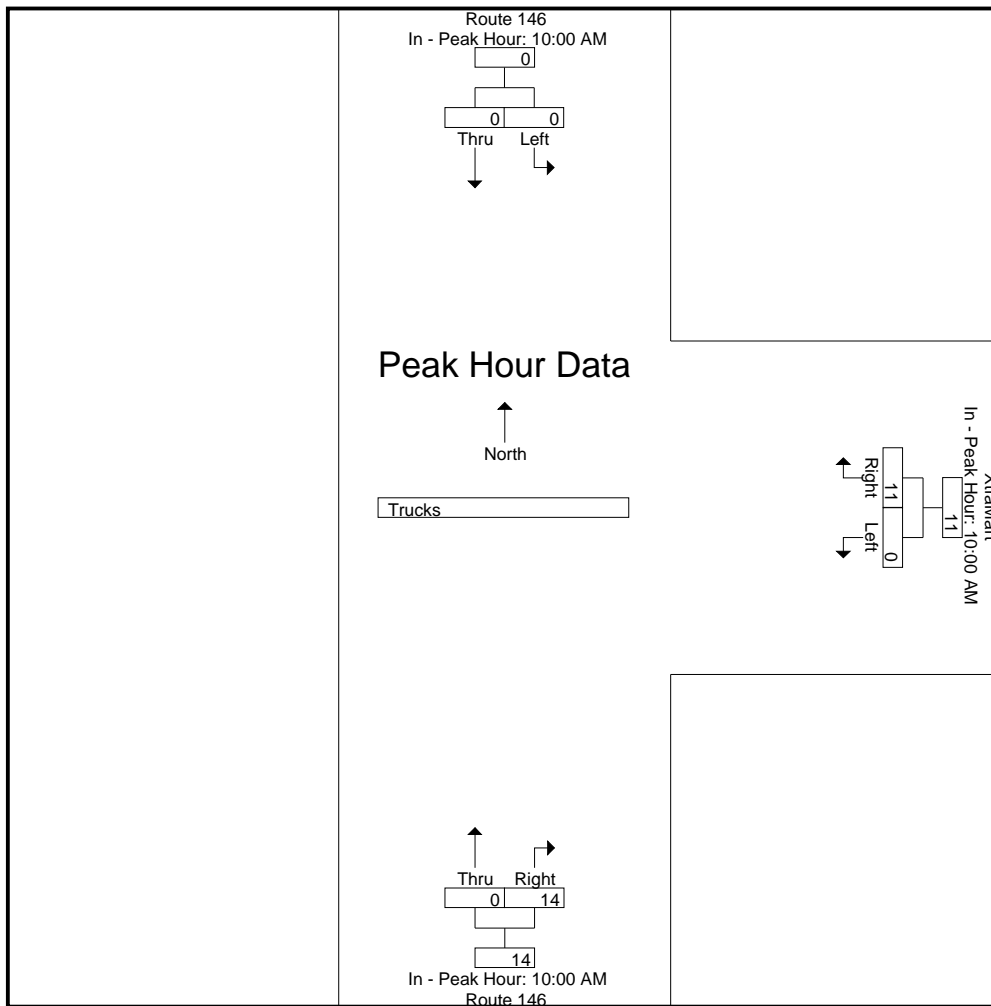
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:00 AM			10:00 AM			10:00 AM		
+0 mins.	0	0	0	0	3	3	0	3	3
+15 mins.	0	0	0	0	1	1	0	0	0
+30 mins.	0	0	0	0	3	3	0	6	6
+45 mins.	0	0	0	0	4	4	0	5	5
Total Volume	0	0	0	0	11	11	0	14	14
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.688	.688	.000	.583	.583

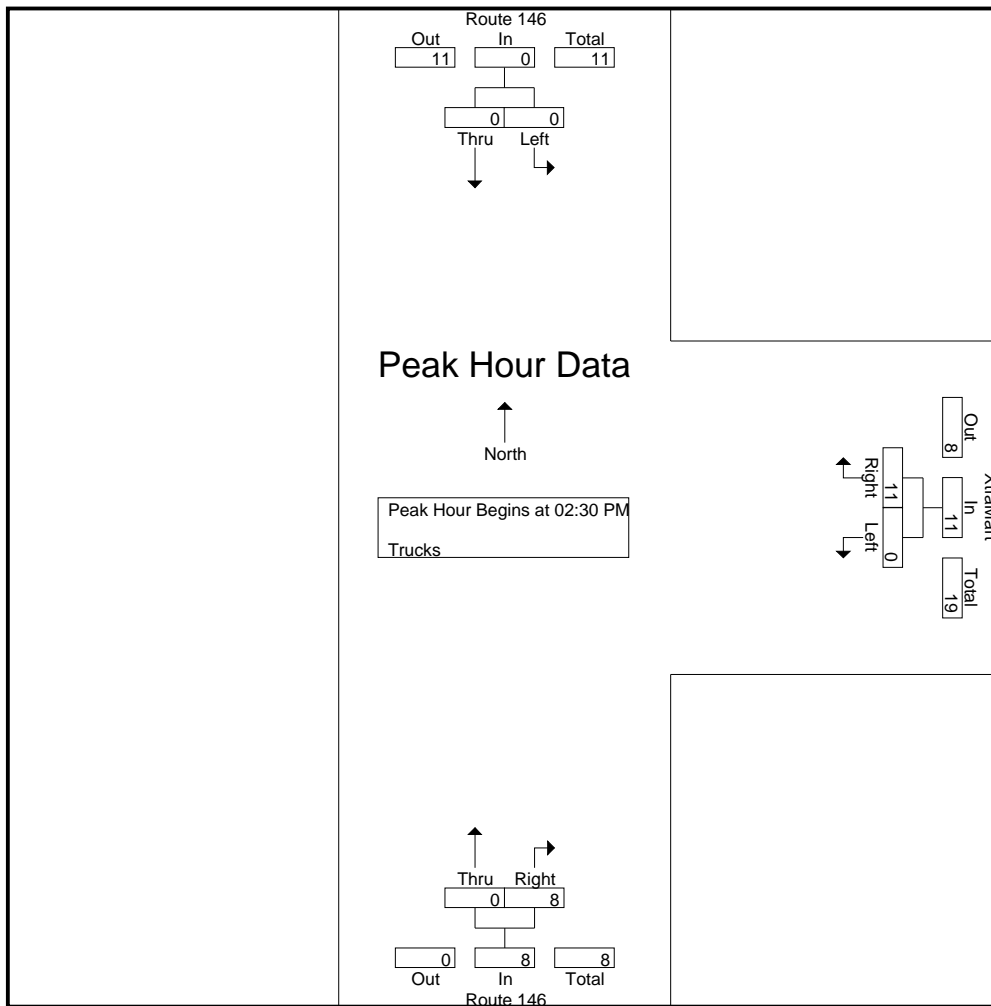
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:30 PM

02:30 PM	0	0	0	0	2	2	0	2	2	4
02:45 PM	0	0	0	0	4	4	0	3	3	7
03:00 PM	0	0	0	0	2	2	0	2	2	4
03:15 PM	0	0	0	0	3	3	0	1	1	4
Total Volume	0	0	0	0	11	11	0	8	8	19
% App. Total	0	0	0	0	100	100	0	100	100	100
PHF	.000	.000	.000	.000	.688	.688	.000	.667	.667	.679

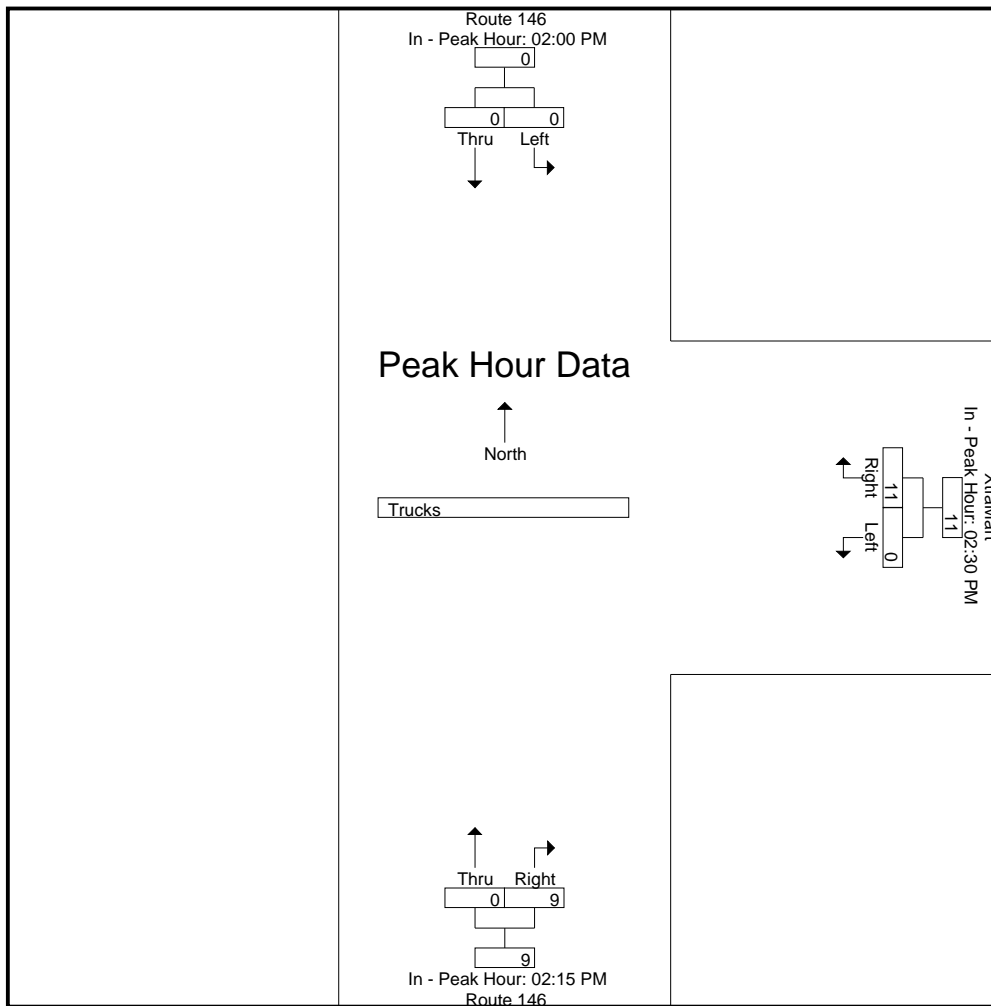
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



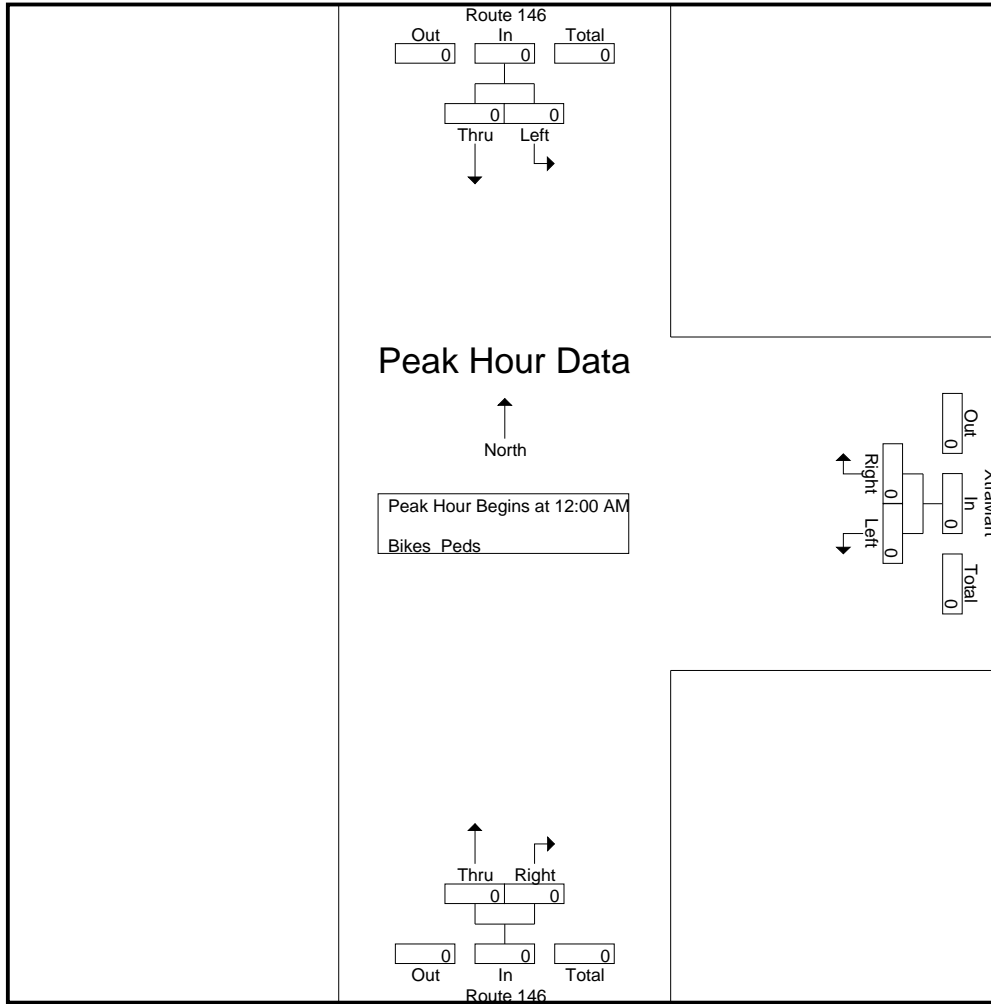
Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:30 PM			02:15 PM		
+0 mins.	0	0	0	0	2	2	0	2	2
+15 mins.	0	0	0	0	4	4	0	2	2
+30 mins.	0	0	0	0	2	2	0	3	3
+45 mins.	0	0	0	0	3	3	0	2	2
Total Volume	0	0	0	0	11	11	0	9	9
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.688	.688	.000	.750	.750

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



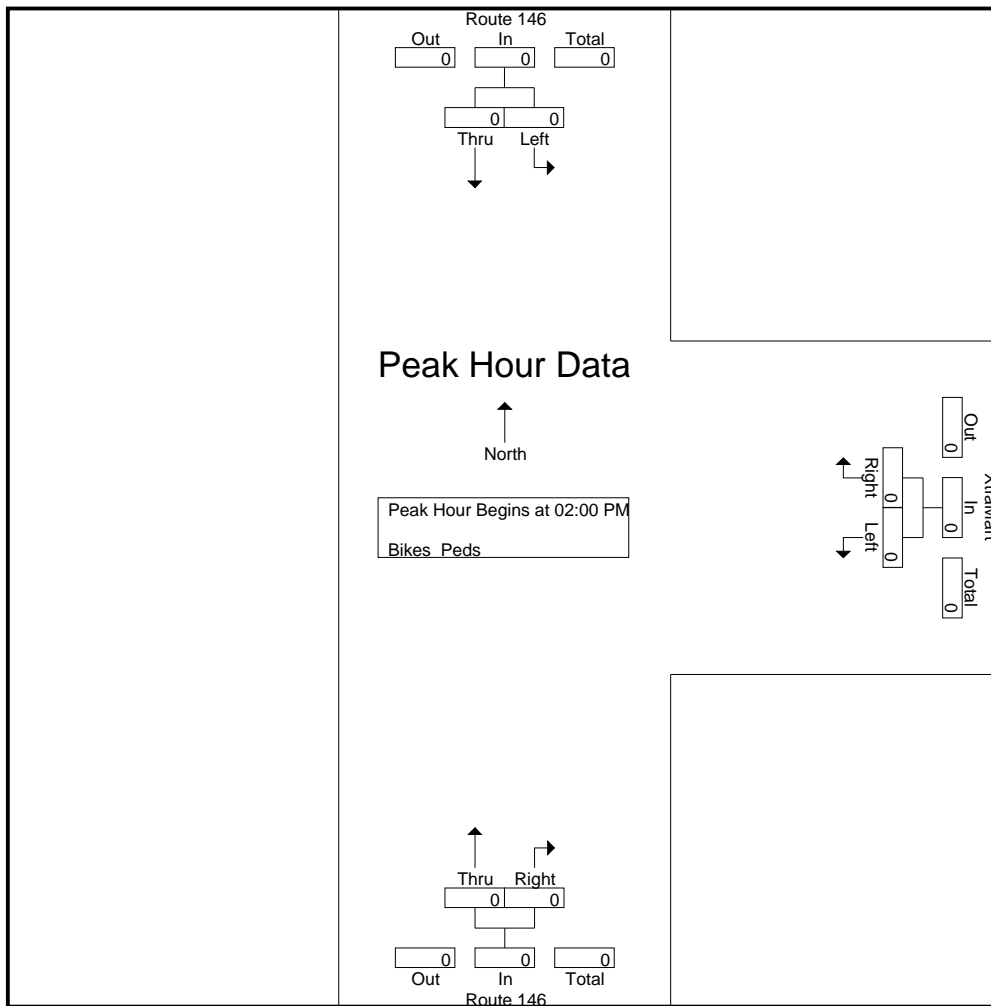
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 12:00 AM to 09:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 AM			12:00 AM			12:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

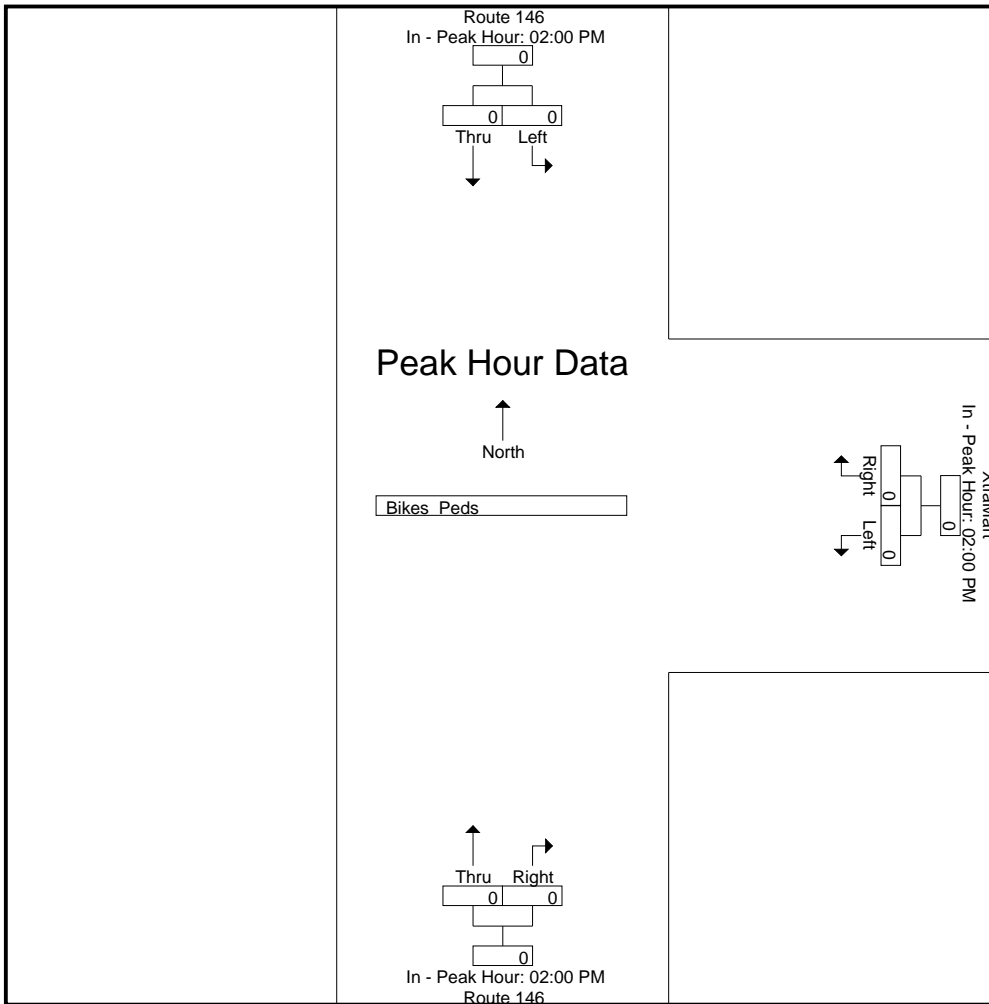
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:00 PM			02:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

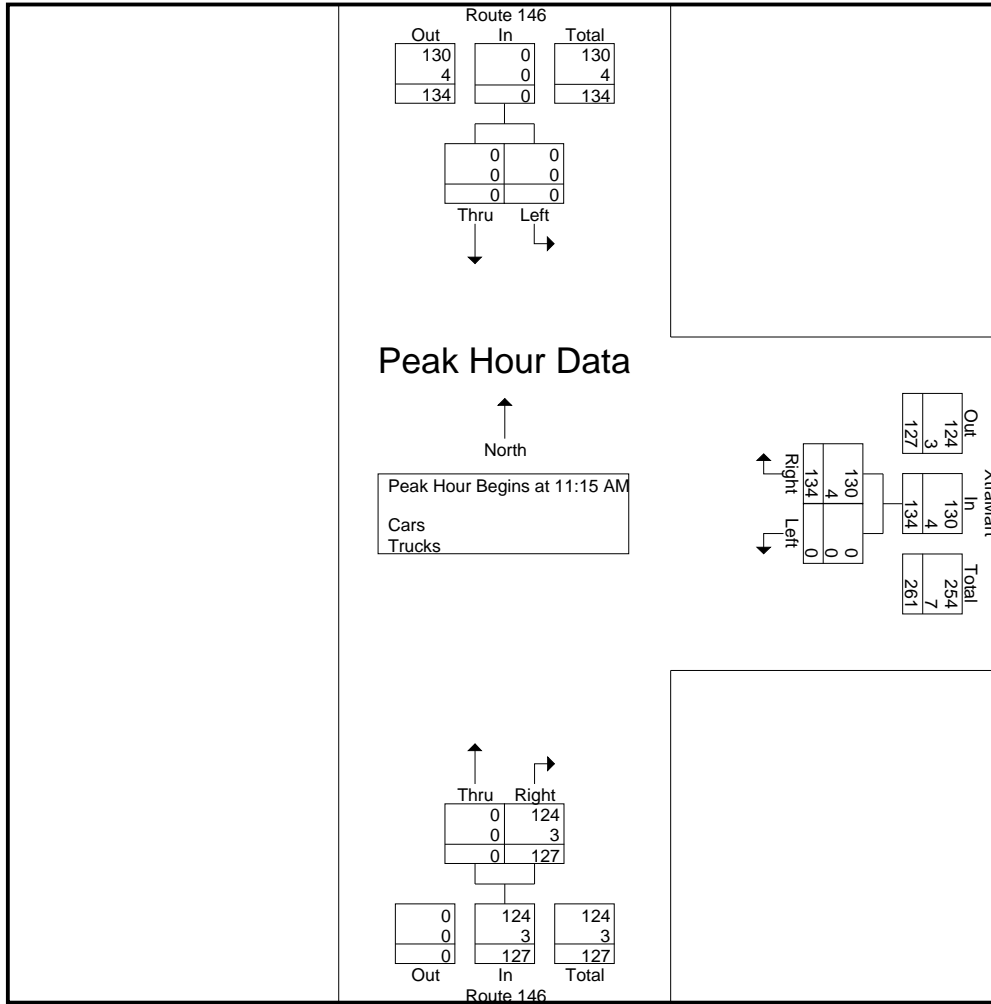
File Name : 870700S2
Site Code : 87070002
Start Date : 1/9/2021
Page No : 1

Groups Printed- Cars - Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	27	0	26	53
11:15 AM	0	0	0	32	0	39	71
11:30 AM	0	0	0	31	0	29	60
11:45 AM	0	0	0	38	0	36	74
Total	0	0	0	128	0	130	258
12:00 PM	0	0	0	33	0	23	56
12:15 PM	0	0	0	31	0	30	61
12:30 PM	0	0	0	28	0	34	62
12:45 PM	0	0	0	35	0	30	65
Total	0	0	0	127	0	117	244
01:00 PM	0	0	0	29	0	27	56
01:15 PM	0	0	0	28	0	25	53
01:30 PM	0	0	0	22	0	15	37
01:45 PM	0	0	0	15	0	20	35
Total	0	0	0	94	0	87	181
Grand Total	0	0	0	349	0	334	683
Apprch %	0	0	0	100	0	100	
Total %	0	0	0	51.1	0	48.9	
Cars	0	0	0	339	0	323	662
% Cars	0	0	0	97.1	0	96.7	96.9
Trucks	0	0	0	10	0	11	21
% Trucks	0	0	0	2.9	0	3.3	3.1

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	0	0	0	0	32	32	0	39	39	71
11:30 AM	0	0	0	0	31	31	0	29	29	60
11:45 AM	0	0	0	0	38	38	0	36	36	74
12:00 PM	0	0	0	0	33	33	0	23	23	56
Total Volume	0	0	0	0	134	134	0	127	127	261
% App. Total	0	0	0	0	100	100	0	100	100	
PHF	.000	.000	.000	.000	.882	.882	.000	.814	.814	.882
Cars	0	0	0	0	130	130	0	124	124	254
% Cars	0	0	0	0	97.0	97.0	0	97.6	97.6	97.3
Trucks	0	0	0	0	4	4	0	3	3	7
% Trucks	0	0	0	0	3.0	3.0	0	2.4	2.4	2.7

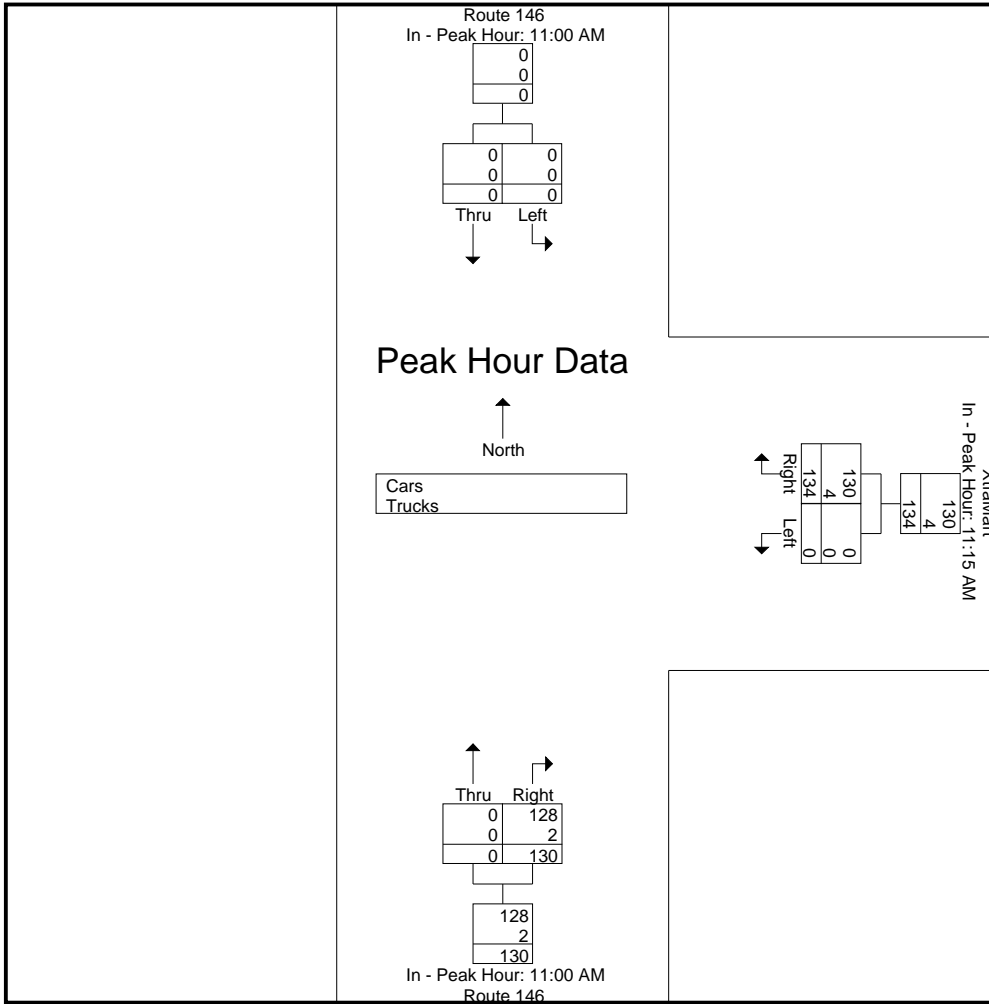
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



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

	11:00 AM			11:15 AM			11:00 AM		
+0 mins.	0	0	0	0	32	32	0	26	26
+15 mins.	0	0	0	0	31	31	0	39	39
+30 mins.	0	0	0	0	38	38	0	29	29
+45 mins.	0	0	0	0	33	33	0	36	36
Total Volume	0	0	0	0	134	134	0	130	130
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.882	.882	.000	.833	.833
Cars	0	0	0	0	130	130	0	128	128
% Cars	0	0	0	0	97	97	0	98.5	98.5
Trucks	0	0	0	0	4	4	0	2	2
% Trucks	0	0	0	0	3	3	0	1.5	1.5

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

File Name : 870700S2
Site Code : 87070002
Start Date : 1/9/2021
Page No : 4

Groups Printed- Cars

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	27	0	26	53
11:15 AM	0	0	0	32	0	38	70
11:30 AM	0	0	0	29	0	29	58
11:45 AM	0	0	0	38	0	35	73
Total	0	0	0	126	0	128	254
12:00 PM	0	0	0	31	0	22	53
12:15 PM	0	0	0	30	0	29	59
12:30 PM	0	0	0	28	0	33	61
12:45 PM	0	0	0	35	0	30	65
Total	0	0	0	124	0	114	238
01:00 PM	0	0	0	29	0	25	54
01:15 PM	0	0	0	27	0	24	51
01:30 PM	0	0	0	19	0	14	33
01:45 PM	0	0	0	14	0	18	32
Total	0	0	0	89	0	81	170
Grand Total	0	0	0	339	0	323	662
Apprch %	0	0	0	100	0	100	
Total %	0	0	0	51.2	0	48.8	

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
11:00 AM	0	0	0	0	27	27	0	26	26	53
11:15 AM	0	0	0	0	32	32	0	38	38	70
11:30 AM	0	0	0	0	29	29	0	29	29	58
11:45 AM	0	0	0	0	38	38	0	35	35	73
Total Volume	0	0	0	0	126	126	0	128	128	254
% App. Total	0	0		0	100		0	100		
PHF	.000	.000	.000	.000	.829	.829	.000	.842	.842	.870

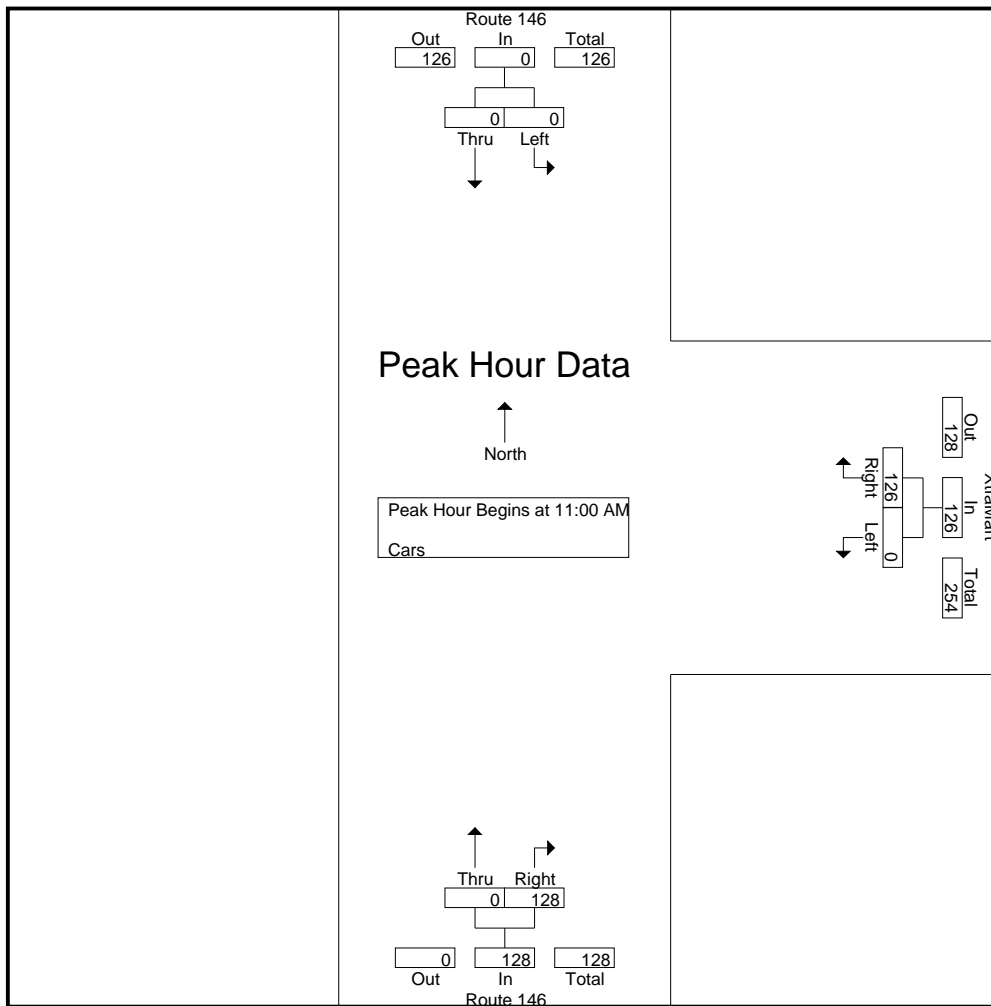
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:00 AM

Accurate Counts
978-664-2565

File Name : 870700S2
Site Code : 87070002
Start Date : 1/9/2021
Page No : 5

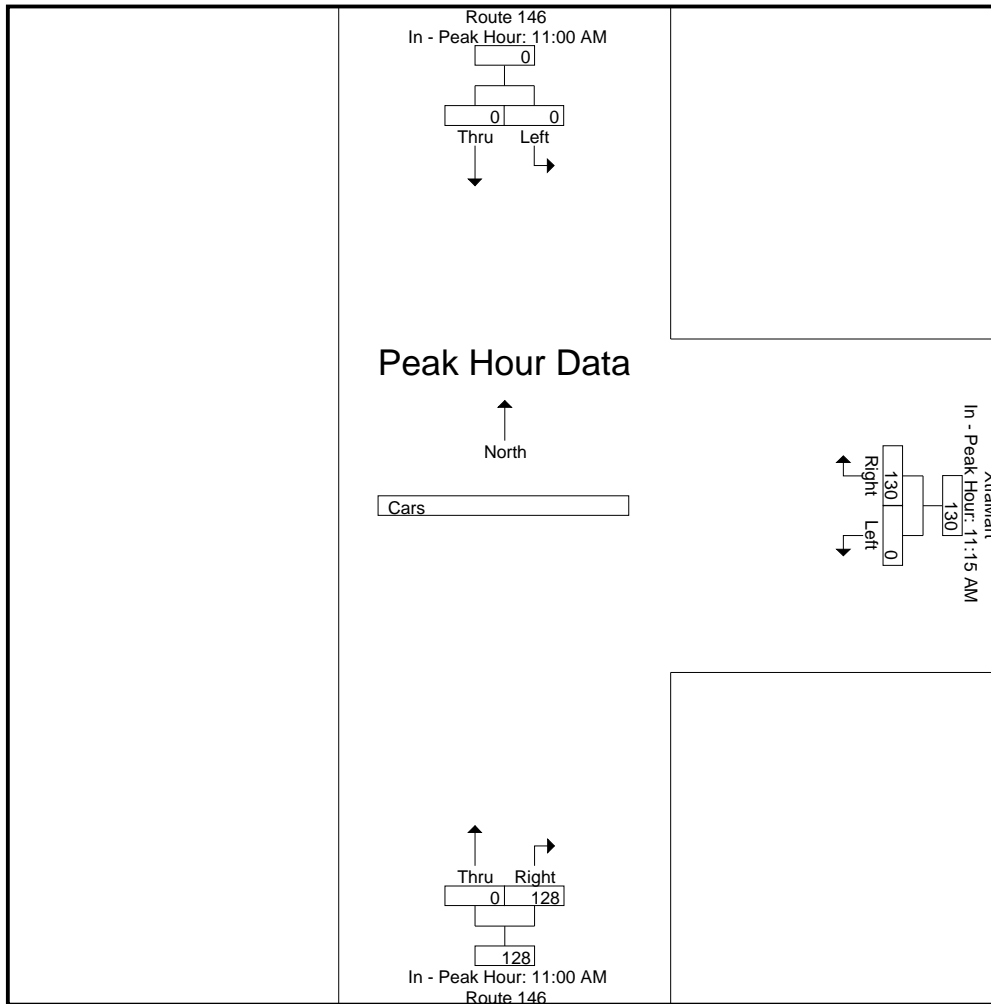
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



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

	11:00 AM			11:15 AM			11:00 AM		
+0 mins.	0	0	0	0	32	32	0	26	26
+15 mins.	0	0	0	0	29	29	0	38	38
+30 mins.	0	0	0	0	38	38	0	29	29
+45 mins.	0	0	0	0	31	31	0	35	35
Total Volume	0	0	0	0	130	130	0	128	128
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.855	.855	.000	.842	.842

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts
978-664-2565

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear

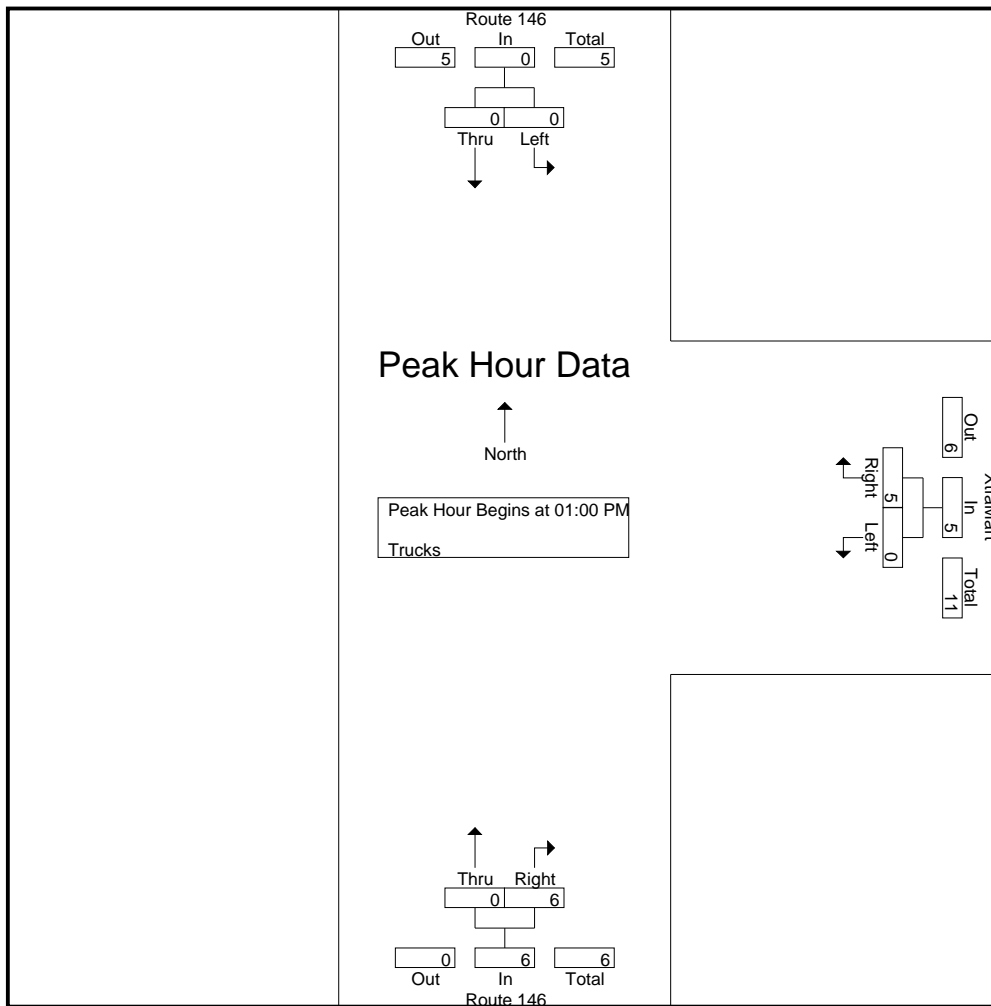
File Name : 870700S2
Site Code : 87070002
Start Date : 1/9/2021
Page No : 7

Groups Printed- Trucks

Start Time	Route 146 From North		XtraMart From East		Route 146 From South		Int. Total
	Left	Thru	Left	Right	Thru	Right	
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	1	1
11:30 AM	0	0	0	2	0	0	2
11:45 AM	0	0	0	0	0	1	1
Total	0	0	0	2	0	2	4
12:00 PM	0	0	0	2	0	1	3
12:15 PM	0	0	0	1	0	1	2
12:30 PM	0	0	0	0	0	1	1
12:45 PM	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	6
01:00 PM	0	0	0	0	0	2	2
01:15 PM	0	0	0	1	0	1	2
01:30 PM	0	0	0	3	0	1	4
01:45 PM	0	0	0	1	0	2	3
Total	0	0	0	5	0	6	11
Grand Total	0	0	0	10	0	11	21
Apprch %	0	0	0	100	0	100	
Total %	0	0	0	47.6	0	52.4	

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 01:00 PM										
01:00 PM	0	0	0	0	0	0	0	2	2	2
01:15 PM	0	0	0	0	1	1	0	1	1	2
01:30 PM	0	0	0	0	3	3	0	1	1	4
01:45 PM	0	0	0	0	1	1	0	2	2	3
Total Volume	0	0	0	0	5	5	0	6	6	11
% App. Total	0	0		0	100		0	100		
PHF	.000	.000	.000	.000	.417	.417	.000	.750	.750	.688

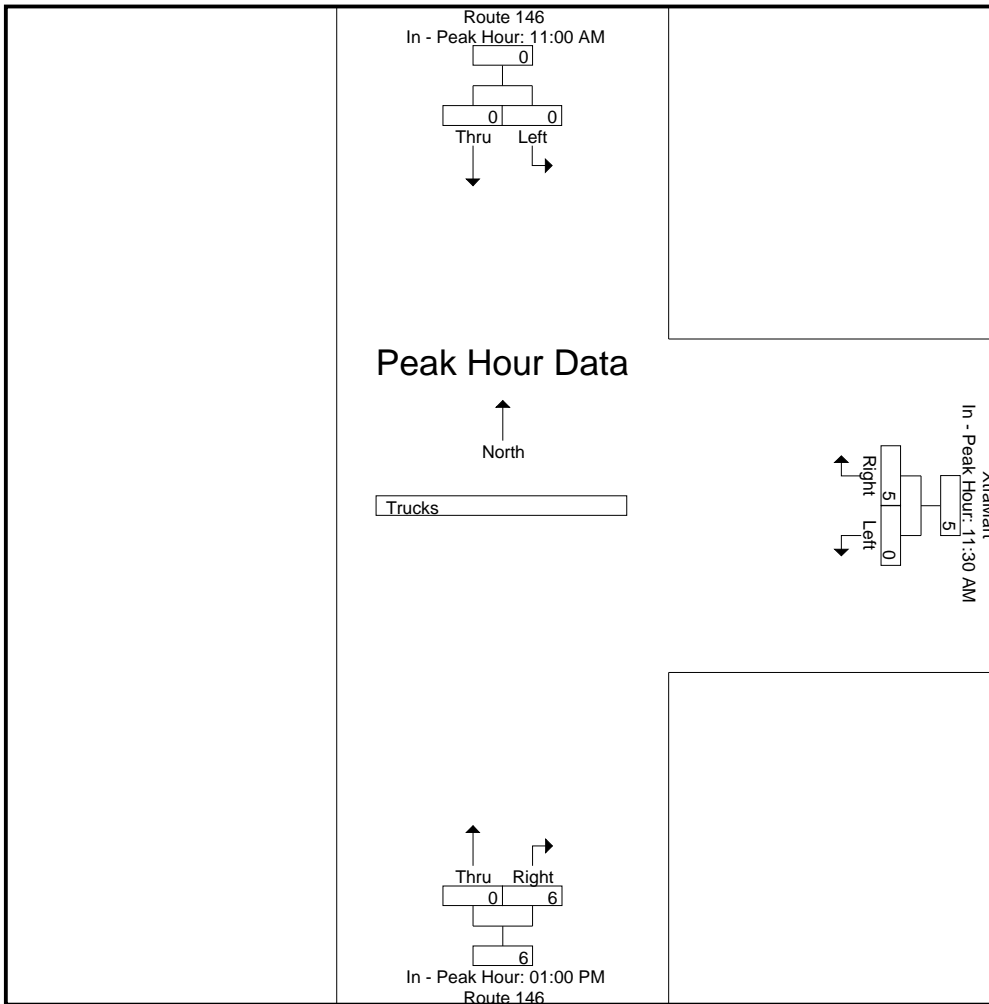
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



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

	11:00 AM			11:30 AM			01:00 PM		
+0 mins.	0	0	0	0	2	2	0	2	2
+15 mins.	0	0	0	0	0	0	0	1	1
+30 mins.	0	0	0	0	2	2	0	1	1
+45 mins.	0	0	0	0	1	1	0	2	2
Total Volume	0	0	0	0	5	5	0	6	6
% App. Total	0	0	0	0	100	100	0	100	100
PHF	.000	.000	.000	.000	.625	.625	.000	.750	.750

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Route 146
 E/W Street : XtraMart
 City/State : Sutton, MA
 Weather : Clear

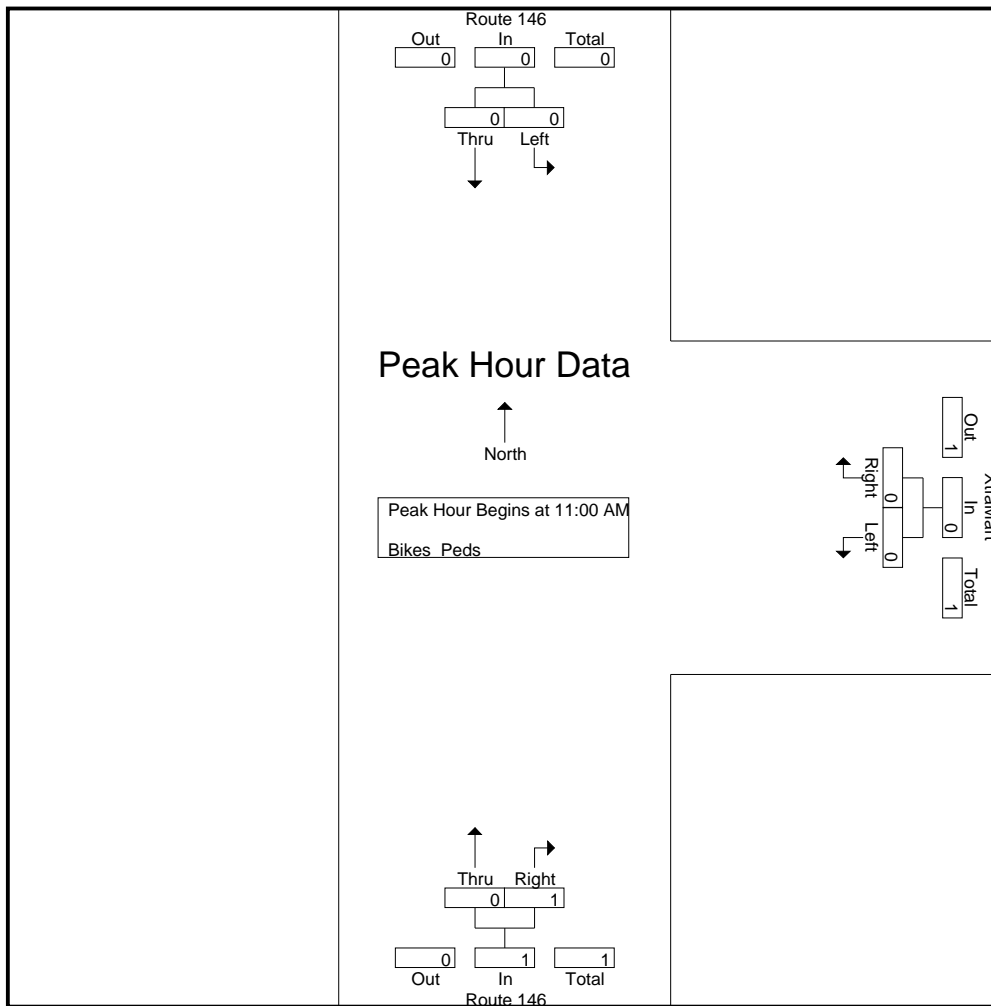
File Name : 870700S2
 Site Code : 87070002
 Start Date : 1/9/2021
 Page No : 10

Groups Printed- Bikes Peds

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	1	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	0	1	1
Apprch %	0	0		0	0		0	100				
Total %	0	0		0	0		0	100		0	100	

Start Time	Route 146 From North			XtraMart From East			Route 146 From South			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	1	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	1	1
% App. Total	0	0		0	0		0	100		
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250

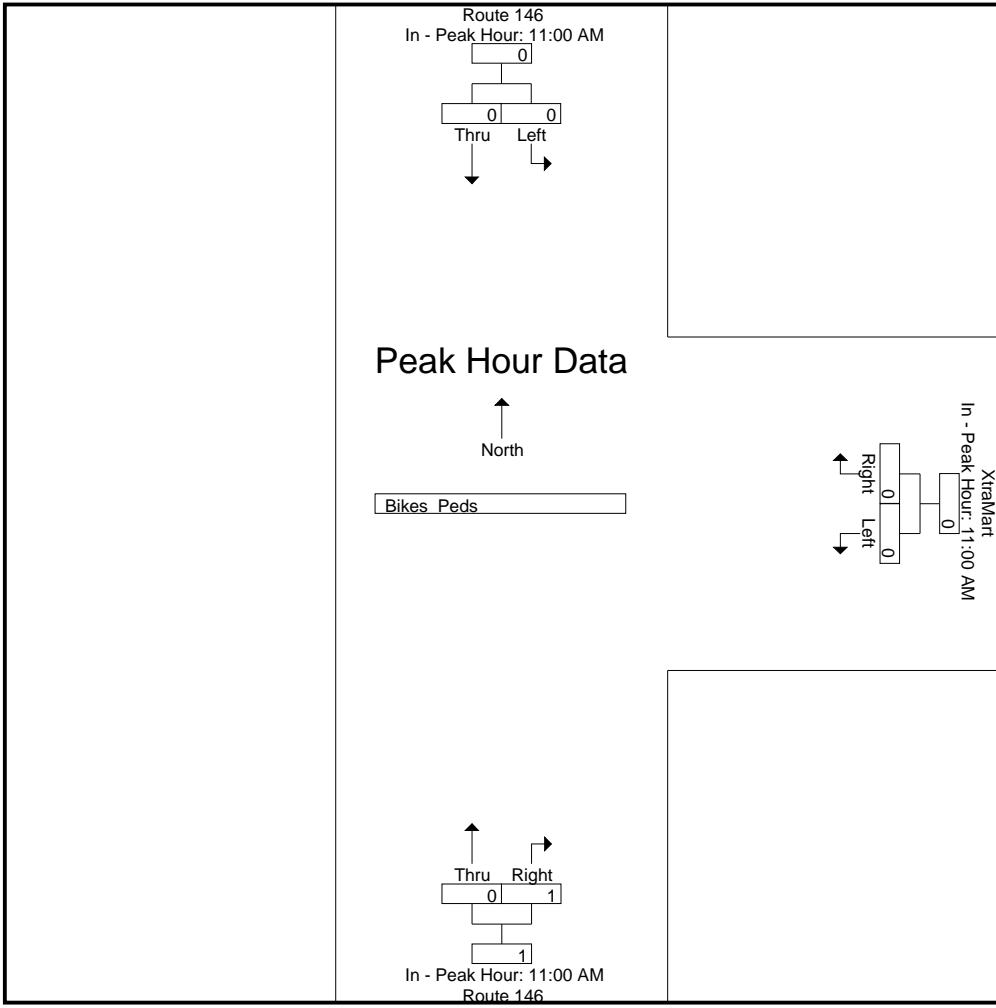
N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



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

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

N/S Street : Route 146
E/W Street : XtraMart
City/State : Sutton, MA
Weather : Clear



100 WORC-PROV PIKE

Location 100 WORC-PROV PIKE

Mblu 52/ 3/ / /

Acct# R

Owner DRAKE PETROLEUM CO INC

Assessment \$1,176,900

PID 2949

Building Count 1

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$906,200	\$270,700	\$1,176,900

Owner of Record

Owner DRAKE PETROLEUM CO INC
Co-Owner C/O GLOBAL PARTNERS LP
Address 15 NORTHEAST INDUSTRIAL RD
BRANFORD, CT 02905

Sale Price \$1,300,000
Certificate
Book & Page 41536/0088
Sale Date 07/25/2007
Instrument 1U

Ownership History

Ownership History

Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
DRAKE PETROLEUM CO INC	\$1,300,000		41536/0088	1U	07/25/2007
BG DEVELOPMENT LLC	\$664,000		30669/0306	1O	07/03/2003
STAR GAS PROPANE,L.P.	\$0		17549/0360	1A	12/18/1995
ARROW GAS CORPORATION	\$0		/0		

Building Information

Building 1 : Section 1

Year Built: 2003
Living Area: 3,544
Replacement Cost: \$572,433
Building Percent Good: 85
Replacement Cost Less Depreciation: \$486,600

Building Attributes	
Field	Description
Style:	Gas Mart
Model	Comm/Ind
Grade	Average
Stories:	1
Occupancy	2.00
Exterior Wall 1	Hardy Plank
Exterior Wall 2	
Roof Structure	Gable/Hip

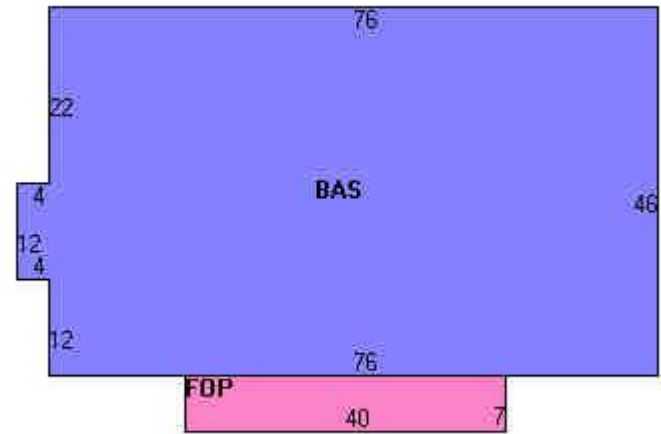
Building Photo



(<http://images.vgsi.com/photos/MillburyMAPhotos//default.jpg>)

Roof Cover	Asph/F GlS/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceramic Tile
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	GASMART
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3250
Heat/AC	HEAT/AC PKGS
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	10.00
% Comn Wall	0.00

Building Layout



(http://images.vgsi.com/photos/MillburyMAPhotos//Sketches/2949_3012.jpg)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	3,544	3,544
FOP	Porch, Open	280	0
		3,824	3,544

Extra Features

Extra Features

Legend

Code	Description	Size	Value	Bldg #
DUW1	DRIVE-UP WINDW	1.00 UNITS	\$5,100	1
CLR1	COOLER	304.00 S.F.	\$6,500	1

Land

Land Use

Use Code 3330
Description GASMART
Zone I1
Neighborhood C1
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 3
Frontage 0
Assessed Value \$270,700

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAVING-ASPHALT			50000.00 S.F.	\$87,500	1
FN3	FENCE-6' CHAIN			600.00 L.F.	\$5,900	1
SHD1	SHED FRAME			120.00 S.F.	\$1,200	1
PMP5	W/BLENDING			5.00 UNITS	\$24,500	1
PMP1	PUMP-SING HSE			2.00 UNITS	\$4,200	1
TNK1	TANK-UNDERGRND			42000.00 GALS	\$73,500	1
SGN3	W/INT LIGHTS			64.00 S.F.&HGT	\$3,400	1
LT5	MERC VAP/FLU			10.00 UNITS	\$7,000	1
LT6	W/DOUBLE LIGHT			4.00 UNITS	\$4,200	1

CNP2	CANOPY,GOOD			960.00 S.F.	\$20,200	1
CNP3	GAS CANOPY			3360.00 S.F.	\$176,400	1

Valuation History

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$906,200	\$270,700	\$1,176,900
2020	\$906,200	\$270,700	\$1,176,900
2019	\$747,300	\$347,000	\$1,094,300

27 WORC-PROV TPKE

Location 27 WORC-PROV TPKE

Mblu 5/ 18/ / /

Acct#

Owner T E D REALTY TRUST

Assessment \$1,407,200

Appraisal \$1,407,200

PID 98

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$1,036,700	\$370,500	\$1,407,200

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$1,036,700	\$370,500	\$1,407,200

Owner of Record

Owner T E D REALTY TRUST

Sale Price \$550,000

Co-Owner THOMAS DENESOWICZ TRUSTEE

Certificate

Address 10 SUSAN DRIVE

Book & Page 33173/0256

DUDLEY, MA 01571

Sale Date 03/30/2004

Instrument 1G

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
T E D REALTY TRUST	\$550,000		33173/0256	1G	03/30/2004
HOWARD ROBERT J	\$0		04718/0366		

Building Information

Building 1 : Section 1

Year Built: 2007
Living Area: 5,805
Replacement Cost: \$723,135
Building Percent Good: 88

Replacement Cost

Less Depreciation: \$636,400

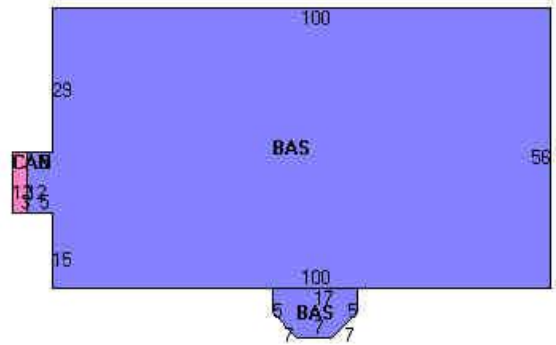
Building Attributes	
Field	Description
Style:	Gas Mart
Model	Comm/Ind
Grade	Average +10
Stories:	1
Occupancy	2.00
Exterior Wall 1	Hardy Plank
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F GlS/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceram Clay Til
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	Gas Mart/Gas Station
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	HEAT/AC PKGS
Frame Type	WOOD FRAME
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	14.00
% Comn Wall	

Building Photo



(<http://images.vgsi.com/photos/SuttonMAPhotos/A00\00\87\67.jpg>)

Building Layout



(http://images.vgsi.com/photos/SuttonMAPhotos/Sketches/98_107.jpg)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	5,805	5,805
CAN	Canopy	36	0
		5,841	5,805

Extra Features

Extra Features				<u>Legend</u>
Code	Description	Size	Value	Bldg #
DUW1	DRIVE-UP WINDW	1.00 UNITS	\$5,300	1

Land

Land Use

Land Line Valuation

Use Code	3340	Size (Acres)	7.79
Description	Gas Mart/Gas Station	Frontage	315
Zone	B2	Depth	0
Neighborhood	C1	Assessed Value	\$370,500
Alt Land Appr	No	Appraised Value	\$370,500
Category			

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAVING-ASPHALT			35000.00 S.F.	\$63,000	1
PAV2	PAVING-CONC			6000.00 S.F.	\$14,400	1
CNP2	CANOPY,GD			5280.00 S.F.	\$83,200	1
CNP2	CANOPY,GD			736.00 S.F.	\$11,600	1
LT5	MERC VAP/FLU			18.00 UNITS	\$13,500	1
PMP4	DOUBLE HOSE			8.00 UNITS	\$15,600	1
PMP7	3 HOSE			1.00 UNITS	\$4,900	1
SGN3	W/INT LIGHTS			76.00 S.F.&HGT	\$4,400	1
TNK2	3000-10000 GAL			15000.00 GALS	\$45,000	1
TNK3	GT-10,000			45000.00 GALS	\$135,000	1
SHD4	COMM,WD			120.00 S.F.	\$1,800	1
PMP1	PUMP-SING HSE			2.00 UNITS	\$2,600	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$1,036,700	\$370,500	\$1,407,200
2020	\$1,036,700	\$370,500	\$1,407,200
2019	\$985,300	\$349,000	\$1,334,300

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$1,036,700	\$370,500	\$1,407,200
2020	\$1,036,700	\$370,500	\$1,407,200
2019	\$985,300	\$349,000	\$1,334,300

Job: Travel Center
 Location: Sturbridge, MA
 Title: T/G
 Calculated by: BG

Job Number: 8707
 Date: 3/30/21
 Sheet _____ of _____
 Checked by: _____

Xtra Mart - 100 Wob - Prov Turnpike, Millbury, MA
 GFA = 3,824sf (Assessor's Record)
 Weekday 24-Counts (Thursday, Jan 7, 2021)

In + Out Total = 3,041 Trips

$$3,041 / 3,824 \approx 795.24$$

Weekday Morning 8:15 - 9:15 AM

In	143			37.39
Out	119	$\times 3,824$	\approx	31.12
Total	262			68.51

Weekday Evening 3:45 - 4:45 PM

In	124			32.43
Out	123	$\times 3,824$	\approx	32.16
Total	247			64.59

Saturday Middy 11:45 AM - 12:45 PM (Saturday, Jan. 9, 2021)

In	123			32.16
Out	121	$\times 3,824$	\approx	31.64
Total	244			63.80



Calculations

Job: Travel Center
Location: Sturbridge, MA
Title: T/G
Calculated by: BG

Job Number: 8707
Date: 5/30/21
Sheet _____ of _____
Checked by: _____

Xtra Mnt - 27 Wvc - Rav Turnpike, Sutton, MA
GFA = 5,805 sf

Weekday 24-hour Counts (Thursday, Jan. 7, 2021)

In & Out Total = 3276

$$3276 / 5.805 \approx 564.34$$

Weekday Morning 7:15 - 8:15 AM

In	188		32.39
Out	187	$\div 5.805 \approx$	32.21
Total	375		64.60

Weekday Evening 2:45 - 3:45 PM

In	93		16.02
Out	96	$\div 5.805 \approx$	16.54
Total	189		32.56

Saturday Middy 11:15 - 12:15 PM (Saturday, Jan. 9, 2021)

In	127		21.88
Out	134	$\div 5.805 \approx$	23.08
Total	261		44.96



Calculations

Job: Travel Center
 Location: Sturbridge, MA
 Title: T/G
 Calculated by: BG

Job Number: 8707
 Date: 3/30/21
 Sheet _____ of _____
 Checked by: _____

Average of Two sites

$$795.24 + 574.34 = 1359.58 / 2 \approx 679.79 \text{ Weekly Daily}$$

Weekday Morning

In	37.39	32.39	=	69.78	÷ 2	≈	34.89
Out	31.12	32.21	=	63.33	÷ 2	≈	31.67
Total	68.51	64.60		133.11			66.56

Weekday Evening

In	32.43	16.02	=	48.45	÷ 2	≈	24.23
Out	32.16	16.54	=	48.70	÷ 2	≈	24.35
Total	64.59	32.56		97.15			48.58

Saturday Midday

In	32.16	21.08	=	54.04	÷ 2	≈	27.02
Out	31.64	23.08	=	54.72	÷ 2	≈	27.36
Total	63.80	44.96		108.76			54.58



Calculations

Job: Travel Center
Location: Sturbridge, MA
Title: T/G
Calculated by: BG

Job Number: 0707
Date: 3/30/21
Sheet _____ of _____
Checked by: _____

MassDOT Count Station # 3999, Route 146, north of I-91,
Worcester, MA

Jan, 2021 ≈ 46077

Jan 2020 $\approx 47853 \times 1.01 \approx 48332$

$48332 / 46077 \approx 1.049$

COVID Adjustment = 1.049

Weekday Daily

$679.79 \times 8.437 \times 1.049 \approx 6,016$

Weekday Morning

In	37.89				308
Out	31.67	$\times 8.437$	$\times 1.049$	\approx	280
Total	66.56				588

Weekday Evening

In	24.23				215
Out	24.35	$\times 8.437$	$\times 1.049$	\approx	215
Total	48.58				430

Saturday Midday

In	27.02				239
Out	27.36	$\times 8.437$	$\times 1.049$	\approx	242
Total	54.38				481

Massachusetts Highway Department

3991: Monthly Hourly Volume for January 2021

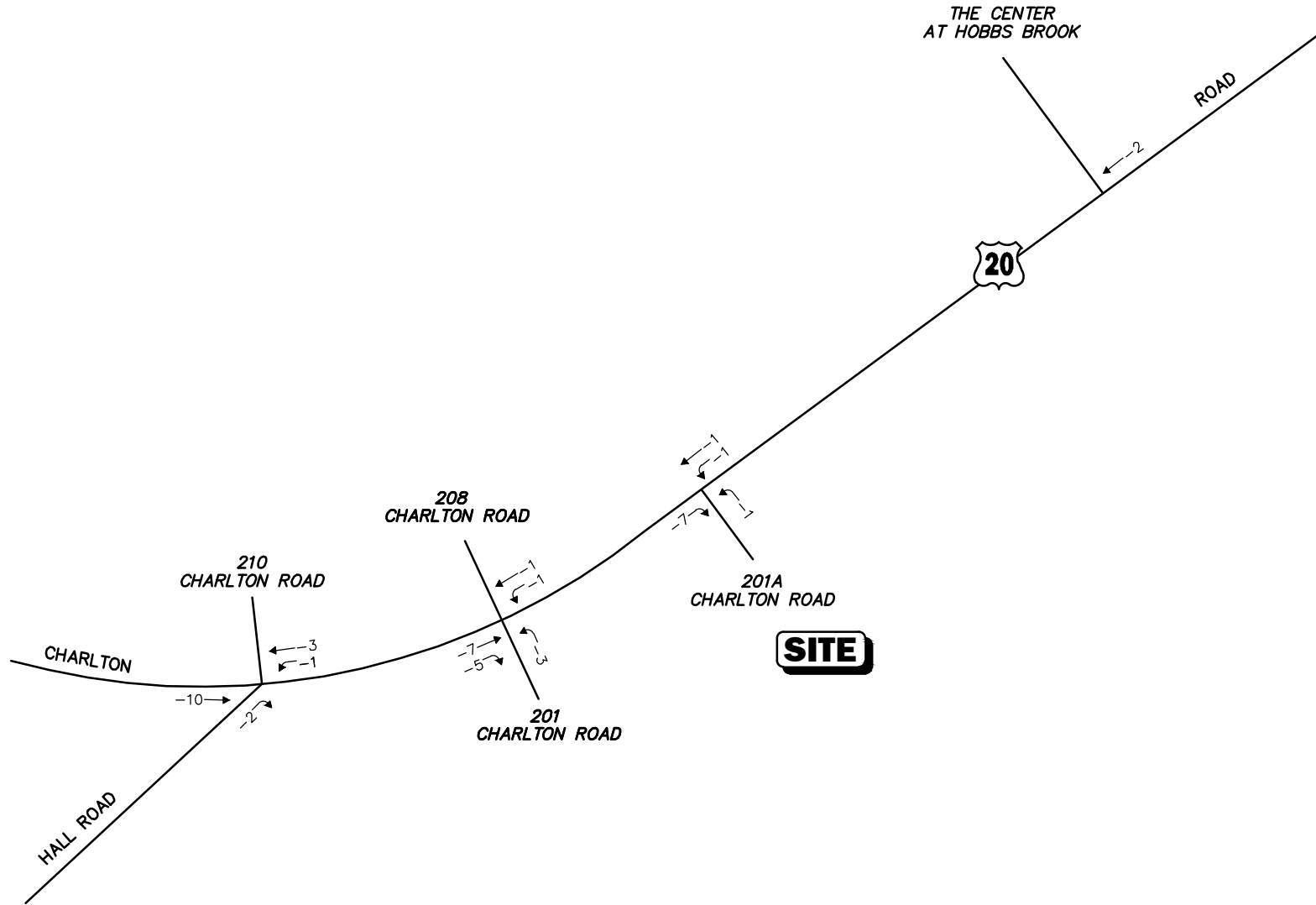
Location ID: 3991
County: WORCESTER
Functional Class: 3
Location: ROUTE 146
Seasonal Factor Group: U3
Daily Factor Group:
Axle Factor Group: U3
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status	
1	372	362	246	174	126	182	411	530	653	934	1340	1674	2073	2322	2370	2465	2282	2081	1701	1271	1030	824	582	389	26394	Accepted	
2	192	111	144	112	139	352	622	803	1102	1441	1795	2354	2694	2861	3045	2923	2827	2560	2077	1652	1317	1033	778	463	33397	Accepted	
3	239	139	103	85	112	258	517	649	779	1220	1778	2230	2529	2677	2599	2637	2355	1969	1537	1195	827	589	464	324	27811	Accepted	
4	197	172	181	236	440	1238	2415	2843	2615	2075	2148	2290	2450	2606	3102	3588	3389	3204	2206	1562	1109	797	675	458	41996	Accepted	
5	229	135	148	171	436	1337	2554	3052	2762	2279	2218	2412	2563	2721	3243	3791	3490	3403	2340	1630	1132	842	652	458	43998	Accepted	
6	231	159	126	155	439	1248	2556	2965	2709	2224	2203	2440	2687	2752	3408	3737	3648	3442	2393	1727	1229	889	719	450	44536	Accepted	
7	245	161	149	181	420	1256	2579	3024	2782	2315	2276	2483	2624	2736	3266	3721	3880	3480	2532	1801	1203	924	722	450	45210	Accepted	
8	256	148	145	203	434	1250	2379	2928	2753	2307	2390	2537	2763	3045	3539	3935	3727	3656	2877	2093	1558	1319	916	626	47784	Accepted	
9	343	184	208	172	259	528	911	1204	1552	1868	2542	2697	3197	3198	3153	2735	2666	2594	2431	1802	1362	1190	861	541	38198	Accepted	
10	280	164	107	93	135	247	554	677	918	1353	1897	2368	2874	2843	2888	2817	2759	2467	1945	1535	1056	815	617	354	31763	Accepted	
11																											
12	254	135	141	185	421	1299	2516	2948	2703	2315	2254	2416	2662	2518	3070	3846	3476	3276	2349	1699	1201	984	830	501	43999	Accepted	
13	287	169	186	253	537	1344	2510	2963	2581	2379	2449	2613	2773	2926	3386	3825	3817	3460	2471	1722	1196	941	719	461	45968	Accepted	
14	264	151	191	230	410	1308	2514	3079	2841	2334	2266	2451	2600	2740	3355	3775	3700	3465	2512	1804	1234	909	736	472	45341	Accepted	
15	234	131	164	199	464	1225	2434	3023	2685	2405	2326	2721	3073	3123	3637	4089	3961	3727	2822	2100	1489	1190	947	589	48758	Accepted	
16	297	235	134	125	206	455	742	977	1305	1704	2147	2667	2853	2985	3104	3133	2900	2641	2287	1754	1325	1123	875	605	36579	Accepted	
17	304	167	134	120	123	295	547	733	921	1387	1993	2353	2852	2950	3070	2902	2558	2303	1997	1431	1084	854	736	365	32179	Accepted	
18	230	142	181	202	416	1227	2045	2203	2111	2075	2115	2758	3056	3058	3382	3725	3417	3053	2267	1639	1083	797	667	403	42252	Accepted	
19	239	179	134	198	375	1316	2688	3058	2925	2367	2400	2475	2640	2766	3190	3734	3638	3250	2321	1589	1143	865	666	415	44571	Accepted	
20	232	162	135	157	396	1321	2555	3072	2702	2336	2390	2442	2621	2758	3217	3643	3594	3528	2494	1750	1137	877	723	450	44692	Accepted	
21	251	146	155	175	436	1348	2583	3141	2823	2405	2297	2575	2626	2787	3333	3757	3656	3527	2356	1741	1159	936	752	417	45382	Accepted	
22	255	150	146	215	436	1232	2534	3037	2888	2531	2447	2631	2910	3133	3498	3912	4002	3802	2932	2177	1493	1240	1037	609	49247	Accepted	
23	292	185	150	170	221	486	953	1198	1572	1941	2464	3067	3381	3176	3243	3386	3227	2974	2486	1975	1485	1270	1004	598	40904	Accepted	
24	346	372	221	199	229	399	782	977	1024	1373	1952	2469	2735	2925	2977	2765	2487	2147	1813	1497	1078	841	615	324	32547	Accepted	
25	191	110	161	173	438	1447	2834	3145	2848	2331	2326	2454	2649	2863	3430	3701	3707	3476	2381	1668	1179	823	670	444	45449	Accepted	
26	231	149	162	185	459	1464	2697	3294	2939	2347	2143	2623	2838	2979	3631	3965	3377	2779	1727	1143	892	732	603	420	43779	Accepted	
27	294	191	203	271	422	1110	2111	2703	2586	2244	2152	2197	2443	2587	3111	3483	3506	3364	2465	1776	1180	904	748	484	42535	Accepted	
28	300	170	198	212	456	1365	2604	3228	2851	2424	2296	2576	2728	2872	3390	3893	3808	3566	2577	1820	1319	956	797	602	47008	Accepted	
29	414	324	255	355	690	1698	2915	3498	3311	2842	2395	2561	2913	3078	3637	3975	3830	3684	2867	2350	1827	1481	1359	929	53188	Accepted	
30	549	303	247	333	341	706	1035	1550	1939	1918	2378	2910	3339	3368	3241	3255	3120	2875	2504	1919	1713	1548	1255	964	43310	Accepted	
31	587	394	244	197	175	398	754	1026	1256	1404	2060	2485	2835	3023	3135	2986	2834	2484	2122	1700	1229	872	670	415	35285	Accepted	

46076.3

REMOVAL OF EXISTING SITE TRIPS



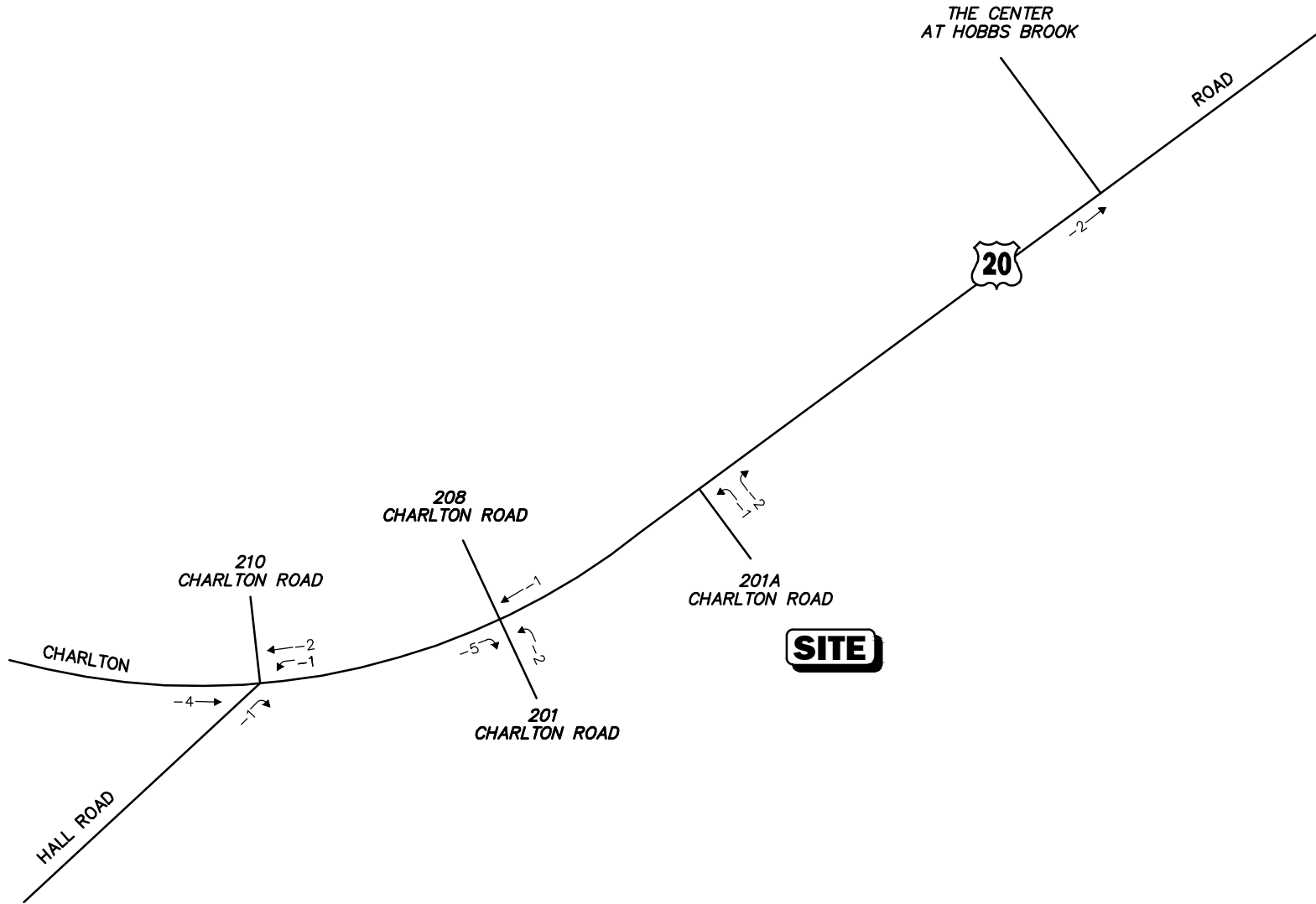


Not To Scale



Figure A-9

Removal of Existing Site Traffic
Weekday Morning
Peak-Hour Traffic Volumes



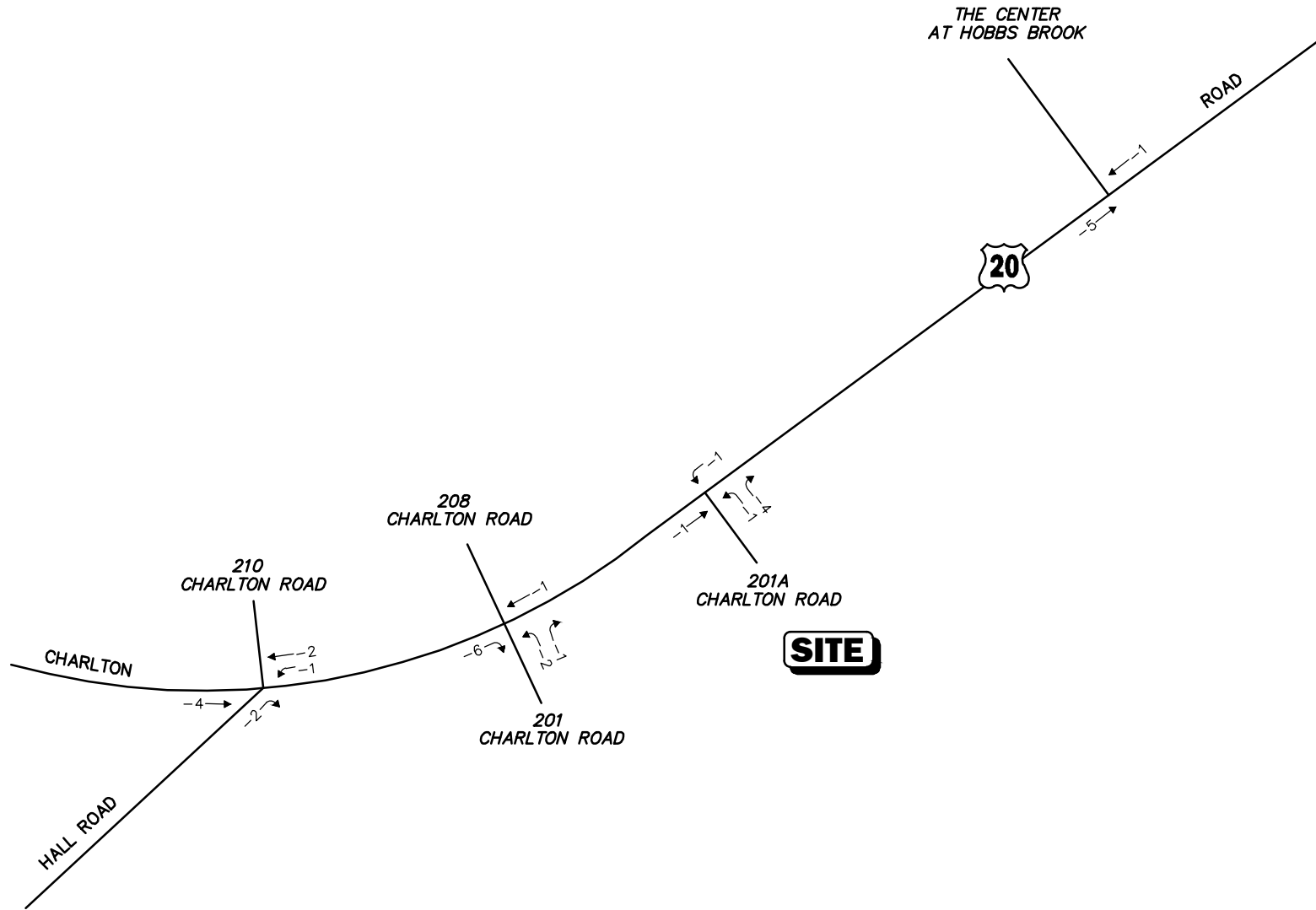
Not To Scale



Figure A-10

Removal of Existing Site Traffic
Weekday Evening
Peak-Hour Traffic Volumes

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Not To Scale



Figure A-11

Removal of Existing Site Traffic
Saturday Midday
Peak-Hour Traffic Volumes

CAPACITY ANALYSIS WORKSHEETS

2020 Existing Capacity Analysis Worksheets
2028 No-Build Capacity Analysis Worksheets
2028 Build Capacity Analysis Worksheets



2020 Existing Capacity Analysis Worksheets



2020 Existing Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	547	495	43	31	84
Future Volume (vph)	166	547	495	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1533		490	
Travel Time (s)		36.5	34.8		11.1	
Peak Hour Factor	0.85	0.85	0.82	0.82	0.69	0.69
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	644	604	52	45	122
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.41	0.24	0.43	0.03	0.08	0.20
Control Delay	20.2	2.3	12.3	0.0	22.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	2.3	12.3	0.0	22.7	3.2
Queue Length 50th (ft)	49	27	69	0	6	0
Queue Length 95th (ft)	110	41	114	0	16	12
Internal Link Dist (ft)		1526	1453		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	1040	3252	2700	1568	1992	1035
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.20	0.22	0.03	0.02	0.12

Intersection Summary

Area Type: Other
Cycle Length: 107

2020 Existing Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 48.8

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2020 Existing Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	547	495	43	31	84
Future Volume (vph)	166	547	495	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1829	3252	3172	1568	3502	1442
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1829	3252	3172	1568	3502	1442
Peak-hour factor, PHF	0.85	0.85	0.82	0.82	0.69	0.69
Adj. Flow (vph)	195	644	604	52	45	122
RTOR Reduction (vph)	0	0	0	0	0	81
Lane Group Flow (vph)	195	644	604	52	45	41
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	11.5	35.3	18.8	50.8	3.5	15.0
Effective Green, g (s)	12.5	38.3	21.8	50.8	4.5	17.0
Actuated g/C Ratio	0.25	0.75	0.43	1.00	0.09	0.33
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	450	2451	1361	1568	310	596
v/s Ratio Prot	c0.11	0.20	c0.19		c0.01	0.02
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.43	0.26	0.44	0.03	0.15	0.07
Uniform Delay, d1	16.2	1.9	10.2	0.0	21.4	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.2	0.0	0.2	0.0
Delay (s)	16.8	2.0	10.5	0.0	21.6	11.6
Level of Service	B	A	B	A	C	B
Approach Delay (s)		5.4	9.6		14.3	
Approach LOS		A	A		B	

Intersection Summary

HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2020 Existing Weekday Morning Peak Hour
 2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↖	↕↕		↖	↕			↕↔	
Traffic Volume (vph)	3	647	16	77	497	2	12	0	124	2	0	4
Future Volume (vph)	3	647	16	77	497	2	12	0	124	2	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.70	0.70	0.70	0.75	0.75	0.75
Heavy Vehicles (%)	0%	11%	7%	1%	10%	0%	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	732	0	97	632	0	17	177	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2020 Existing Weekday Morning Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↕		↗	↔			↔↔	
Traffic Vol, veh/h	3	647	16	77	497	2	12	0	124	2	0	4
Future Vol, veh/h	3	647	16	77	497	2	12	0	124	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	79	79	79	70	70	70	75	75	75
Heavy Vehicles, %	0	11	7	1	10	0	0	0	1	0	0	0
Mvmt Flow	3	711	18	97	629	3	17	0	177	3	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	632	0	0	729	0	0	1235	1552	365	1187	1560	316
Stage 1	-	-	-	-	-	-	726	726	-	825	825	-
Stage 2	-	-	-	-	-	-	509	826	-	362	735	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.5	6.5	6.92	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.21	-	-	3.5	4	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	960	-	-	877	-	-	135	115	635	146	113	686
Stage 1	-	-	-	-	-	-	387	433	-	337	390	-
Stage 2	-	-	-	-	-	-	520	389	-	635	428	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	960	-	-	877	-	-	122	102	635	96	100	686
Mov Cap-2 Maneuver	-	-	-	-	-	-	122	102	-	96	100	-
Stage 1	-	-	-	-	-	-	385	431	-	335	347	-
Stage 2	-	-	-	-	-	-	459	346	-	456	426	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.3			15.1			21.6		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	122	635	960	-	-	877	-	-	225
HCM Lane V/C Ratio	0.141	0.279	0.003	-	-	0.111	-	-	0.036
HCM Control Delay (s)	39.3	12.8	8.8	0	-	9.6	-	-	21.6
HCM Lane LOS	E	B	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	1.1	0	-	-	0.4	-	-	0.1

2020 Existing Weekday Morning Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (vph)	3	765	5	1	573	0	3	0	0	1	0	0
Future Volume (vph)	3	765	5	1	573	0	3	0	0	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	7%	33%	0%	7%	0%	33%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	849	0	0	726	0	0	6	0	0	2	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2020 Existing Weekday Morning Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	3	765	5	1	573	0	3	0	0	1	0	0
Future Vol, veh/h	3	765	5	1	573	0	3	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	79	79	79	50	50	50	50	50	50
Heavy Vehicles, %	0	7	33	0	7	0	33	0	0	0	0	0
Mvmt Flow	3	841	5	1	725	0	6	0	0	2	0	0

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	725	0	0	846	0	0	1215	1577	423	1154	1579	363
Stage 1	-	-	-	-	-	-	850	850	-	727	727	-
Stage 2	-	-	-	-	-	-	365	727	-	427	852	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.16	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	7.16	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.16	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.83	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	887	-	-	800	-	-	107	111	585	155	110	640
Stage 1	-	-	-	-	-	-	263	380	-	386	432	-
Stage 2	-	-	-	-	-	-	549	432	-	581	379	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	887	-	-	800	-	-	106	110	585	154	109	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	106	110	-	154	109	-
Stage 1	-	-	-	-	-	-	261	378	-	384	431	-
Stage 2	-	-	-	-	-	-	548	431	-	578	377	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	41	28.7
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	106	887	-	-	800	-	-	154
HCM Lane V/C Ratio	0.057	0.004	-	-	0.002	-	-	0.013
HCM Control Delay (s)	41	9.1	0	-	9.5	0	-	28.7
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

2020 Existing Weekday Morning Peak Hour
 4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	759	7	1	573	1	0
Future Volume (vph)	759	7	1	573	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.91	0.91	0.79	0.79	0.50	0.50
Heavy Vehicles (%)	7%	0%	0%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	842	0	0	726	2	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2020 Existing Weekday Morning Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	759	7	1	573	1	0
Future Vol, veh/h	759	7	1	573	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	79	79	50	50
Heavy Vehicles, %	7	0	0	7	0	0
Mvmt Flow	834	8	1	725	2	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	842	0	1203
Stage 1	-	-	-	-	838
Stage 2	-	-	-	-	365
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	802	-	180
Stage 1	-	-	-	-	390
Stage 2	-	-	-	-	679
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	802	-	180
Mov Cap-2 Maneuver	-	-	-	-	180
Stage 1	-	-	-	-	390
Stage 2	-	-	-	-	678

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	180	-	-	802	-
HCM Lane V/C Ratio	0.011	-	-	0.002	-
HCM Control Delay (s)	25.2	-	-	9.5	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2020 Existing Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	620	620	190	157	361
Future Volume (vph)	378	620	620	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1785		490	
Travel Time (s)		36.5	40.6		11.1	
Peak Hour Factor	0.91	0.91	0.95	0.95	0.94	0.94
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	681	653	200	167	384
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.66	0.26	0.57	0.12	0.33	0.41
Control Delay	26.2	3.3	21.4	0.2	30.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	3.3	21.4	0.2	30.1	7.9
Queue Length 50th (ft)	146	36	124	0	34	54
Queue Length 95th (ft)	283	62	182	0	67	130
Internal Link Dist (ft)		1526	1705		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	724	3422	2176	1615	1360	1011
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.20	0.30	0.12	0.12	0.38

Intersection Summary

Area Type: Other
Cycle Length: 107

2020 Existing Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 68.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2020 Existing Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	620	620	190	157	361
Future Volume (vph)	378	620	620	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3505	3388	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3505	3388	1615	3502	1615
Peak-hour factor, PHF	0.91	0.91	0.95	0.95	0.94	0.94
Adj. Flow (vph)	415	681	653	200	167	384
RTOR Reduction (vph)	0	0	0	0	0	66
Lane Group Flow (vph)	415	681	653	200	167	318
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	22.2	47.2	20.0	68.2	9.0	31.2
Effective Green, g (s)	23.2	50.2	23.0	68.2	10.0	33.2
Actuated g/C Ratio	0.34	0.74	0.34	1.00	0.15	0.49
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	634	2579	1142	1615	513	880
v/s Ratio Prot	c0.22	0.19	c0.19		0.05	c0.12
v/s Ratio Perm				0.12		0.07
v/c Ratio	0.65	0.26	0.57	0.12	0.33	0.36
Uniform Delay, d1	19.1	2.9	18.6	0.0	26.1	10.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.7	0.2	0.4	0.3
Delay (s)	21.5	3.0	19.3	0.2	26.5	11.2
Level of Service	C	A	B	A	C	B
Approach Delay (s)		10.0	14.8		15.8	
Approach LOS		B	B		B	

Intersection Summary

HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2020 Existing Weekday Evening Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↖	↕↕		↖	↕			↕↔	
Traffic Volume (vph)	3	795	12	183	859	2	3	2	218	4	0	5
Future Volume (vph)	3	795	12	183	859	2	3	2	218	4	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.85	0.85	0.85	0.45	0.45	0.45
Heavy Vehicles (%)	33%	3%	0%	1%	3%	50%	0%	0%	0%	25%	0%	20%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	871	0	193	906	0	4	258	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

2020 Existing Weekday Evening Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↕		↗	↔			↕↕	
Traffic Vol, veh/h	3	795	12	183	859	2	3	2	218	4	0	5
Future Vol, veh/h	3	795	12	183	859	2	3	2	218	4	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	85	85	85	45	45	45
Heavy Vehicles, %	33	3	0	1	3	50	0	0	0	25	0	20
Mvmt Flow	3	855	13	193	904	2	4	2	256	9	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	906	0	0	868	0	0	1706	2160	434	1726	2165	453
Stage 1	-	-	-	-	-	-	868	868	-	1291	1291	-
Stage 2	-	-	-	-	-	-	838	1292	-	435	874	-
Critical Hdwy	4.76	-	-	4.12	-	-	7.5	6.5	6.9	8	6.5	7.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Follow-up Hdwy	2.53	-	-	2.21	-	-	3.5	4	3.3	3.75	4	3.5
Pot Cap-1 Maneuver	581	-	-	778	-	-	60	48	576	45	48	507
Stage 1	-	-	-	-	-	-	318	372	-	142	236	-
Stage 2	-	-	-	-	-	-	331	236	-	512	370	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	581	-	-	778	-	-	47	36	576	19	36	507
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	36	-	19	36	-
Stage 1	-	-	-	-	-	-	315	368	-	141	177	-
Stage 2	-	-	-	-	-	-	243	177	-	279	366	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	20.2	158
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	47	507	581	-	-	778	-	-	41
HCM Lane V/C Ratio	0.075	0.511	0.006	-	-	0.248	-	-	0.488
HCM Control Delay (s)	87.7	19.3	11.2	0.1	-	11.1	-	-	158
HCM Lane LOS	F	C	B	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	2.9	0	-	-	1	-	-	1.7

2020 Existing Weekday Evening Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	1007	5	0	1038	0	2	0	0	1	0	4
Future Volume (vph)	1	1007	5	0	1038	0	2	0	0	1	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	2%	40%	0%	2%	0%	0%	0%	0%	0%	0%	25%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1089	0	0	1093	0	0	4	0	0	10	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2020 Existing Weekday Evening Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	1007	5	0	1038	0	2	0	0	1	0	4
Future Vol, veh/h	1	1007	5	0	1038	0	2	0	0	1	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	50	50	50	50	50	50
Heavy Vehicles, %	0	2	40	0	2	0	0	0	0	0	0	25
Mvmt Flow	1	1083	5	0	1093	0	4	0	0	2	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1093	0	0	1088	0	0	1635	2181	544	1637	2183	547
Stage 1	-	-	-	-	-	-	1088	1088	-	1093	1093	-
Stage 2	-	-	-	-	-	-	547	1093	-	544	1090	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.55
Pot Cap-1 Maneuver	646	-	-	649	-	-	68	47	488	68	47	426
Stage 1	-	-	-	-	-	-	234	294	-	232	293	-
Stage 2	-	-	-	-	-	-	494	293	-	496	294	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	646	-	-	649	-	-	67	47	488	68	47	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	47	-	68	47	-
Stage 1	-	-	-	-	-	-	233	293	-	231	293	-
Stage 2	-	-	-	-	-	-	485	293	-	494	293	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	62.1	23.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	67	646	-	-	649	-	-	208
HCM Lane V/C Ratio	0.06	0.002	-	-	-	-	-	0.048
HCM Control Delay (s)	62.1	10.6	0	-	0	-	-	23.2
HCM Lane LOS	F	B	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

2020 Existing Weekday Evening Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1008	0	0	1037	1	2
Future Volume (vph)	1008	0	0	1037	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.93	0.93	0.95	0.95	0.50	0.50
Heavy Vehicles (%)	7%	0%	0%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1084	0	0	1092	6	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

2020 Existing Weekday Evening Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Traffic Vol, veh/h	1008	0	0	1037	1	2
Future Vol, veh/h	1008	0	0	1037	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	95	95	50	50
Heavy Vehicles, %	7	0	0	7	0	0
Mvmt Flow	1084	0	0	1092	2	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1084	0	1630
Stage 1	-	-	-	-	1084
Stage 2	-	-	-	-	546
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	651	-	94
Stage 1	-	-	-	-	290
Stage 2	-	-	-	-	550
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	651	-	94
Mov Cap-2 Maneuver	-	-	-	-	94
Stage 1	-	-	-	-	290
Stage 2	-	-	-	-	550

Approach	EB	WB	NB
HCM Control Delay, s	0	0	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	204	-	-	651	-
HCM Lane V/C Ratio	0.029	-	-	-	-
HCM Control Delay (s)	23.2	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2020 Existing Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	619	711	207	174	451
Future Volume (vph)	411	619	711	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1653		490	
Travel Time (s)		36.5	37.6		11.1	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	467	703	773	225	193	501
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.73	0.26	0.63	0.14	0.39	0.55
Control Delay	31.7	3.3	23.1	0.2	33.0	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	3.3	23.1	0.2	33.0	12.9
Queue Length 50th (ft)	186	40	155	0	42	114
Queue Length 95th (ft)	#387	66	223	0	80	249
Internal Link Dist (ft)		1526	1573		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	644	3377	1975	1615	1210	912
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.21	0.39	0.14	0.16	0.55

Intersection Summary

Area Type: Other
Cycle Length: 107

2020 Existing Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 75.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2020 Existing Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	619	711	207	174	451
Future Volume (vph)	411	619	711	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3574	3455	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3574	3455	1615	3502	1615
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.90	0.90
Adj. Flow (vph)	467	703	773	225	193	501
RTOR Reduction (vph)	0	0	0	0	0	43
Lane Group Flow (vph)	467	703	773	225	193	458
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	25.2	54.0	23.8	75.8	9.8	35.0
Effective Green, g (s)	26.2	57.0	26.8	75.8	10.8	37.0
Actuated g/C Ratio	0.35	0.75	0.35	1.00	0.14	0.49
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	644	2687	1221	1615	498	873
v/s Ratio Prot	c0.25	0.20	c0.22		0.06	c0.18
v/s Ratio Perm				0.14		0.10
v/c Ratio	0.73	0.26	0.63	0.14	0.39	0.52
Uniform Delay, d1	21.7	2.9	20.4	0.0	29.5	13.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.1	1.1	0.2	0.5	0.6
Delay (s)	25.7	3.0	21.5	0.2	30.0	13.9
Level of Service	C	A	C	A	C	B
Approach Delay (s)		12.0	16.7		18.4	
Approach LOS		B	B		B	

Intersection Summary

HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2020 Existing Saturday Midday Peak Hour
 2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕		↕	↕			↕↕	
Traffic Volume (vph)	3	883	10	221	908	2	13	0	216	0	1	3
Future Volume (vph)	3	883	10	221	908	2	13	0	216	0	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.94	0.94	0.94	0.50	0.50	0.50
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	953	0	248	1022	0	14	230	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2020 Existing Saturday Midday Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↔		↗	↔			↔↔	
Traffic Vol, veh/h	3	883	10	221	908	2	13	0	216	0	1	3
Future Vol, veh/h	3	883	10	221	908	2	13	0	216	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	89	89	89	94	94	94	50	50	50
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	3	939	11	248	1020	2	14	0	230	0	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1022	0	0	950	0	0	1958	2469	475	1993	2473	511
Stage 1	-	-	-	-	-	-	951	951	-	1517	1517	-
Stage 2	-	-	-	-	-	-	1007	1518	-	476	956	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	687	-	-	731	-	-	39	31	541	37	30	513
Stage 1	-	-	-	-	-	-	283	341	-	127	183	-
Stage 2	-	-	-	-	-	-	262	183	-	544	339	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	687	-	-	731	-	-	26	20	541	16	20	513
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	20	-	16	20	-
Stage 1	-	-	-	-	-	-	280	338	-	126	121	-
Stage 2	-	-	-	-	-	-	168	121	-	310	336	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.4			29.7			61.2		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	26	541	687	-	-	731	-	-	72
HCM Lane V/C Ratio	0.532	0.425	0.005	-	-	0.34	-	-	0.111
HCM Control Delay (s)	248.5	16.5	10.3	0	-	12.4	-	-	61.2
HCM Lane LOS	F	C	B	A	-	B	-	-	F
HCM 95th %tile Q(veh)	1.6	2.1	0	-	-	1.5	-	-	0.4

2020 Existing Saturday Midday Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (vph)	1	1102	6	0	1125	2	2	0	1	0	0	4
Future Volume (vph)	1	1102	6	0	1125	2	2	0	1	0	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1179	0	0	1266	0	0	6	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2020 Existing Saturday Midday Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	1102	6	0	1125	2	2	0	1	0	0	4
Future Vol, veh/h	1	1102	6	0	1125	2	2	0	1	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	89	89	89	50	50	50	50	50	50
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	1172	6	0	1264	2	4	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1266	0	0	1178	0	0	1809	2443	589	1853	2445	633
Stage 1	-	-	-	-	-	-	1177	1177	-	1265	1265	-
Stage 2	-	-	-	-	-	-	632	1266	-	588	1180	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	556	-	-	600	-	-	50	32	457	47	32	427
Stage 1	-	-	-	-	-	-	206	267	-	182	243	-
Stage 2	-	-	-	-	-	-	440	242	-	467	266	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	556	-	-	600	-	-	49	32	457	47	32	427
Mov Cap-2 Maneuver	-	-	-	-	-	-	49	32	-	47	32	-
Stage 1	-	-	-	-	-	-	205	266	-	181	243	-
Stage 2	-	-	-	-	-	-	432	242	-	463	265	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			61.2			13.6		
HCM LOS							F			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	70	556	-	-	600	-	-	427
HCM Lane V/C Ratio	0.086	0.002	-	-	-	-	-	0.019
HCM Control Delay (s)	61.2	11.5	0	-	0	-	-	13.6
HCM Lane LOS	F	B	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

2020 Existing Saturday Midday Peak Hour
 4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1103	0	1	1126	1	4
Future Volume (vph)	1103	0	1	1126	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.94	0.94	0.89	0.89	0.50	0.50
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1173	0	0	1266	10	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2020 Existing Saturday Midday Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	1103	0	1	1126	1	4
Future Vol, veh/h	1103	0	1	1126	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	50	50
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1173	0	1	1265	2	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1173	0	1808
Stage 1	-	-	-	-	1173
Stage 2	-	-	-	-	635
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	603	-	72
Stage 1	-	-	-	-	261
Stage 2	-	-	-	-	496
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	603	-	72
Mov Cap-2 Maneuver	-	-	-	-	72
Stage 1	-	-	-	-	261
Stage 2	-	-	-	-	493

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	221	-	-	603	-
HCM Lane V/C Ratio	0.045	-	-	0.002	-
HCM Control Delay (s)	22.1	-	-	11	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2028 No-Build Capacity Analysis Worksheets



2028 No-Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	695	575	43	31	84
Future Volume (vph)	166	695	575	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1858		490	
Travel Time (s)		36.5	42.2		11.1	
Peak Hour Factor	0.85	0.85	0.82	0.82	0.69	0.69
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	818	701	52	45	122
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.42	0.30	0.47	0.03	0.09	0.20
Control Delay	21.9	2.3	12.5	0.0	24.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	2.3	12.5	0.0	24.9	4.4
Queue Length 50th (ft)	54	37	85	0	6	2
Queue Length 95th (ft)	118	54	137	0	17	16
Internal Link Dist (ft)		1526	1778		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	979	3252	2600	1568	1876	977
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.25	0.27	0.03	0.02	0.12

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 No-Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 52.2

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 No-Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	695	575	43	31	84
Future Volume (vph)	166	695	575	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1829	3252	3172	1568	3502	1442
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1829	3252	3172	1568	3502	1442
Peak-hour factor, PHF	0.85	0.85	0.82	0.82	0.69	0.69
Adj. Flow (vph)	195	818	701	52	45	122
RTOR Reduction (vph)	0	0	0	0	0	73
Lane Group Flow (vph)	195	818	701	52	45	49
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	12.0	38.6	21.6	54.1	3.5	15.5
Effective Green, g (s)	13.0	41.6	24.6	54.1	4.5	17.5
Actuated g/C Ratio	0.24	0.77	0.45	1.00	0.08	0.32
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	439	2500	1442	1568	291	573
v/s Ratio Prot	c0.11	0.25	c0.22		c0.01	0.02
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.44	0.33	0.49	0.03	0.15	0.09
Uniform Delay, d1	17.5	1.9	10.3	0.0	23.0	12.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.3	0.0	0.2	0.1
Delay (s)	18.2	2.0	10.6	0.0	23.3	12.8
Level of Service	B	A	B	A	C	B
Approach Delay (s)		5.1	9.9		15.6	
Approach LOS		A	A		B	

Intersection Summary

HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2028 No-Build Weekday Morning Peak Hour
 2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔↔		↔	↔			↔↔	
Traffic Volume (vph)	3	793	17	85	570	2	13	0	134	2	0	4
Future Volume (vph)	3	793	17	85	570	2	13	0	134	2	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.70	0.70	0.70	0.75	0.75	0.75
Heavy Vehicles (%)	0%	11%	7%	1%	10%	0%	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	893	0	108	725	0	19	191	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 No-Build Weekday Morning Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↔		↗	↔			↔↔	
Traffic Vol, veh/h	3	793	17	85	570	2	13	0	134	2	0	4
Future Vol, veh/h	3	793	17	85	570	2	13	0	134	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	79	79	79	70	70	70	75	75	75
Heavy Vehicles, %	0	11	7	1	10	0	0	0	1	0	0	0
Mvmt Flow	3	871	19	108	722	3	19	0	191	3	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	725	0	0	890	0	0	1464	1828	445	1382	1836	363
Stage 1	-	-	-	-	-	-	887	887	-	940	940	-
Stage 2	-	-	-	-	-	-	577	941	-	442	896	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.5	6.5	6.92	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.21	-	-	3.5	4	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	887	-	-	764	-	-	91	78	563	105	77	640
Stage 1	-	-	-	-	-	-	309	365	-	287	345	-
Stage 2	-	-	-	-	-	-	474	345	-	570	362	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	887	-	-	764	-	-	80	67	563	61	66	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	67	-	61	66	-
Stage 1	-	-	-	-	-	-	307	362	-	285	296	-
Stage 2	-	-	-	-	-	-	404	296	-	374	359	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.4			19			29.7		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	80	563	887	-	-	764	-	-	154
HCM Lane V/C Ratio	0.232	0.34	0.004	-	-	0.141	-	-	0.052
HCM Control Delay (s)	63.1	14.7	9.1	0	-	10.5	-	-	29.7
HCM Lane LOS	F	B	A	A	-	B	-	-	D
HCM 95th %tile Q(veh)	0.8	1.5	0	-	-	0.5	-	-	0.2

2028 No-Build Weekday Morning Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (vph)	3	921	5	1	654	0	3	0	0	1	0	0
Future Volume (vph)	3	921	5	1	654	0	3	0	0	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	7%	33%	0%	7%	0%	33%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1020	0	0	829	0	0	6	0	0	2	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 No-Build Weekday Morning Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	3	921	5	1	654	0	3	0	0	1	0	0
Future Vol, veh/h	3	921	5	1	654	0	3	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	79	79	79	50	50	50	50	50	50
Heavy Vehicles, %	0	7	33	0	7	0	33	0	0	0	0	0
Mvmt Flow	3	1012	5	1	828	0	6	0	0	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	828	0	0	1017	0	0	1437	1851	509	1342	1853	414
Stage 1	-	-	-	-	-	-	1021	1021	-	830	830	-
Stage 2	-	-	-	-	-	-	416	830	-	512	1023	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.16	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	7.16	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.16	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.83	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	812	-	-	690	-	-	71	75	515	112	75	593
Stage 1	-	-	-	-	-	-	202	316	-	335	388	-
Stage 2	-	-	-	-	-	-	509	388	-	518	316	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	812	-	-	690	-	-	70	74	515	111	74	593
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	74	-	111	74	-
Stage 1	-	-	-	-	-	-	200	313	-	332	387	-
Stage 2	-	-	-	-	-	-	507	387	-	513	313	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	61.2	38
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	70	812	-	-	690	-	-	111
HCM Lane V/C Ratio	0.086	0.004	-	-	0.002	-	-	0.018
HCM Control Delay (s)	61.2	9.5	0	-	10.2	0	-	38
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

2028 No-Build Weekday Morning Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	915	7	1	654	1	0
Future Volume (vph)	915	7	1	654	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.91	0.91	0.79	0.79	0.50	0.50
Heavy Vehicles (%)	7%	0%	0%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1013	0	0	829	2	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

2028 No-Build Weekday Morning Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	915	7	1	654	1	0
Future Vol, veh/h	915	7	1	654	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	79	79	50	50
Heavy Vehicles, %	7	0	0	7	0	0
Mvmt Flow	1005	8	1	828	2	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1013	0	1425
Stage 1	-	-	-	-	1009
Stage 2	-	-	-	-	416
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	692	-	129
Stage 1	-	-	-	-	318
Stage 2	-	-	-	-	640
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	692	-	129
Mov Cap-2 Maneuver	-	-	-	-	129
Stage 1	-	-	-	-	318
Stage 2	-	-	-	-	638

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	129	-	-	692	-
HCM Lane V/C Ratio	0.016	-	-	0.002	-
HCM Control Delay (s)	33.3	-	-	10.2	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	0	-

2028 No-Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	726	740	190	157	361
Future Volume (vph)	378	726	740	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1575		490	
Travel Time (s)		36.5	35.8		11.1	
Peak Hour Factor	0.91	0.91	0.95	0.95	0.94	0.94
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	798	779	200	167	384
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.69	0.30	0.62	0.12	0.34	0.44
Control Delay	30.3	3.3	21.6	0.2	32.6	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	3.3	21.6	0.2	32.6	11.0
Queue Length 50th (ft)	162	45	155	0	37	77
Queue Length 95th (ft)	#320	75	223	0	72	171
Internal Link Dist (ft)		1526	1495		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	675	3310	2030	1615	1268	936
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.24	0.38	0.12	0.13	0.41

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 No-Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 73.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 No-Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	726	740	190	157	361
Future Volume (vph)	378	726	740	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3505	3388	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3505	3388	1615	3502	1615
Peak-hour factor, PHF	0.91	0.91	0.95	0.95	0.94	0.94
Adj. Flow (vph)	415	798	779	200	167	384
RTOR Reduction (vph)	0	0	0	0	0	45
Lane Group Flow (vph)	415	798	779	200	167	339
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	22.6	51.9	24.3	73.1	9.2	31.8
Effective Green, g (s)	23.6	54.9	27.3	73.1	10.2	33.8
Actuated g/C Ratio	0.32	0.75	0.37	1.00	0.14	0.46
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	602	2632	1265	1615	488	835
v/s Ratio Prot	c0.22	0.23	c0.23		0.05	c0.13
v/s Ratio Perm				0.12		0.08
v/c Ratio	0.69	0.30	0.62	0.12	0.34	0.41
Uniform Delay, d1	21.6	2.9	18.6	0.0	28.4	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.1	0.9	0.2	0.4	0.3
Delay (s)	24.9	3.0	19.5	0.2	28.8	13.3
Level of Service	C	A	B	A	C	B
Approach Delay (s)		10.5	15.6		18.0	
Approach LOS		B	B		B	

Intersection Summary

HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 No-Build Weekday Evening Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔↔		↔	↔			↔↔	
Traffic Volume (vph)	3	891	13	199	1012	2	3	2	233	4	0	5
Future Volume (vph)	3	891	13	199	1012	2	3	2	233	4	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.85	0.85	0.85	0.45	0.45	0.45
Heavy Vehicles (%)	33%	3%	0%	1%	3%	50%	0%	0%	0%	25%	0%	20%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	975	0	209	1067	0	4	276	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

2028 No-Build Weekday Evening Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↔		↗	↔			↔↔	
Traffic Vol, veh/h	3	891	13	199	1012	2	3	2	233	4	0	5
Future Vol, veh/h	3	891	13	199	1012	2	3	2	233	4	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	85	85	85	45	45	45
Heavy Vehicles, %	33	3	0	1	3	50	0	0	0	25	0	20
Mvmt Flow	3	958	14	209	1065	2	4	2	274	9	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1067	0	0	972	0	0	1922	2456	486	1970	2462	534
Stage 1	-	-	-	-	-	-	971	971	-	1484	1484	-
Stage 2	-	-	-	-	-	-	951	1485	-	486	978	-
Critical Hdwy	4.76	-	-	4.12	-	-	7.5	6.5	6.9	8	6.5	7.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Follow-up Hdwy	2.53	-	-	2.21	-	-	3.5	4	3.3	3.75	4	3.5
Pot Cap-1 Maneuver	493	-	-	711	-	-	41	31	533	28	31	447
Stage 1	-	-	-	-	-	-	275	334	-	105	190	-
Stage 2	-	-	-	-	-	-	283	190	-	476	331	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	493	-	-	711	-	-	31	22	533	10	22	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	31	22	-	10	22	-
Stage 1	-	-	-	-	-	-	271	330	-	104	134	-
Stage 2	-	-	-	-	-	-	195	134	-	227	327	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	26.9	\$ 407.7
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	31	445	493	-	-	711	-	-	22
HCM Lane V/C Ratio	0.114	0.621	0.007	-	-	0.295	-	-	0.909
HCM Control Delay (s)	135.5	25.5	12.3	0.1	-	12.2	-	-	\$ 407.7
HCM Lane LOS	F	D	B	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.3	4.1	0	-	-	1.2	-	-	2.6

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

2028 No-Build Weekday Evening Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (vph)	1	1122	5	0	1207	0	2	0	0	1	0	4
Future Volume (vph)	1	1122	5	0	1207	0	2	0	0	1	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	2%	40%	0%	2%	0%	0%	0%	0%	0%	0%	25%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1212	0	0	1271	0	0	4	0	0	10	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 No-Build Weekday Evening Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	1122	5	0	1207	0	2	0	0	1	0	4
Future Vol, veh/h	1	1122	5	0	1207	0	2	0	0	1	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	50	50	50	50	50	50
Heavy Vehicles, %	0	2	40	0	2	0	0	0	0	0	0	25
Mvmt Flow	1	1206	5	0	1271	0	4	0	0	2	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1271	0	0	1211	0	0	1847	2482	606	1876	2484	636
Stage 1	-	-	-	-	-	-	1211	1211	-	1271	1271	-
Stage 2	-	-	-	-	-	-	636	1271	-	605	1213	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.55
Pot Cap-1 Maneuver	553	-	-	583	-	-	47	30	445	45	30	369
Stage 1	-	-	-	-	-	-	197	257	-	181	241	-
Stage 2	-	-	-	-	-	-	437	241	-	456	257	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	553	-	-	583	-	-	46	30	445	45	30	369
Mov Cap-2 Maneuver	-	-	-	-	-	-	46	30	-	45	30	-
Stage 1	-	-	-	-	-	-	196	255	-	180	241	-
Stage 2	-	-	-	-	-	-	428	241	-	453	255	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	90.6	30.5
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	46	553	-	-	583	-	-	151
HCM Lane V/C Ratio	0.087	0.002	-	-	-	-	-	0.066
HCM Control Delay (s)	90.6	11.5	0	-	0	-	-	30.5
HCM Lane LOS	F	B	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2

2028 No-Build Weekday Evening Peak Hour
 4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1123	0	0	1206	1	2
Future Volume (vph)	1123	0	0	1206	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.93	0.93	0.95	0.95	0.50	0.50
Heavy Vehicles (%)	7%	0%	0%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1208	0	0	1269	6	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 No-Build Weekday Evening Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Traffic Vol, veh/h	1123	0	0	1206	1	2
Future Vol, veh/h	1123	0	0	1206	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	95	95	50	50
Heavy Vehicles, %	7	0	0	7	0	0
Mvmt Flow	1208	0	0	1269	2	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1208	0	1843
Stage 1	-	-	-	-	1208
Stage 2	-	-	-	-	635
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	585	-	68
Stage 1	-	-	-	-	250
Stage 2	-	-	-	-	496
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	585	-	68
Mov Cap-2 Maneuver	-	-	-	-	68
Stage 1	-	-	-	-	250
Stage 2	-	-	-	-	496

Approach	EB	WB	NB
HCM Control Delay, s	0	0	29
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	156	-	-	585	-
HCM Lane V/C Ratio	0.038	-	-	-	-
HCM Control Delay (s)	29	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2028 No-Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	720	806	207	174	451
Future Volume (vph)	411	720	806	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1606	1643		490	
Travel Time (s)		36.5	37.3		11.1	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	467	818	876	225	193	501
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.77	0.30	0.66	0.14	0.40	0.58
Control Delay	36.3	3.4	23.0	0.2	35.4	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	3.4	23.0	0.2	35.4	16.2
Queue Length 50th (ft)	204	50	184	0	45	139
Queue Length 95th (ft)	#431	80	258	0	86	299
Internal Link Dist (ft)		1526	1563		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	610	3245	1872	1615	1147	860
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.25	0.47	0.14	0.17	0.58

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 No-Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 80.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 No-Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	720	806	207	174	451
Future Volume (vph)	411	720	806	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3574	3455	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3574	3455	1615	3502	1615
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.90	0.90
Adj. Flow (vph)	467	818	876	225	193	501
RTOR Reduction (vph)	0	0	0	0	0	32
Lane Group Flow (vph)	467	818	876	225	193	469
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	25.3	58.1	27.8	80.1	10.0	35.3
Effective Green, g (s)	26.3	61.1	30.8	80.1	11.0	37.3
Actuated g/C Ratio	0.33	0.76	0.38	1.00	0.14	0.47
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	612	2726	1328	1615	480	832
v/s Ratio Prot	c0.25	0.23	c0.25		0.06	c0.19
v/s Ratio Perm				0.14		0.11
v/c Ratio	0.76	0.30	0.66	0.14	0.40	0.56
Uniform Delay, d1	24.1	2.9	20.3	0.0	31.5	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.1	1.2	0.2	0.6	0.9
Delay (s)	29.7	3.0	21.5	0.2	32.1	16.4
Level of Service	C	A	C	A	C	B
Approach Delay (s)		12.7	17.2		20.8	
Approach LOS		B	B		C	

Intersection Summary

HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 No-Build Saturday Midday Peak Hour
 2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↖	↕↕		↖	↕			↕↔	
Traffic Volume (vph)	3	979	11	234	992	2	14	0	241	0	1	3
Future Volume (vph)	3	979	11	234	992	2	14	0	241	0	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			310			692				212
Travel Time (s)		17.1			7.0			15.7				4.8
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.94	0.94	0.94	0.50	0.50	0.50
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1056	0	263	1117	0	15	256	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 No-Build Saturday Midday Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↗↗		↗	↗			↔↔	
Traffic Vol, veh/h	3	979	11	234	992	2	14	0	241	0	1	3
Future Vol, veh/h	3	979	11	234	992	2	14	0	241	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	89	89	89	94	94	94	50	50	50
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	3	1041	12	263	1115	2	15	0	256	0	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1117	0	0	1053	0	0	2138	2696	527	2169	2701	559
Stage 1	-	-	-	-	-	-	1053	1053	-	1642	1642	-
Stage 2	-	-	-	-	-	-	1085	1643	-	527	1059	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	633	-	-	669	-	-	28	22	501	27	22	478
Stage 1	-	-	-	-	-	-	245	306	-	106	159	-
Stage 2	-	-	-	-	-	-	235	159	-	508	304	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	633	-	-	669	-	-	17	13	501	9	13	478
Mov Cap-2 Maneuver	-	-	-	-	-	-	17	13	-	9	13	-
Stage 1	-	-	-	-	-	-	242	303	-	105	97	-
Stage 2	-	-	-	-	-	-	138	97	-	245	301	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.1		2.6		44.7		94.4	
HCM LOS					E		F	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	17	501	633	-	-	669	-	-	48
HCM Lane V/C Ratio	0.876	0.512	0.005	-	-	0.393	-	-	0.167
HCM Control Delay (s)	\$ 479.2	19.5	10.7	0.1	-	13.8	-	-	94.4
HCM Lane LOS	F	C	B	A	-	B	-	-	F
HCM 95th %tile Q(veh)	2.2	2.9	0	-	-	1.9	-	-	0.5

2028 No-Build Saturday Midday Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1213	6	0	1222	2	2	0	1	0	0	4
Future Volume (vph)	1	1213	6	0	1222	2	2	0	1	0	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		310			261			200			250	
Travel Time (s)		7.0			5.9			4.5			5.7	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1297	0	0	1375	0	0	6	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 No-Build Saturday Midday Peak Hour
 3: 201 Charlton Road Driveway/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	1213	6	0	1222	2	2	0	1	0	0	4
Future Vol, veh/h	1	1213	6	0	1222	2	2	0	1	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	89	89	89	50	50	50	50	50	50
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	1290	6	0	1373	2	4	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1375	0	0	1296	0	0	1982	2670	648	2021	2672	688
Stage 1	-	-	-	-	-	-	1295	1295	-	1374	1374	-
Stage 2	-	-	-	-	-	-	687	1375	-	647	1298	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	505	-	-	541	-	-	37	23	418	35	23	393
Stage 1	-	-	-	-	-	-	175	235	-	156	215	-
Stage 2	-	-	-	-	-	-	408	215	-	431	234	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	505	-	-	541	-	-	36	23	418	35	23	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	36	23	-	35	23	-
Stage 1	-	-	-	-	-	-	174	233	-	155	215	-
Stage 2	-	-	-	-	-	-	400	215	-	426	232	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	83.1	14.4
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	505	-	-	541	-	-	393
HCM Lane V/C Ratio	0.115	0.002	-	-	-	-	-	0.02
HCM Control Delay (s)	83.1	12.1	0	-	0	-	-	14.4
HCM Lane LOS	F	B	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

2028 No-Build Saturday Midday Peak Hour
 4: 201A Charlton Road Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1214	0	1	1223	1	4
Future Volume (vph)	1214	0	1	1223	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	261			1606	367	
Travel Time (s)	5.9			36.5	8.3	
Peak Hour Factor	0.94	0.94	0.89	0.89	0.50	0.50
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1291	0	0	1375	10	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 No-Build Saturday Midday Peak Hour
4: 201A Charlton Road Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Traffic Vol, veh/h	1214	0	1	1223	1	4
Future Vol, veh/h	1214	0	1	1223	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	50	50
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1291	0	1	1374	2	8

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1291	0	1980
Stage 1	-	-	-	-	1291
Stage 2	-	-	-	-	689
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	544	-	55
Stage 1	-	-	-	-	226
Stage 2	-	-	-	-	465
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	544	-	55
Mov Cap-2 Maneuver	-	-	-	-	55
Stage 1	-	-	-	-	226
Stage 2	-	-	-	-	461

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	180	-	-	544	-
HCM Lane V/C Ratio	0.056	-	-	0.002	-
HCM Control Delay (s)	26.2	-	-	11.6	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

2028 Build Capacity Analysis Worksheets



2028 Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	763	657	43	31	84
Future Volume (vph)	166	763	657	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1460	2084		490	
Travel Time (s)		33.2	47.4		11.1	
Peak Hour Factor	0.85	0.85	0.82	0.82	0.69	0.69
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	898	801	52	45	122
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.44	0.32	0.51	0.03	0.09	0.22
Control Delay	23.7	2.3	12.7	0.0	27.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	2.3	12.7	0.0	27.0	7.0
Queue Length 50th (ft)	59	42	104	0	7	9
Queue Length 95th (ft)	127	61	162	0	19	27
Internal Link Dist (ft)		1380	2004		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	924	3220	2517	1568	1769	914
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.28	0.32	0.03	0.03	0.13

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021

Actuated Cycle Length: 55.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 Build Weekday Morning Peak Hour
1: Route 20 & Hobbs Brook Drive

04/01/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	166	763	657	43	31	84
Future Volume (vph)	166	763	657	43	31	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1829	3252	3172	1568	3502	1442
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1829	3252	3172	1568	3502	1442
Peak-hour factor, PHF	0.85	0.85	0.82	0.82	0.69	0.69
Adj. Flow (vph)	195	898	801	52	45	122
RTOR Reduction (vph)	0	0	0	0	0	53
Lane Group Flow (vph)	195	898	801	52	45	69
Heavy Vehicles (%)	2%	11%	10%	3%	0%	12%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	12.5	41.9	24.4	57.4	3.5	16.0
Effective Green, g (s)	13.5	44.9	27.4	57.4	4.5	18.0
Actuated g/C Ratio	0.24	0.78	0.48	1.00	0.08	0.31
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	430	2543	1514	1568	274	552
v/s Ratio Prot	c0.11	0.28	c0.25		0.01	c0.03
v/s Ratio Perm				0.03		0.02
v/c Ratio	0.45	0.35	0.53	0.03	0.16	0.13
Uniform Delay, d1	18.8	1.9	10.5	0.0	24.7	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.3	0.0	0.3	0.1
Delay (s)	19.6	2.0	10.8	0.0	25.0	14.2
Level of Service	B	A	B	A	C	B
Approach Delay (s)		5.1	10.2		17.1	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2028 Build Weekday Morning Peak Hour
 2: Hall Road/Driveway & Route 20

04/01/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔↔		↔	↔			↔↔	
Traffic Volume (vph)	3	913	17	104	675	2	13	0	156	2	0	4
Future Volume (vph)	3	913	17	104	675	2	13	0	156	2	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			160			692				212
Travel Time (s)		17.1			3.6			15.7				4.8
Peak Hour Factor	0.91	0.91	0.91	0.79	0.79	0.79	0.70	0.70	0.70	0.75	0.75	0.75
Heavy Vehicles (%)	0%	11%	7%	1%	10%	0%	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1025	0	132	857	0	19	223	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Morning Peak Hour
2: Hall Road/Driveway & Route 20

04/01/2021

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔↔		↔	↔			↔↔	
Traffic Vol, veh/h	3	913	17	104	675	2	13	0	156	2	0	4
Future Vol, veh/h	3	913	17	104	675	2	13	0	156	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	79	79	79	70	70	70	75	75	75
Heavy Vehicles, %	0	11	7	1	10	0	0	0	1	0	0	0
Mvmt Flow	3	1003	19	132	854	3	19	0	223	3	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	857	0	0	1022	0	0	1710	2140	511	1628	2148	429
Stage 1	-	-	-	-	-	-	1019	1019	-	1120	1120	-
Stage 2	-	-	-	-	-	-	691	1121	-	508	1028	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.5	6.5	6.92	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.21	-	-	3.5	4	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	792	-	-	681	-	-	60	50	510	69	49	580
Stage 1	-	-	-	-	-	-	257	317	-	223	284	-
Stage 2	-	-	-	-	-	-	406	284	-	521	314	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	792	-	-	681	-	-	50	40	510	33	39	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	40	-	33	39	-
Stage 1	-	-	-	-	-	-	255	314	-	221	229	-
Stage 2	-	-	-	-	-	-	324	229	-	291	311	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.5			24.9			49.4		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	50	510	792	-	-	681	-	-	89
HCM Lane V/C Ratio	0.371	0.437	0.004	-	-	0.193	-	-	0.09
HCM Control Delay (s)	114.6	17.4	9.6	0	-	11.5	-	-	49.4
HCM Lane LOS	F	C	A	A	-	B	-	-	E
HCM 95th %tile Q(veh)	1.3	2.2	0	-	-	0.7	-	-	0.3

2028 Build Weekday Morning Peak Hour
 3: Route 20 & Driveway

04/01/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (vph)	3	1068	781	0	1	0
Future Volume (vph)	3	1068	781	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		160	150		165	
Travel Time (s)		3.6	3.4		3.8	
Peak Hour Factor	0.91	0.91	0.79	0.79	0.50	0.50
Heavy Vehicles (%)	0%	7%	7%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1177	989	0	2	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Morning Peak Hour
3: Route 20 & Driveway

04/01/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	
Traffic Vol, veh/h	3	1068	781	0	1	0
Future Vol, veh/h	3	1068	781	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	79	79	50	50
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	3	1174	989	0	2	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	989	0	-	0	1582 495
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	593 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	707	-	-	-	101 525
Stage 1	-	-	-	-	325 -
Stage 2	-	-	-	-	521 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	707	-	-	-	100 525
Mov Cap-2 Maneuver	-	-	-	-	100 -
Stage 1	-	-	-	-	321 -
Stage 2	-	-	-	-	521 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	41.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	707	-	-	-	100
HCM Lane V/C Ratio	0.005	-	-	-	0.02
HCM Control Delay (s)	10.1	0.1	-	-	41.7
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2028 Build Weekday Morning Peak Hour
 4: East Site Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	919	0	0	735	20	64
Future Volume (vph)	919	0	0	735	20	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	407			1460	367	
Travel Time (s)	9.3			33.2	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	2%	2%	7%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	999	0	0	799	92	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Morning Peak Hour
4: East Site Driveway & Route 20

04/01/2021

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↓	
Traffic Vol, veh/h	919	0	0	735	20	64
Future Vol, veh/h	919	0	0	735	20	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	2	2	7	2	2
Mvmt Flow	999	0	0	799	22	70

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	1399 500
Stage 1	-	-	-	-	999 -
Stage 2	-	-	-	-	400 -
Critical Hdwy	-	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	-	0	0	-	132 516
Stage 1	-	0	0	-	317 -
Stage 2	-	0	0	-	646 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	132 516
Mov Cap-2 Maneuver	-	-	-	-	132 -
Stage 1	-	-	-	-	317 -
Stage 2	-	-	-	-	646 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	305	-	-
HCM Lane V/C Ratio	0.299	-	-
HCM Control Delay (s)	21.8	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	1.2	-	-

2028 Build Weekday Morning Peak Hour
5: Main Site Driveway & Route 20

04/01/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	846	223	131	624	157	73
Future Volume (vph)	846	223	131	624	157	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	125		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	150			407	200	
Travel Time (s)	3.4			9.3	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	2%	2%	7%	2%	2%
Parking (#/hr)						0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1162	0	142	678	171	79
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Detector Phase	4		3	8	2	3
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		10.0	22.0	18.0	10.0
Total Split (s)	35.0		16.0	51.0	19.0	16.0
Total Split (%)	50.0%		22.9%	72.9%	27.1%	22.9%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None		None	None	None	None
v/c Ratio	0.62		0.38	0.27	0.40	0.12
Control Delay	15.4		29.4	4.4	27.2	4.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	15.4		29.4	4.4	27.2	4.7
Queue Length 50th (ft)	195		55	48	64	3
Queue Length 95th (ft)	281		108	75	120	24
Internal Link Dist (ft)	70			327	120	
Turn Bay Length (ft)			125			50
Base Capacity (vph)	1888		447	2536	559	695
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.62		0.32	0.27	0.31	0.11

Intersection Summary

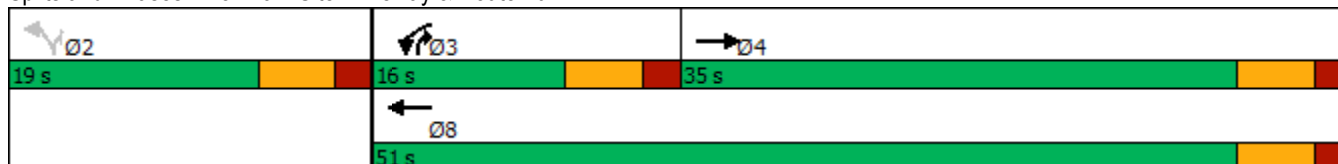
Area Type: Other
Cycle Length: 70

2028 Build Weekday Morning Peak Hour
5: Main Site Driveway & Route 20

04/01/2021

Actuated Cycle Length: 58.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Main Site Driveway & Route 20



2028 Build Weekday Morning Peak Hour
5: Main Site Driveway & Route 20

04/01/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	846	223	131	624	157	73
Future Volume (vph)	846	223	131	624	157	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3301		1770	3374	1770	1425
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3301		1770	3374	1770	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	920	242	142	678	171	79
RTOR Reduction (vph)	30	0	0	0	0	47
Lane Group Flow (vph)	1132	0	142	678	171	32
Heavy Vehicles (%)	7%	2%	2%	7%	2%	2%
Parking (#/hr)						0
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Actuated Green, G (s)	28.2		6.7	40.9	8.2	14.9
Effective Green, g (s)	30.2		8.7	42.9	10.2	18.9
Actuated g/C Ratio	0.49		0.14	0.70	0.17	0.31
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1631		252	2368	295	534
v/s Ratio Prot	c0.34		c0.08	0.20		0.01
v/s Ratio Perm					c0.10	0.01
v/c Ratio	0.69		0.56	0.29	0.58	0.06
Uniform Delay, d1	11.9		24.4	3.4	23.5	14.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		2.9	0.1	2.8	0.0
Delay (s)	13.2		27.3	3.5	26.2	14.9
Level of Service	B		C	A	C	B
Approach Delay (s)	13.2			7.6	22.6	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/05/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	764	777	190	157	361
Future Volume (vph)	378	764	777	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1393	1780		490	
Travel Time (s)		31.7	40.5		11.1	
Peak Hour Factor	0.91	0.91	0.95	0.95	0.94	0.94
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	840	818	200	167	384
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.70	0.32	0.63	0.12	0.35	0.45
Control Delay	31.9	3.4	21.6	0.2	33.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	3.4	21.6	0.2	33.6	12.2
Queue Length 50th (ft)	166	49	166	0	38	83
Queue Length 95th (ft)	#349	81	236	0	74	186
Internal Link Dist (ft)		1313	1700		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	661	3262	1987	1615	1242	915
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.26	0.41	0.12	0.13	0.42

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/05/2021

Actuated Cycle Length: 75

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 Build Weekday Evening Peak Hour
1: Route 20 & Hobbs Brook Drive

04/05/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	378	764	777	190	157	361
Future Volume (vph)	378	764	777	190	157	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3505	3388	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3505	3388	1615	3502	1615
Peak-hour factor, PHF	0.91	0.91	0.95	0.95	0.94	0.94
Adj. Flow (vph)	415	840	818	200	167	384
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	415	840	818	200	167	345
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	22.7	53.5	25.8	74.8	9.3	32.0
Effective Green, g (s)	23.7	56.5	28.8	74.8	10.3	34.0
Actuated g/C Ratio	0.32	0.76	0.39	1.00	0.14	0.45
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	590	2647	1304	1615	482	820
v/s Ratio Prot	c0.22	0.24	c0.24		0.05	c0.13
v/s Ratio Perm				0.12		0.08
v/c Ratio	0.70	0.32	0.63	0.12	0.35	0.42
Uniform Delay, d1	22.5	2.9	18.6	0.0	29.2	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.1	1.0	0.2	0.4	0.3
Delay (s)	26.3	3.0	19.6	0.2	29.6	14.1
Level of Service	C	A	B	A	C	B
Approach Delay (s)		10.7	15.8		18.8	
Approach LOS		B	B		B	

Intersection Summary

HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 Build Weekday Evening Peak Hour
 2: Hall Road/Driveway & Route 20

04/05/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔			↔	
Traffic Volume (vph)	3	946	13	209	1070	2	3	2	243	4	0	5
Future Volume (vph)	3	946	13	209	1070	2	3	2	243	4	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			211			692				212
Travel Time (s)		17.1			4.8			15.7				4.8
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.85	0.85	0.85	0.45	0.45	0.45
Heavy Vehicles (%)	33%	3%	0%	1%	3%	50%	0%	0%	0%	25%	0%	20%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1034	0	220	1128	0	4	288	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Evening Peak Hour
2: Hall Road/Driveway & Route 20

04/05/2021

Intersection												
Int Delay, s/veh	10											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↔		↗	↔			↔↔	
Traffic Vol, veh/h	3	946	13	209	1070	2	3	2	243	4	0	5
Future Vol, veh/h	3	946	13	209	1070	2	3	2	243	4	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	95	95	95	85	85	85	45	45	45
Heavy Vehicles, %	33	3	0	1	3	50	0	0	0	25	0	20
Mvmt Flow	3	1017	14	220	1126	2	4	2	286	9	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1128	0	0	1031	0	0	2033	2598	516	2083	2604	564
Stage 1	-	-	-	-	-	-	1030	1030	-	1567	1567	-
Stage 2	-	-	-	-	-	-	1003	1568	-	516	1037	-
Critical Hdwy	4.76	-	-	4.12	-	-	7.5	6.5	6.9	8	6.5	7.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	7	5.5	-
Follow-up Hdwy	2.53	-	-	2.21	-	-	3.5	4	3.3	3.75	4	3.5
Pot Cap-1 Maneuver	464	-	-	676	-	-	34	25	509	23	25	426
Stage 1	-	-	-	-	-	-	254	313	-	93	173	-
Stage 2	-	-	-	-	-	-	263	173	-	455	311	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	464	-	-	676	-	-	24	17	509	~7	17	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	17	-	~7	17	-
Stage 1	-	-	-	-	-	-	250	308	-	92	117	-
Stage 2	-	-	-	-	-	-	173	117	-	195	306	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			2.1			33.5			\$ 706.8		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	24	412	464	-	-	676	-	-	15
HCM Lane V/C Ratio	0.147	0.7	0.007	-	-	0.325	-	-	1.333
HCM Control Delay (s)	179.3	31.7	12.8	0.1	-	12.9	-	-	\$ 706.8
HCM Lane LOS	F	D	B	A	-	B	-	-	F
HCM 95th %tile Q(veh)	0.4	5.2	0	-	-	1.4	-	-	3.1

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

2028 Build Weekday Evening Peak Hour
 3: Route 20 & Driveway

04/05/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1192	1277	0	1	4
Future Volume (vph)	1	1192	1277	0	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		211	184		212	
Travel Time (s)		4.8	4.2		4.8	
Peak Hour Factor	0.93	0.93	0.95	0.95	0.50	0.50
Heavy Vehicles (%)	0%	2%	2%	0%	0%	25%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1283	1344	0	10	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Evening Peak Hour
3: Route 20 & Driveway

04/05/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	
Traffic Vol, veh/h	1	1192	1277	0	1	4
Future Vol, veh/h	1	1192	1277	0	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	95	95	50	50
Heavy Vehicles, %	0	2	2	0	0	25
Mvmt Flow	1	1282	1344	0	2	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1344	0	-	0	1987 672
Stage 1	-	-	-	-	1344 -
Stage 2	-	-	-	-	643 -
Critical Hdwy	4.1	-	-	-	6.8 7.4
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.55
Pot Cap-1 Maneuver	519	-	-	-	54 348
Stage 1	-	-	-	-	211 -
Stage 2	-	-	-	-	491 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	519	-	-	-	54 348
Mov Cap-2 Maneuver	-	-	-	-	54 -
Stage 1	-	-	-	-	210 -
Stage 2	-	-	-	-	491 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	519	-	-	-	167
HCM Lane V/C Ratio	0.002	-	-	-	0.06
HCM Control Delay (s)	12	0	-	-	27.9
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2028 Build Weekday Evening Peak Hour
 4: East Site Driveway & Route 20

04/05/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1109	0	0	1243	11	54
Future Volume (vph)	1109	0	0	1243	11	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	389			1393	367	
Travel Time (s)	8.8			31.7	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	2%	2%	7%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1205	0	0	1351	71	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Weekday Evening Peak Hour
4: East Site Driveway & Route 20

04/05/2021

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Vol, veh/h	1109	0	0	1243	11	54
Future Vol, veh/h	1109	0	0	1243	11	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	2	2	7	2	2
Mvmt Flow	1205	0	0	1351	12	59

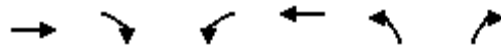
Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	1881 603
Stage 1	-	-	-	-	1205 -
Stage 2	-	-	-	-	676 -
Critical Hdwy	-	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	0	-	63 442
Stage 1	-	-	0	-	247 -
Stage 2	-	-	0	-	467 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	63 442
Mov Cap-2 Maneuver	-	-	-	-	63 -
Stage 1	-	-	-	-	247 -
Stage 2	-	-	-	-	467 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	29.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	219	-	-	-
HCM Lane V/C Ratio	0.323	-	-	-
HCM Control Delay (s)	29.1	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-

2028 Build Weekday Evening Peak Hour
5: Main Site Driveway & Route 20

04/05/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1049	144	116	1138	139	60
Future Volume (vph)	1049	144	116	1138	139	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	125		0	59
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	184			389	200	
Travel Time (s)	4.2			8.8	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1297	0	126	1237	151	65
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Detector Phase	4		3	8	2	3
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		10.0	22.0	17.0	10.0
Total Split (s)	35.0		17.0	52.0	18.0	17.0
Total Split (%)	50.0%		24.3%	74.3%	25.7%	24.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None		None	None	None	None
v/c Ratio	0.66		0.32	0.46	0.36	0.09
Control Delay	16.6		27.7	5.2	27.5	7.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	16.6		27.7	5.2	27.5	7.1
Queue Length 50th (ft)	229		47	104	56	7
Queue Length 95th (ft)	330		95	150	109	27
Internal Link Dist (ft)	104			309	120	
Turn Bay Length (ft)			125			59
Base Capacity (vph)	1973		506	2704	545	786
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.66		0.25	0.46	0.28	0.08

Intersection Summary

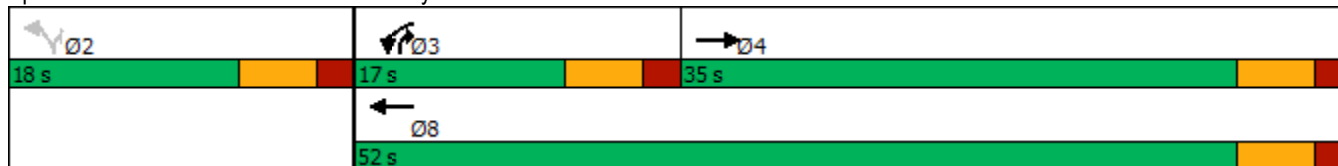
Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 58.4
 Natural Cycle: 60

2028 Build Weekday Evening Peak Hour
5: Main Site Driveway & Route 20

04/05/2021

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Main Site Driveway & Route 20



2028 Build Weekday Evening Peak Hour
5: Main Site Driveway & Route 20

04/05/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1049	144	116	1138	139	60
Future Volume (vph)	1049	144	116	1138	139	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3475		1770	3539	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3475		1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1140	157	126	1237	151	65
RTOR Reduction (vph)	14	0	0	0	0	24
Lane Group Flow (vph)	1283	0	126	1237	151	41
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Actuated Green, G (s)	28.0		6.9	40.9	7.5	14.4
Effective Green, g (s)	30.0		8.9	42.9	9.5	18.4
Actuated g/C Ratio	0.50		0.15	0.71	0.16	0.30
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1725		260	2513	278	587
v/s Ratio Prot	c0.37		0.07	c0.35		0.01
v/s Ratio Perm					c0.09	0.02
v/c Ratio	0.74		0.48	0.49	0.54	0.07
Uniform Delay, d1	12.1		23.6	3.9	23.5	14.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		1.4	0.2	2.2	0.1
Delay (s)	13.9		25.1	4.1	25.6	15.0
Level of Service	B		C	A	C	B
Approach Delay (s)	13.9			6.0	22.4	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/02/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	756	846	207	174	451
Future Volume (vph)	411	756	846	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	11	12	12	12
Storage Length (ft)	265			115	160	0
Storage Lanes	1			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		30	30		30	
Link Distance (ft)		1383	1260		490	
Travel Time (s)		31.4	28.6		11.1	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	467	859	920	225	193	501
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Detector Phase	7	4	8		6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	9.0	23.0	23.0		21.0	9.0
Total Split (s)	30.0	77.0	47.0		30.0	30.0
Total Split (%)	28.0%	72.0%	43.9%		28.0%	28.0%
Yellow Time (s)	4.0	6.0	6.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min		None	None
v/c Ratio	0.78	0.31	0.67	0.14	0.41	0.60
Control Delay	38.4	3.4	23.0	0.2	36.4	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	3.4	23.0	0.2	36.4	17.6
Queue Length 50th (ft)	214	54	197	0	47	153
Queue Length 95th (ft)	#442	84	274	0	88	313
Internal Link Dist (ft)		1303	1180		410	
Turn Bay Length (ft)	265			115	160	
Base Capacity (vph)	597	3186	1832	1615	1123	841
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.27	0.50	0.14	0.17	0.60

Intersection Summary

Area Type: Other
Cycle Length: 107

2028 Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/02/2021

Actuated Cycle Length: 82

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 20 & Hobbs Brook Drive



2028 Build Saturday Midday Peak Hour
1: Route 20 & Hobbs Brook Drive

04/02/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	411	756	846	207	174	451
Future Volume (vph)	411	756	846	207	174	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	12	11	12	12	12
Total Lost time (s)	4.0	4.0	4.0	1.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865	3574	3455	1615	3502	1615
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865	3574	3455	1615	3502	1615
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.90	0.90
Adj. Flow (vph)	467	859	920	225	193	501
RTOR Reduction (vph)	0	0	0	0	0	28
Lane Group Flow (vph)	467	859	920	225	193	473
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	7	4	8		6	7
Permitted Phases				Free		6
Actuated Green, G (s)	25.3	59.8	29.5	81.9	10.1	35.4
Effective Green, g (s)	26.3	62.8	32.5	81.9	11.1	37.4
Actuated g/C Ratio	0.32	0.77	0.40	1.00	0.14	0.46
Clearance Time (s)	5.0	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	598	2740	1371	1615	474	816
v/s Ratio Prot	c0.25	0.24	c0.27		0.06	c0.19
v/s Ratio Perm				0.14		0.11
v/c Ratio	0.78	0.31	0.67	0.14	0.41	0.58
Uniform Delay, d1	25.2	2.9	20.3	0.0	32.4	16.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.1	1.3	0.2	0.6	1.1
Delay (s)	31.7	3.0	21.6	0.2	33.0	17.5
Level of Service	C	A	C	A	C	B
Approach Delay (s)		13.1	17.4		21.8	
Approach LOS		B	B		C	

Intersection Summary

HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

2028 Build Saturday Midday Peak Hour
 2: Hall Road/Driveway & Route 20

04/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↖	↕↕		↖	↖			↕↕	
Traffic Volume (vph)	3	1041	11	245	1055	2	14	0	251	0	1	3
Future Volume (vph)	3	1041	11	245	1055	2	14	0	251	0	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	15	16	12	12	12	12
Storage Length (ft)	0		0	250		0	0		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		30			30			30				30
Link Distance (ft)		752			191			692				212
Travel Time (s)		17.1			4.3			15.7				4.8
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.94	0.94	0.94	0.50	0.50	0.50
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1122	0	275	1187	0	15	267	0	0	8	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Saturday Midday Peak Hour
2: Hall Road/Driveway & Route 20

04/02/2021

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↗	↕↔		↗	↔			↕↔	
Traffic Vol, veh/h	3	1041	11	245	1055	2	14	0	251	0	1	3
Future Vol, veh/h	3	1041	11	245	1055	2	14	0	251	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	250	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	89	89	89	94	94	94	50	50	50
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	3	1107	12	275	1185	2	15	0	267	0	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1187	0	0	1119	0	0	2263	2856	560	2296	2861	594
Stage 1	-	-	-	-	-	-	1119	1119	-	1736	1736	-
Stage 2	-	-	-	-	-	-	1144	1737	-	560	1125	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	595	-	-	632	-	-	23	17	477	22	17	453
Stage 1	-	-	-	-	-	-	224	285	-	93	143	-
Stage 2	-	-	-	-	-	-	216	143	-	485	283	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	595	-	-	632	-	-	~ 12	9	477	6	9	453
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 12	9	-	6	9	-
Stage 1	-	-	-	-	-	-	221	281	-	92	81	-
Stage 2	-	-	-	-	-	-	117	81	-	211	279	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			2.8			61.3			140.9		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	12	477	595	-	-	632	-	-	34
HCM Lane V/C Ratio	1.241	0.56	0.005	-	-	0.436	-	-	0.235
HCM Control Delay (s)	\$ 772.2	21.7	11.1	0.1	-	15	-	-	140.9
HCM Lane LOS	F	C	B	A	-	C	-	-	F
HCM 95th %tile Q(veh)	2.6	3.4	0	-	-	2.2	-	-	0.8

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

2028 Build Saturday Midday Peak Hour
 3: Route 20 & Driveway

04/02/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1291	1298	2	0	4
Future Volume (vph)	1	1291	1298	2	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		191	208		229	
Travel Time (s)		4.3	4.7		5.2	
Peak Hour Factor	0.94	0.94	0.81	0.81	0.50	0.50
Heavy Vehicles (%)	0%	1%	2%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1374	1604	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

2028 Build Saturday Midday Peak Hour
3: Route 20 & Driveway

04/02/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	
Traffic Vol, veh/h	1	1291	1298	2	0	4
Future Vol, veh/h	1	1291	1298	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	81	81	50	50
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	1373	1602	2	0	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1604	0	-	0	2292 802
Stage 1	-	-	-	-	1603 -
Stage 2	-	-	-	-	689 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	413	-	-	-	34 331
Stage 1	-	-	-	-	153 -
Stage 2	-	-	-	-	465 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	413	-	-	-	34 331
Mov Cap-2 Maneuver	-	-	-	-	34 -
Stage 1	-	-	-	-	151 -
Stage 2	-	-	-	-	465 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	413	-	-	-	331
HCM Lane V/C Ratio	0.003	-	-	-	0.024
HCM Control Delay (s)	13.7	0.1	-	-	16.1
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2028 Build Saturday Midday Peak Hour
 4: East Site Driveway & Route 20

04/02/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1192	0	0	1264	11	61
Future Volume (vph)	1192	0	0	1264	11	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	395			1383	367	
Travel Time (s)	9.0			31.4	8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1296	0	0	1374	78	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Build Saturday Midday Peak Hour
4: East Site Driveway & Route 20

04/02/2021

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	1192	0	0	1264	11	61
Future Vol, veh/h	1192	0	0	1264	11	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1296	0	0	1374	12	66

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	1983 648
Stage 1	-	-	-	-	1296 -
Stage 2	-	-	-	-	687 -
Critical Hdwy	-	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	0	-	54 413
Stage 1	-	-	0	-	220 -
Stage 2	-	-	0	-	461 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	54 413
Mov Cap-2 Maneuver	-	-	-	-	54 -
Stage 1	-	-	-	-	220 -
Stage 2	-	-	-	-	461 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	205	-	-	-
HCM Lane V/C Ratio	0.382	-	-	-
HCM Control Delay (s)	33	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	1.7	-	-	-

2028 Build Saturday Midday Peak Hour
5: Main Sute Driveway & Route 20

04/02/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1126	165	127	1149	152	66
Future Volume (vph)	1126	165	127	1149	152	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	125		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	208			395	200	
Travel Time (s)	4.7			9.0	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1403	0	138	1249	165	72
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Detector Phase	4		3	8	2	3
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.0		10.0	22.0	18.0	10.0
Total Split (s)	38.0		14.0	52.0	18.0	14.0
Total Split (%)	54.3%		20.0%	74.3%	25.7%	20.0%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0		-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None		None	None	None	None
v/c Ratio	0.68		0.44	0.47	0.42	0.12
Control Delay	15.5		32.9	5.3	28.8	8.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	15.5		32.9	5.3	28.8	8.5
Queue Length 50th (ft)	248		56	111	63	9
Queue Length 95th (ft)	341		109	152	118	32
Internal Link Dist (ft)	128			315	120	
Turn Bay Length (ft)			125			50
Base Capacity (vph)	2069		340	2667	476	642
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.68		0.41	0.47	0.35	0.11

Intersection Summary

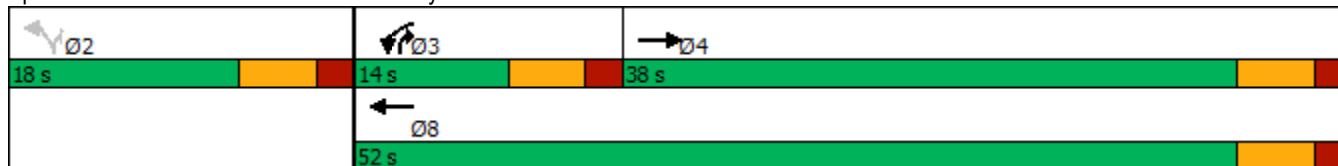
Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 60.7
 Natural Cycle: 60

2028 Build Saturday Midday Peak Hour
5: Main Sute Driveway & Route 20

04/02/2021

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Main Sute Driveway & Route 20



2028 Build Saturday Midday Peak Hour
5: Main Sute Driveway & Route 20

04/02/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1126	165	127	1149	152	66
Future Volume (vph)	1126	165	127	1149	152	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3471		1770	3539	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3471		1770	3539	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1224	179	138	1249	165	72
RTOR Reduction (vph)	15	0	0	0	0	26
Lane Group Flow (vph)	1388	0	138	1249	165	46
Turn Type	NA		Prot	NA	Perm	pm+ov
Protected Phases	4		3	8		3
Permitted Phases					2	2
Actuated Green, G (s)	31.7		5.6	43.3	7.9	13.5
Effective Green, g (s)	33.7		7.6	45.3	9.9	17.5
Actuated g/C Ratio	0.53		0.12	0.72	0.16	0.28
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1850		212	2536	277	538
v/s Ratio Prot	c0.40		c0.08	0.35		0.01
v/s Ratio Perm					c0.09	0.02
v/c Ratio	0.75		0.65	0.49	0.60	0.09
Uniform Delay, d1	11.5		26.5	3.9	24.8	16.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		7.0	0.2	3.4	0.1
Delay (s)	13.2		33.5	4.1	28.2	17.0
Level of Service	B		C	A	C	B
Approach Delay (s)	13.2			7.0	24.8	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

TRAFFIC SIGNAL WARRANT ANALYSIS



Traffic Signal Warrant Analysis Summary - Route 20 at the Project Main Driveway
2028 Build Conditions (As proposed) - Average Month Conditions

Time	Route 20 Volume (Major Street) ^a	Project Site Driveway Volume (Minor Street) ^b	Warrant 1 Condition A ^c	Warrant 1 Condition B ^d	Warrant 2 ^f	Warrant 3 ^g
6:00	1099	187	Yes	Yes	Yes	Yes
7:00	1482	208	Yes	Yes	Yes	Yes
8:00	1508	230	Yes	Yes	Yes	Yes
9:00	1581	205	Yes	Yes	Yes	Yes
10:00	1709	146	Yes	Yes	Yes	Yes
11:00	1849	154	Yes	Yes	Yes	Yes
12:00	2029	167	Yes	Yes	Yes	Yes
1:00	2122	159	Yes	Yes	Yes	Yes
2:00	2219	177	Yes	Yes	Yes	Yes
3:00	2470	174	Yes	Yes	Yes	Yes
4:00	2511	199	Yes	Yes	Yes	Yes
5:00	2387	87	No	Yes	Yes	Yes
Warrant Satisfied?			Yes	Yes	Yes	Yes

^aBased on ATR counts conducted on Thursday, November 15, 2020. Volume includes total of both approaches.

^bBased on the average of the driveway hourly counts conducted at the XtraMart located at Sutton and Millbury, MA.

^cWarrant 1 Condition A - Eight Hour Vehicular Volume, Minimum Vehicular Volume - satisfied when major street volume > 420 and minor street volume > 140 (speed greater than 40 mph).

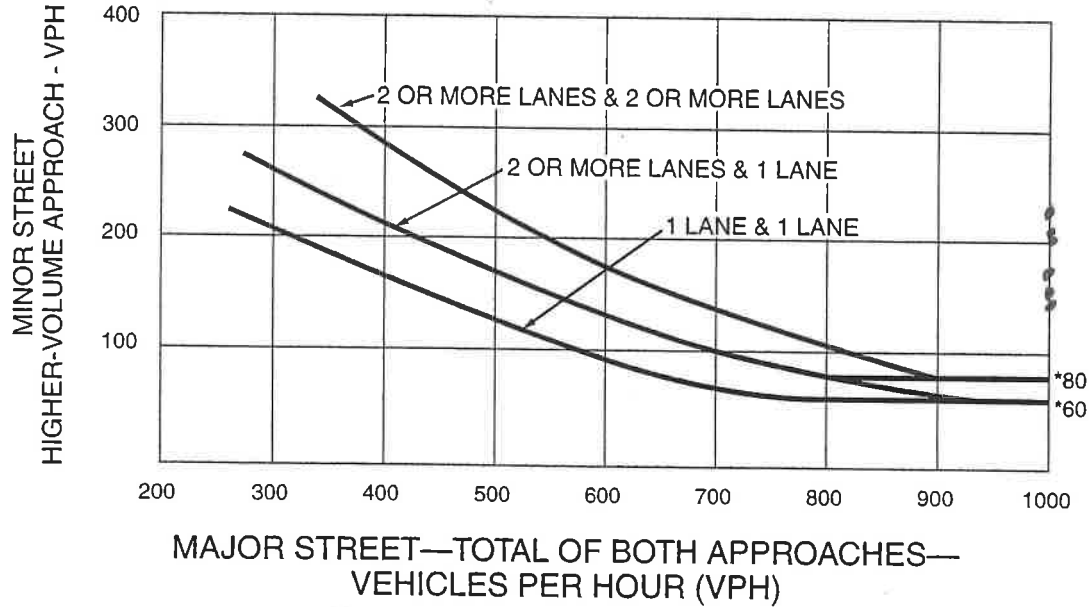
^dWarrant 1 Condition B - Eight Hour Vehicular Volume, Interruption of Continuous Traffic - satisfied when major street volume > 630 and minor street volume > 70, (speed greater than 40 mph).

^fWarrant 2 - Four Hour Vehicular Volume - see Figure 4C-2.

^gWarrant 3 - Peak Hour Vehicular Volume - see Figure 4C-4.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)



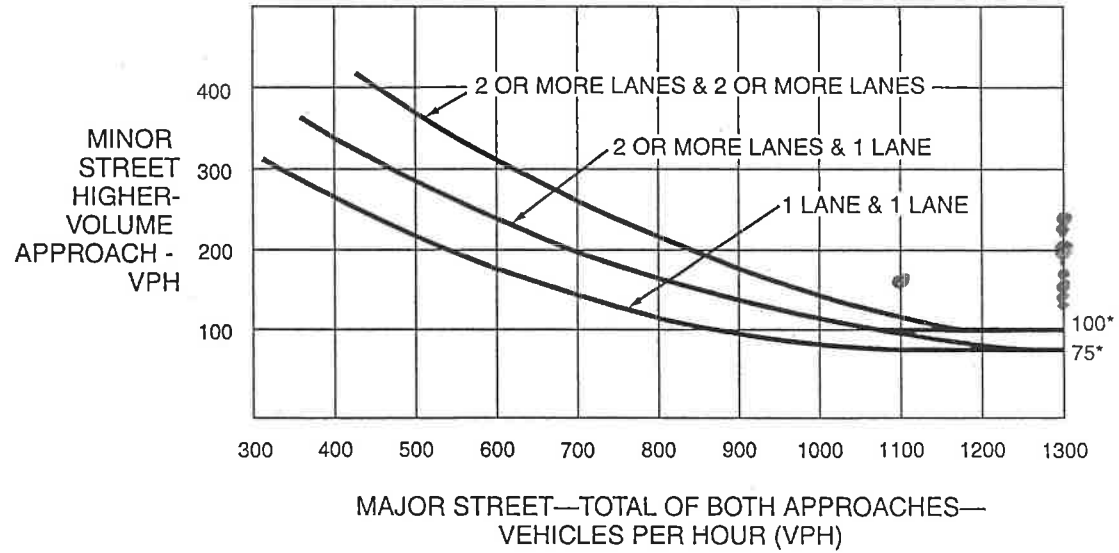
*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

*Route 27 Project Site Driveway
Meets Warrant 2
2028 Build Conditions*

November 2003

Sect. 4C.04

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
 (COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

December 2009

Sect. 4C.04

*Route 20/Project Site Driveway
 Meets Warrant 3
 2028 Build Conditions*