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Quality



Traffic Impact and Access Study

Marijuana Dispensary
Route 2A (State Road)
Phillipston, Massachusetts

Accuracy



Prepared for:

Royalston Farm
P.O. Box 353
Belmont, MA 02478

Integrity





June 15, 2020

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Traffic Impact and Access Study

To:	Mr. Damon Schmidt Royalston Farm P.O. Box 353 Belmont, MA 02478	Reg:	Marijuana Dispensary Route 2A (State Road) Phillipston, MA
		Date:	June 15, 2020
From:	Kirsten Braun, P.E., Associate Ron Müller, P.E., Principal	Project #:	19012

INTRODUCTION

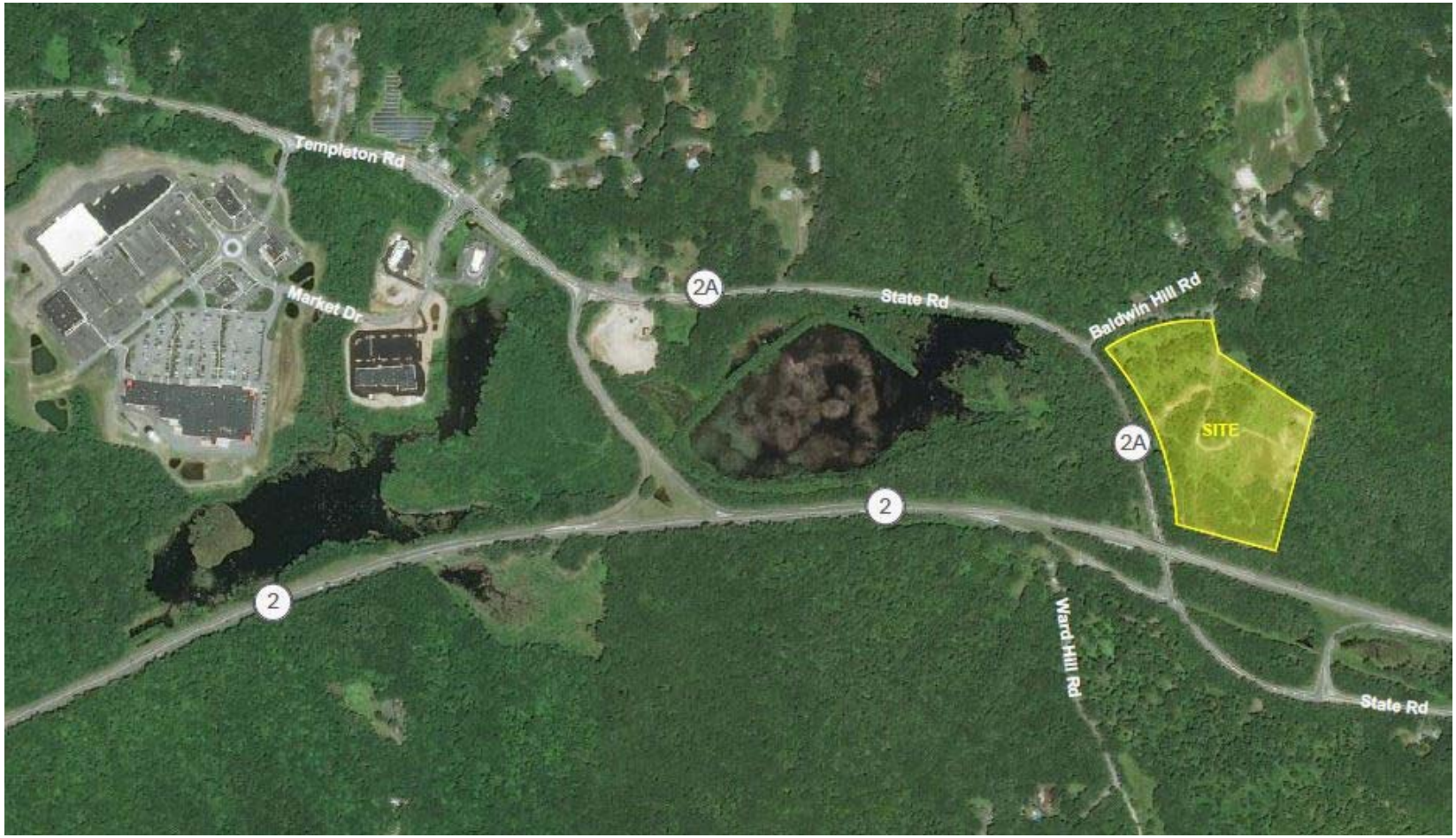
Ron Müller & Associates (RMA) has conducted this Traffic Impact and Access Study to evaluate the traffic impacts of a proposed marijuana dispensary to be located on an undeveloped 20-acre parcel of land abutting Baldwin Hill Road, State Road (Route 2A) and Route 2/202 in Phillipston, Massachusetts. As proposed, a 4,000 square foot marijuana retail dispensary is to be constructed on site. Access will be provided via a site driveway located off of Route 2A. The site location is shown in Figure 1.

This study provides an estimate of the expected traffic generation and distribution characteristics of the project, evaluates the impact of that traffic on the adjacent roadways and intersections, and determines the necessity for improvements to the area roadway system. This study was prepared in conformance with Massachusetts Department of Transportation (MassDOT) standards.

Traffic increases as a result of the project on State Road (Route 2A) west of the site are expected in the range of 56 to 95 vehicles during the peak hours. These increases represent, on average, approximately one to two additional vehicles per minute. East of the site, traffic increases are expected in the range of 31 to 51 vehicles during the weekday PM and Saturday midday peak hours representing an average increase of approximately one additional vehicle every one to two minutes. Negligible increases in traffic are expected on other surrounding roadways.

Development of the site is expected to result in minimal increases in delay and vehicle queues at the study area and site driveway intersections. All intersection approaches currently operate at acceptable levels during peak hours and are expected to operate at acceptable levels under future volume conditions with or without the project.

Figure 1
Site Location Map



The project proposes access to Route 2A, which is under MassDOT jurisdiction and will therefore require a Highway Access Permit from the MassDOT District 2 office. However, the project will not exceed any transportation-related review thresholds that could require MEPA review of the project. The site driveway should be constructed to meet MassDOT standards for commercial driveways including a 24-foot wide driveway width and 30-foot corner radii. It is further recommended that a STOP sign and stop line be installed at the driveway exit at its intersection with State Road (Route 2A).

EXISTING CONDITIONS

Study Area

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

- Baldwin Hill Road at State Road
- State Road (Route 2A) at Route 2 eastbound off-ramp
- State Road (Route 2A) at Route 2 eastbound on-ramp
- State Road (Route 2A) at Route 2 westbound ramps (Athol)

The study area intersections and roadways are described in detail below.

State Road (Route 2A) is classified as a principal arterial under state jurisdiction and is generally oriented in the east/west direction, however, in the vicinity of the proposed site driveway State Road (Route 2A) is oriented in the north/south direction. Route 2A runs from Boston in the east to Erving where it meets with Route 2. Within the study area, State Road (Route 2A) is a two-way, two-lane roadway with a double yellow center line and pavement in good condition. There are wide shoulders on both sides of State Road (Route 2A) in the vicinity of the site. The posted speed limit on State Road (Route 2A) in the vicinity of the site is 45 mph in both directions. Land use within the study area is predominately undeveloped.

Route 2 is classified as a principal arterial under state jurisdiction and oriented in the east/west direction. Route 2 runs between Boston and the Massachusetts border with New York state. In the vicinity of the site it is a two-way, two-lane roadway with flexible delineators dividing lanes as well as rumble strips and painted yellow lines. The pavement is in good condition. There is guardrail along either side of the roadway and wide shoulders. The posted speed limit is 55 mph and land along Route 2 is predominately undeveloped.

Baldwin Hill Road is classified as a local roadway under town jurisdiction and oriented in the northeast/southwest direction. It is a dead-end roadway approximately 0.8 miles long. Baldwin Hill Road is a two-way, two-lane roadway with pavement in fair condition. The roadway is not striped and there are no sidewalks or shoulders. Land use along Baldwin Hill Road is primarily residential.

Baldwin Hill Road meets State Road to form a three-way unsignalized intersection. The Baldwin Hill Road approach to the intersection is STOP controlled while State Road operates freely. All approaches to the intersection provide a single shared use lane.

State Road (Route 2A) meets the Route 2 Eastbound off-ramp to form a three-way unsignalized intersection. The eastbound off-ramp approach to the intersection is STOP controlled while State Road operates freely. All approaches to the intersection provide a shared use lane. There is a raised median on the eastbound off-ramp approach separating traffic originating from the off-ramp and traffic traveling to Ward Hill Road.

State Road (Route 2A) meets the Route 2 Eastbound on-ramp to form a three-way unsignalized intersection. Approaching the on-ramp from the west there is a dedicated left turn lane and a through lane while approaching the on-ramp from the east there is a right turn slip lane to access the ramp.

State Road (Route 2A) meets the Route 2 Westbound ramps (Athol) to form a three-way signalized intersection. The State Road (Route 2A) westbound approach to the intersection consists of a dedicated left turn lane and a through lane while the eastbound approach to the intersection consists of a through lane and a channelized right turn lane under yield control. The Route 2 westbound off-ramp consists of a channelized right turn lane under yield control and a dedicated left turn lane. There are dedicated bike lanes in both directions of Route 2A.

Traffic Volumes

Base traffic conditions within the study area were developed by conducting automatic traffic recorder (ATR) counts on State Road (Route 2A) near the site as well as manual turning movement counts (TMC's) at the study intersections. The ATR counts were collected in November 2019 and the TMC counts were collected in October 2019 when area schools were in session. The ATR counts were conducted to collect weekday and Saturday daily volume conditions and the TMC's were conducted during the weekday PM peak period (4:00 to 6:00 PM) and the Saturday midday peak period (11:00 AM to 2:00 PM). These time periods were chosen for analysis as the development project generates far greater volumes during these times than during the weekday AM peak hour, as further described in the *Trip Generation* section of this report. All traffic count data are provided in the Appendix. The count data indicate that the weekday PM peak hour generally occurs from 4:15 to 5:15 PM and the Saturday midday peak hour generally occurs from 12:45 to 1:45 PM. However, the individual intersection peak hours were used to present a conservative analytical framework.

To determine if the count data needed to be adjusted to represent annual average-month conditions consistent with state guidelines for traffic impact assessment, historical traffic volume data were obtained from the MassDOT. Based on the nearest MassDOT permanent count station located on Route 2 east of Orange (Station 44), traffic during the month of October is approximately 10 percent above annual average-month conditions while November is approximately two percent above annual average-month conditions. To provide a conservative analysis, the existing traffic counts were not downwardly adjusted. The MassDOT permanent count station data are provided in the Appendix.

The 2019 traffic count data was grown to reflect 2020 existing traffic volumes. MassDOT Station No. 44 was used to compute an annual growth rate between 2009 and 2018 of 1.0 percent per year which was applied to the 2019 existing traffic volumes for one year to reflect 2020 conditions. Table 1 summarizes the 2020 Existing Traffic Volumes on the study roadways and the peak hour traffic flow networks are provided on Figure 2.

Table 1
Existing Traffic Volume Summary

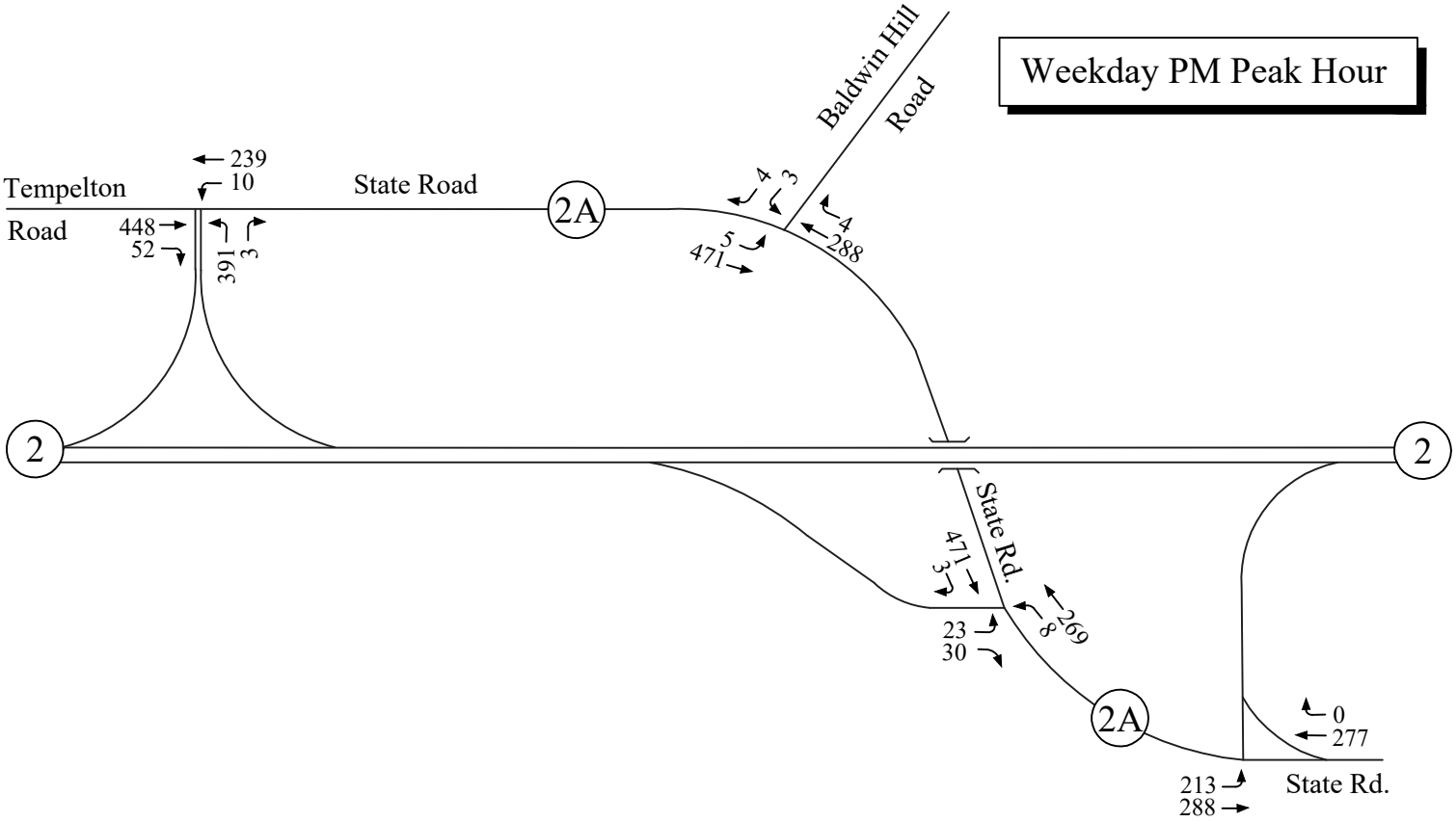
Location/Time Period	Daily Volume [a]	Peak Hour Volume [b]	K-Factor [c]	Directional Distribution [d]
State Rd (Route 2A):				
Weekday	9,475	PM: 830	8.8%	66% EB
Saturday	8,665	Midday: 785	9.1%	66% EB

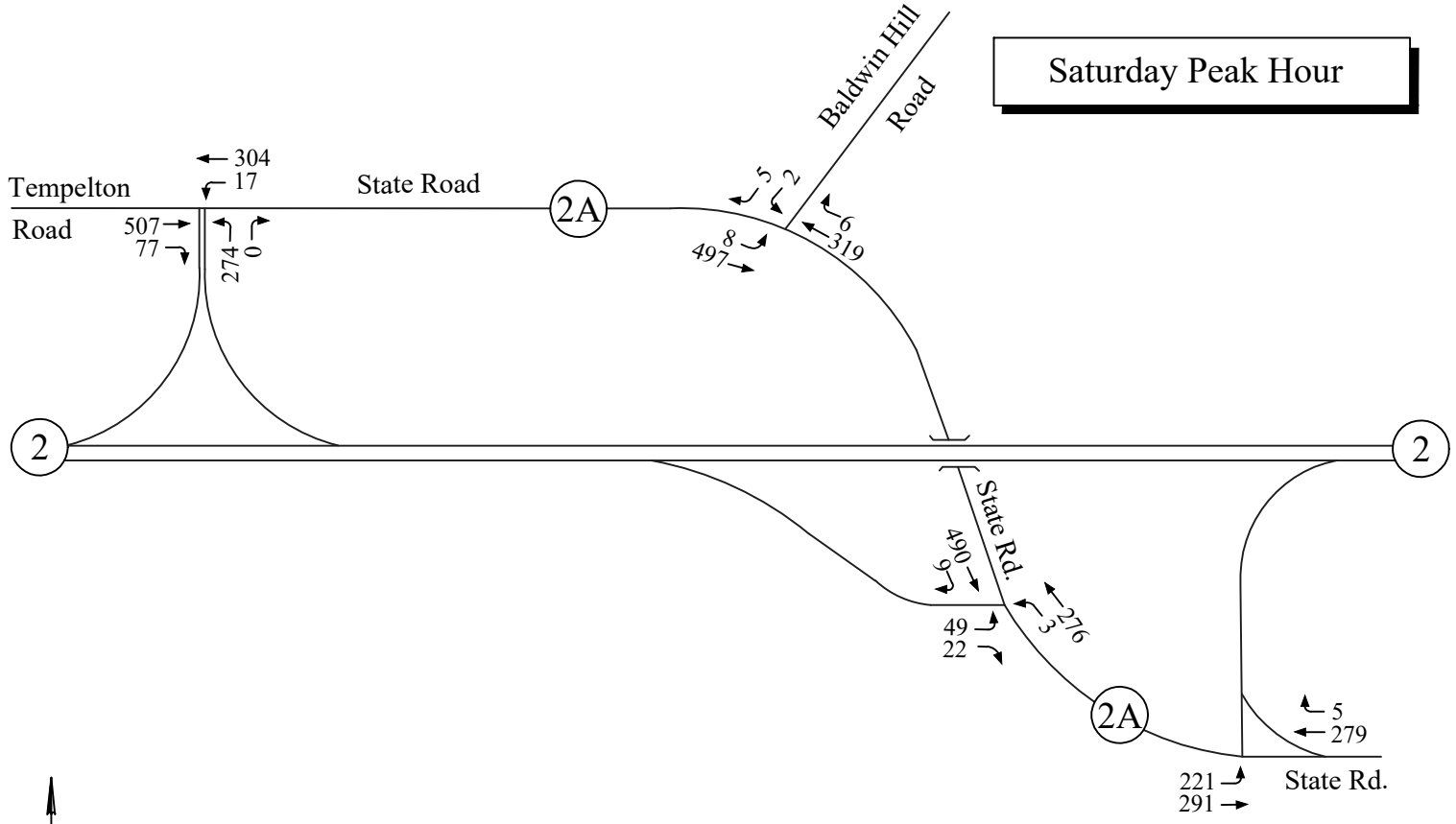
[a] In vehicles per day.
[b] In vehicles per hour.
[c] Percentage of daily traffic occurring during the peak hour.
[d] EB = eastbound

Accidents

Accident data for the study intersections were obtained from MassDOT for the period between 2015 and 2017, the latest three years of available data. A summary of the MassDOT accident data is provided in Table 2. In addition to the summary, accident occurrence should also be compared to the volume of traffic through a particular intersection to determine any significance. Accordingly, the accident rate was calculated for the study area intersections and compared with the statewide and district-wide averages. An intersection accident rate is a measure of the frequency of accidents compared to the volume of traffic through an intersection and is presented in accidents per million entering vehicles (acc/mev). For signalized intersections, the statewide average accident rate is 0.78 acc/mev and the district wide (District 2) accident rate is 0.89 acc/mev. For unsignalized intersections, the statewide average accident rate is 0.57 acc/mev and the district-wide (District 2) accident rate is 0.62 acc/mev. A comparison of the calculated accident

Figure 2
2020 Existing
Peak Hour Traffic Volumes





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rate to the averages can be used to establish the significance of accident occurrence and whether or not potential safety problems exist. The crash rate worksheets are provided in the Appendix.

Table 2
Accident Summary

Location	Number of Accidents			Severity [a]			Accident Type [b]				% During Wet/Icy Conditions
	Total	Avg./ Year	Accident Rate [c]	PD	PI	F	CM	RE	SS	SV	
State Road at Route 2 Westbound Ramps	7	2.33	0.49	6	1	0	1	1	1	4	57%
State Road at Baldwin Hill Road	1	0.33	0.10	0	1	0	0	0	0	1	100%
State Road at Route 2 Eastbound Off-Ramp	0	0	0	0	0	0	0	0	0	0	0%
State Road at Route 2 Eastbound On-Ramp	0	0	0	0	0	0	0	0	0	0	0%

Source: MassDOT Traffic Operations Safety Management System – 2015 through 2017 data.
[a] PD = property damage only; PI = personal injury; F = fatality.
[b] CM = cross movement/angle; RE = rear end; SS = sideswipe; SV = single vehicle; Ped = pedestrian
[c] Measured in accidents per million entering vehicles.

As shown in Table 2, the intersection of State Road (Route 2A) at the Route 2 westbound ramps experienced a total of seven accidents over the three-year period, averaging 2.33 accidents per year. The calculated crash rate of 0.49 acc/mev is lower than both the district-wide and statewide averages. Of the seven reported accidents, four were single vehicle type collisions, one was an angle type collision, another was a rear-end collision and the last was a sideswipe type collision. Additionally, of the seven crashes most (86-percent) involved property damage only.

At the intersection of State Road at Baldwin Hill Road, there was only one accident reported over the three-year period. The calculated crash rate of 0.10 acc/mev is lower than the statewide and district-wide averages. The crash reported was a single vehicle type collision. There were no crashes reported at the intersections of State Road (Route 2A) and the Route 2 eastbound on and off-ramps during the most recent three-year period. It should also be noted that none of the study area intersections are listed as a top crash location in the MassDOT database of Highway Safety Improvement Program (HSIP) eligible clusters.

Vehicle Speeds

Speed measurements were conducted along State Road (Route 2A) adjacent to the site by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints. The travel time was recorded using automatic traffic recorders and the speed is derived by dividing the elapsed time into the measured distance between checkpoints. The results of the speed measurements are summarized in Table 3.

Table 3
Observed Travel Speeds [a]

Location/Direction	Posted Speed Limit	Average Speed	85th Percentile Speed [b]
State Rd (Route 2A):			
Eastbound	45	44	49
Westbound	45	46	51

[a] In miles per hour (mph).
[b] Speed at, or below which 85 percent of all observed vehicles travel.

As shown in Table 3, average travel speeds along State Road (Route 2A) adjacent to the site are comparable to the posted speed limit of 45 mph in both the eastbound and westbound directions. Traveling eastbound the average travel speed is 44 mph while traveling westbound the average travel speed is 46 mph. The 85th percentile speeds were recorded to be slightly higher than the posted speed limit with 49 mph in the eastbound direction and 51 mph in the westbound direction. These higher speeds were accordingly used in the calculation of minimum sight distance requirements, as described below.

Sight Distance

To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at the proposed driveway location on State Road (Route 2A) to determine if the available sight distances for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO)[1]. AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported. The MassDOT and the Executive Office of Energy and Environmental Affairs (EEA) require the use of AASHTO sight distance standards when

[1] *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2009.

preparing traffic impact assessments and studies, as stated in their guidelines for traffic impact assessment.

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

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

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

The available SSD and ISD at the proposed driveway intersection with State Road (Route 2A) were measured and compared to minimum requirements as established by AASHTO. Since the requirements are based on the adjacent street speed of traffic, the observed 85th percentile speed of 49 mph traveling eastbound and 51 mph traveling westbound along State Road (Route 2A) were used to calculate the minimum sight distance requirements. The required minimum sight distances for these speeds are compared to the available distances, as shown in Table 4.

Table 4
Sight Distance Summary

Direction	Intersection Sight Distance (feet)		
	Measured	Minimum Required [a]	Desirable [b]
State Road (Route 2A) at Site Driveway:			
North of intersection	475 [c]	412	500
South of Intersection	500+ [c]	439	500

[a] Values based on AASHTO SSD requirements for the 85th percentile speed of 49 mph on State Road traveling eastbound and 51 mph traveling westbound.
[b] Values based on AASHTO ISD requirements for posted speed limit of 45 mph on State Road.
[c] Assuming the clearing of existing vegetation within the sight triangles both north and south of the site driveway.

As shown in Table 4, sight distances for vehicles exiting the proposed marijuana dispensary exceed the minimum requirements (assuming the clearing of vegetation within the sight triangle on both sides of the site driveway as defined by AASHTO) and therefore safe operation can be expected. Although the desirable sight distance north of the intersection is shown not to be met, these distances are based solely on acceptable speed reductions to approaching traffic and are not the minimum required to avoid a collision. It is recommended that any proposed landscaping or signs in the vicinity of the site driveway be kept low (maximum 2 feet in height from street level), or set back outside the sight triangles so as not to impede the available sight distances.

Public Transportation

Within the study area, the Montachusett Regional Transit Authority (MART) runs the G-Link Bus Route from Gardner to Athol via Route 101 and Route 2A. The route begins in Gardner at Mount Wachusett Community College and ends at the Hannaford grocery store in Athol. Within the study area there are bus stops at King Phillip Restaurant in Phillipston and the Market Basket in Athol. Routes operate Monday through Friday with the outbound route from Gardner operating between the hours of 5:30 AM and 6:15 PM and the inbound Route from Athol operating between the hours of 6:00 AM and 7:00 PM. Current schedules and information can be found at http://www.mrta.us/routes-schedules/athol-link.

FUTURE CONDITIONS

Traffic Growth

Future traffic conditions were projected to the year 2027, representing a 7-year design horizon consistent with state requirements for traffic impact analysis. To project traffic conditions within this design horizon, two components of traffic growth were included. First, an annual average traffic growth rate was determined to account for general population growth and smaller development projects that may impact traffic along roadways in the site vicinity. Based on historic traffic counts collected by MassDOT permanent count station located on Route 2 east of Orange in Athol (STA #44), traffic volumes have increased on average by 0.66 percent per year over the last 10 years of collected data. To present a conservative analytical scenario, a one-percent annual growth rate was used. The MassDOT permanent count station data are provided in the Appendix.

Second, any planned or approved specific developments in the area that would generate a significant volume of traffic on study area roadways within the next seven years were investigated. Based on discussions with local officials, there are two proposed or planned projects in the area:

- *North Quabbin Commons, Athol* – North Quabbin Commons is a mixed-use development consisting of approximately 300,000 square-feet in Athol, MA just off Route 2 at exits 17 and 18. Currently, the majority of North Quabbin Commons is constructed and occupied with approximately five percent of the development remaining vacant. The vacant portions of North Quabbin Commons are proposed to be retail uses. To provide a conservative analysis, trips associated with the vacant retail uses were generated using Institute of Transportation Engineers (ITE) *Trip Generation Manual*[2] for shopping centers and distributed to the adjacent roadway network based on existing travel patterns as described in the Appendix.

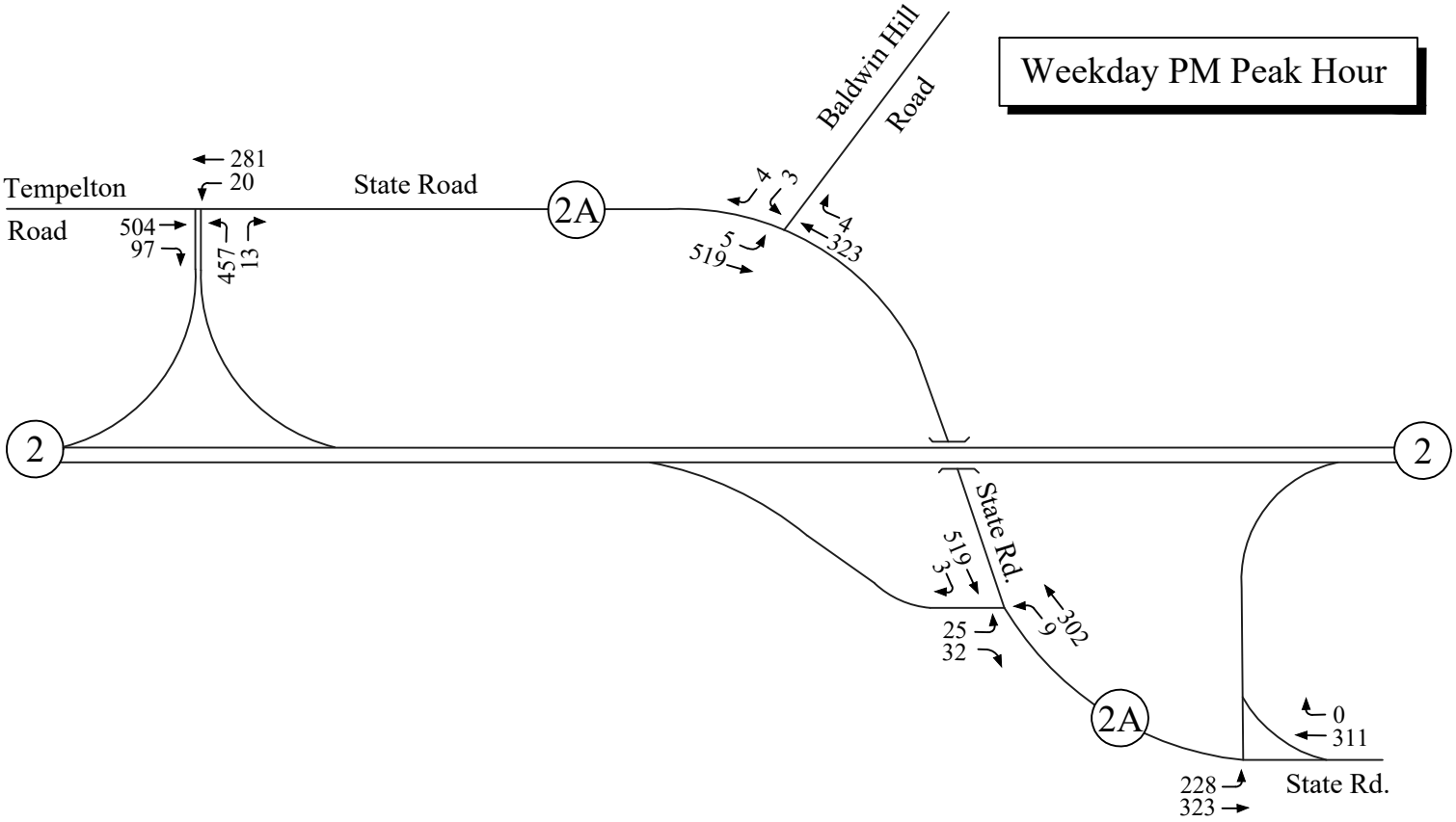
- *Gas Station and Convenience Store with Coffee Shop, Athol* – This project consists of constructing a gas station with 12 fueling stations. In addition, an approximately 5,112 square-foot convenience store is proposed with an 800 square-foot coffee shop with drive-through window. Trips were assigned to the adjacent roadway system based on the trip distribution outlined in the traffic impact study submitted by McMahon Associates, Inc. in May, 2018[3].

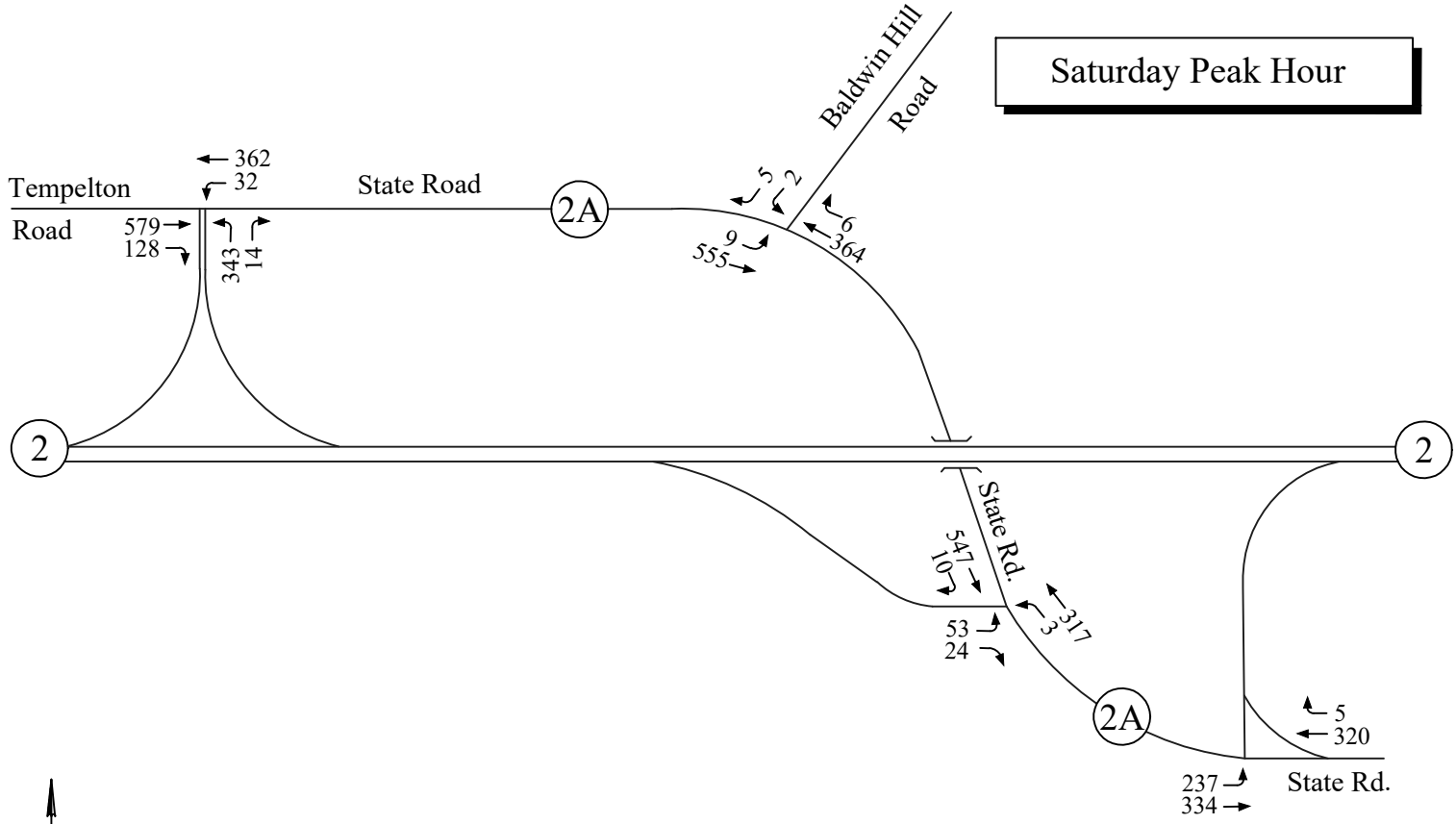
No-Build Conditions

The 2027 No-Build networks were accordingly developed by applying a compounded one-percent annual growth rate (7.2 percent over seven years) to the existing adjacent street volumes and by assuming completion of the above area development projects. The 2027 No-Build peak-hour traffic-flow networks are shown on Figure 3.

[2] *Trip Generation Manual*, *10th Edition;* Institute of Transportation Engineers; Washington, DC; 2017.
[3] *Traffic Impact Study, Gas Station Development Templeton Road (Route 2A), Athol, Massachusetts*; Prepared for Kayrouz Realty, LLC; Prepared by McMahon Associates, Inc.; Dated May 2018.

Figure 3
2027 No-Build
Peak Hour Traffic Volumes





Trip Generation

As proposed, a 4,000 square foot marijuana retail dispensary is to be constructed on site. Approximately 2,500 square feet of the space will be used for retail sales while the remaining 1,500 square feet will be ancillary uses and offices. To estimate the volume of traffic to be generated by the project, trip-generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual* were researched. To present a worst-case scenario, the entire building area of 4,000 square feet was used to estimate the volume of traffic to be generated by the proposed project. ITE land use code (LUC) 882 provides trip generation characteristics for marijuana dispensaries and the estimated daily and peak hour traffic generation is summarized in Table 5. The trip generation worksheet is provided in the Appendix.

Table 5
Trip Generation Summary

Time Period	Marijuana Dispensary [a]
Weekday Daily	1,010
Weekday AM Peak Hour	
Enter	24
Exit	18
Total	42
Weekday PM Peak Hour	
Enter	44
Exit	43
Total	87
Saturday Daily	1,040
Saturday Midday Peak Hour	
Enter	76
Exit	70
Total	146

[a] ITE Land Use Code 882 (Marijuana Dispensary) for 4,000 sf.

As shown, the marijuana dispensary is expected to generate 1,010 vehicle trips on a typical weekday with 42 vehicle trips occurring during the weekday AM peak hour (24 entering and 18 exiting) and 87 vehicle trips occurring during the weekday PM peak hour (44 entering and 43 exiting). On a typical Saturday, the project is expected to generate 1,040 daily trips with 146 vehicle trips occurring during the Saturday midday peak hour (76 entering and 70 exiting).

Since the site traffic generation is significantly higher during the weekday PM and Saturday midday peak hours, these time periods were chosen for analysis in this report.

MEPA Thresholds

The site abuts and proposes to access a state highway (Route 2 and Route 2A) and therefore will require a Highway Access Permit from MassDOT. Massachusetts Environmental Policy Act (MEPA) review of the project is required if the project requires a Highway Access Permit from MassDOT and exceeds one or more of the following review thresholds:

- Generation of 2,000 or more daily vehicle trips
- Creation of 300 or more new parking spaces
- Generation of 1,000 or more daily vehicle trips plus 150 or more parking spaces
- Creation of 5 or more acres of additional impervious surface
- Alteration of 25 or more acres of additional land
- Site is located within an Area of Critical Environmental Concern (ACEC)

As shown in Table 5, the project will generate 1,010 weekday daily vehicle trips and the site plan shows a total of 40 parking spaces are proposed on site. The transportation review thresholds are accordingly not exceeded. The total site area is less than 25 acres and only 22,145 square feet are proposed to be impervious. Accordingly, the land thresholds regarding impervious surface and land alteration will also not be exceeded. Finally, the site is not located within an ACEC as designated by the Secretary of Environmental Affairs. MEPA review of the project will therefore not be required.

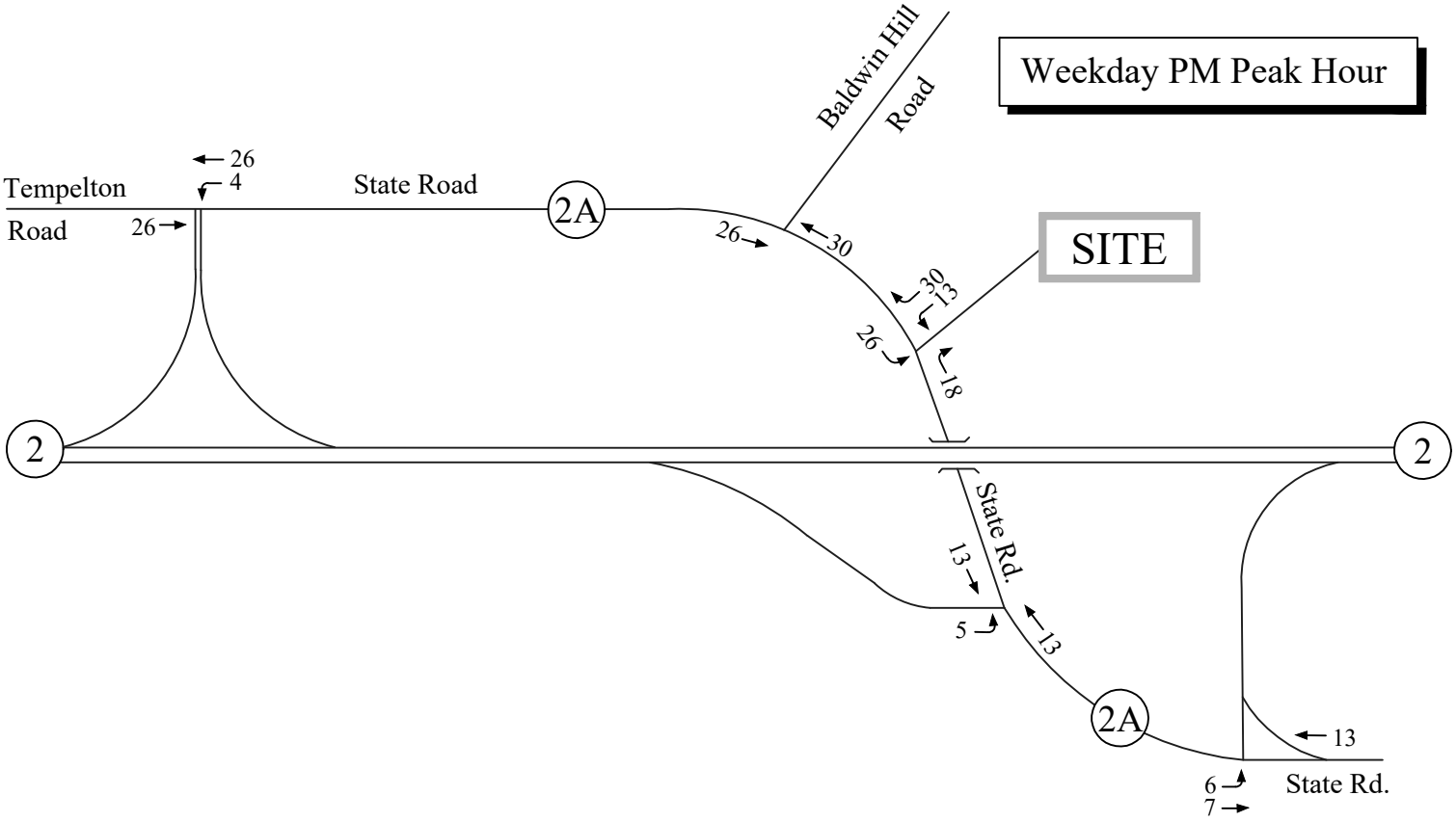
Trip Distribution

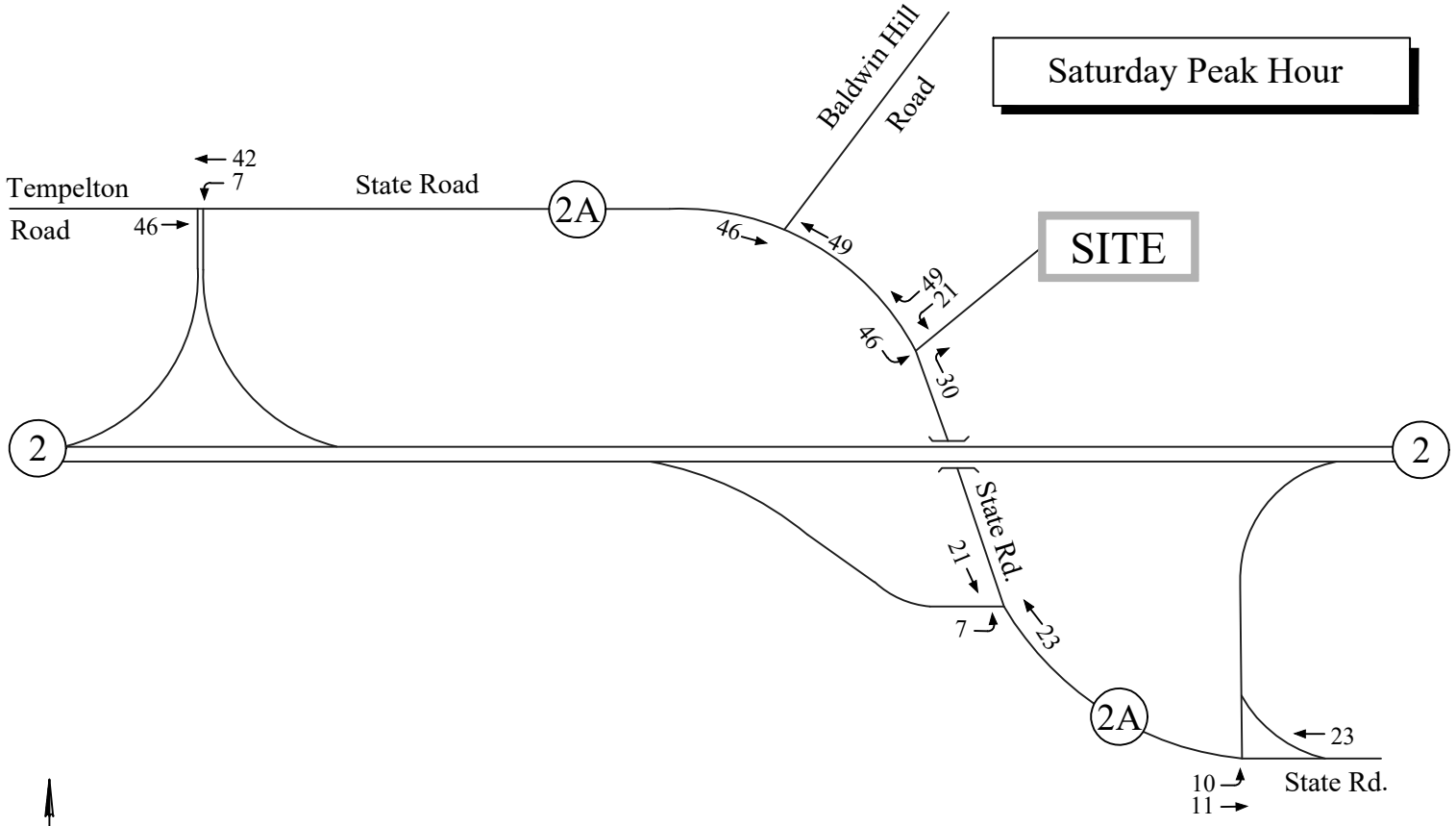
The distribution of new site traffic on the area roadways is based on existing travel patterns and population densities within the area. Based on this information, 60-percent of the dispensary traffic will be oriented to/from the west on Route 2A, 10-percent will be oriented to/from the west on Route 2, 15-percent to/from the east on Route 2A and 15-percent to/from the east on Route 2. Based on travel directions provided by Google Maps, it was assumed that the traffic entering the site from the east on Route 2 will utilize Exit 19 (Route 2A/Route 202) in Phillipston while traffic exiting the site will access Route 2 eastbound via the on-ramp on State Road at Exit 18.

Build Conditions

Based on the traffic generation and distribution estimates for this project, the traffic volumes generated by the proposed project were assigned to the roadway network as shown on Figure 4 and were added to the 2027 No-Build traffic volumes to develop the 2027 Build traffic volumes. The 2027 Build peak hour traffic volumes are graphically depicted on Figure 5.

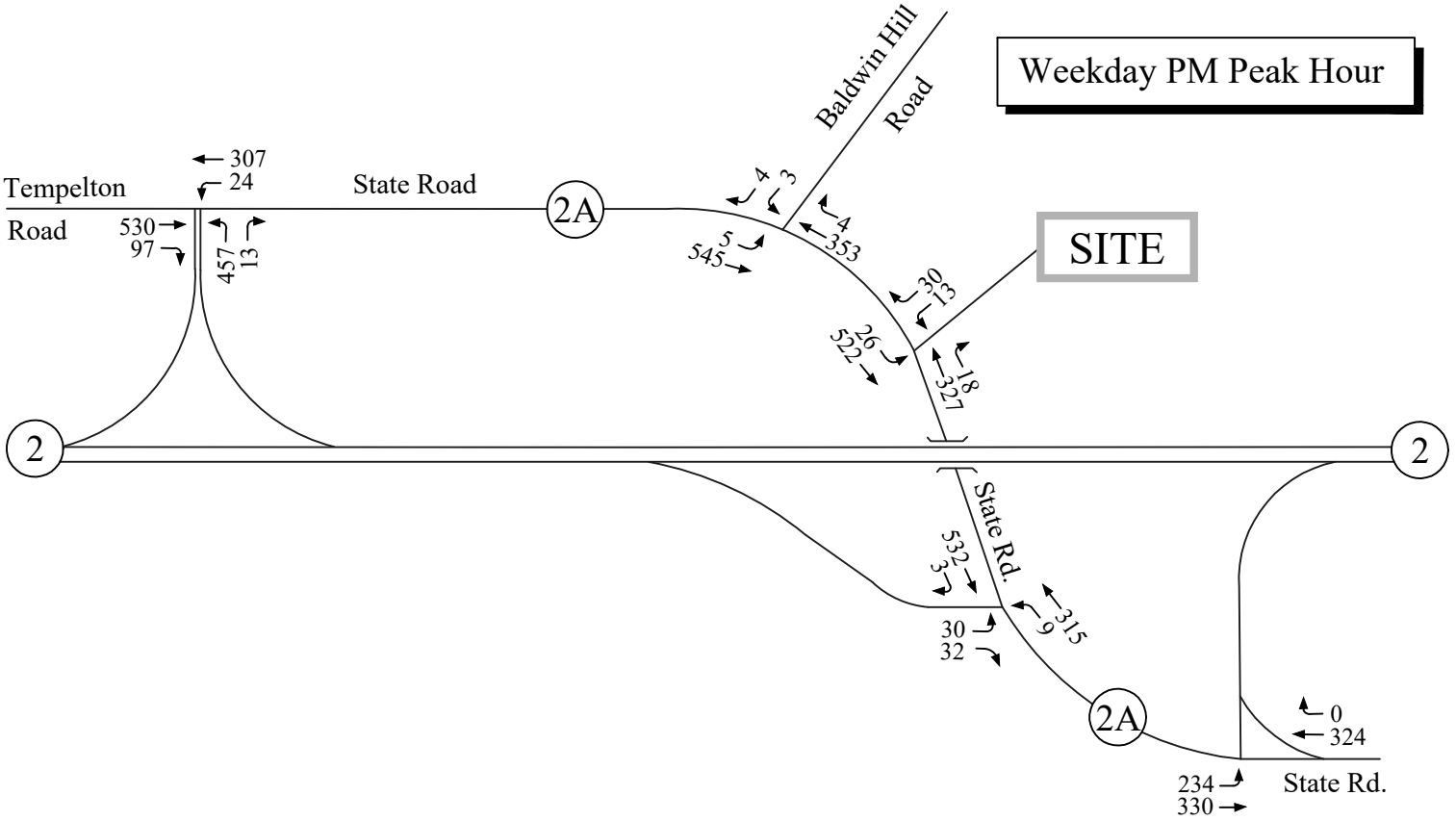
Figure 4
Site Generated
Peak Hour Traffic Volumes

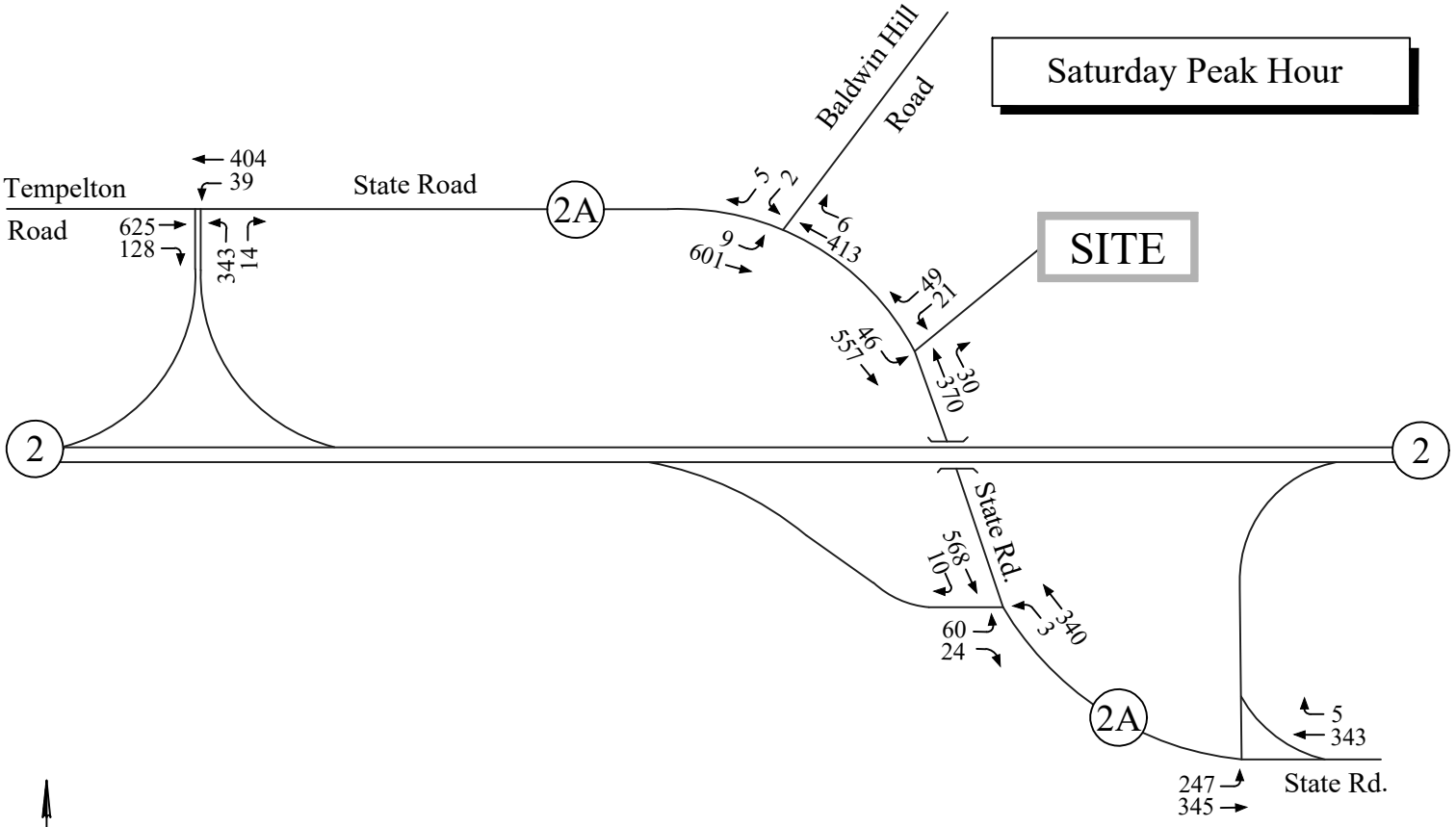




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Figure 5
2027 Build
Peak Hour Traffic Volumes





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Traffic Increases

The proposed development project will result in increases in traffic on the study area roadways. Traffic-volume increases on State Road (Route 2A) to the west of the site are expected in the range of 56 to 95 vehicles during the peak hours. These increases represent, on average, approximately one to two additional vehicles per minute. Traffic-volume increases on State Road (Route 2A) to the east of the site are expected in the range of 31 to 51 vehicles during the peak hours. These increases represent, on average, approximately one additional vehicle every one to two minutes. Negligible increases in traffic are expected on other surrounding roadways.

Site Access

The project proposed access to Route 2A, which is under MassDOT jurisdiction and the proposed site driveway will accordingly need to meet MassDOT standards for commercial driveways. It is therefore recommended that the site driveway be 24 feet in width and provide 30-foot corner radii. It is further recommended that a STOP (R1-1) sign and stop line be installed on the driveway exit at its intersection with State Road (Route 2A).

CAPACITY ANALYSIS

Level-of-service (LOS) analyses were conducted at the study area intersections under existing and projected volume conditions to determine the effect that the additional site-generated traffic will have on traffic operations. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual*[4] (HCM) and is described in the Appendix. For signalized intersections, the maximum back of queue during an average signal cycle and a 95th percentile signal cycle was calculated for each lane group during the peak periods studied. The back of queue is the length of a backup of vehicles from the stop line of a signalized intersection to the last car in the queue that is required to stop, regardless of the signal indication. The length of this queue depends on a number of factors including signal timing, vehicle arrival patterns, and the saturation flow rate. For unsignalized intersections, the 95th percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). The queue length is a function of the capacity of the movement and the movement's degree of saturation.

The Synchro analysis program was used for all capacity analyses utilizing the 2010 HCM method. Existing parameters were obtained from traffic control plans and observations made in the field during peak times. The level-of-service and queue results for signalized and unsignalized intersections are presented in Tables 6 and 7, respectively and are discussed below. All analysis worksheets are provided in the Appendix.

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

Table 6
Signalized Intersection Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2020 Existing					2027 No-Build					2027 Build				
	V/C[a]	Delay[b]	LOS[c]	50 Q[d]	95 Q[e]	V/C	Delay	LOS	50 Q	95 Q	V/C	Delay	LOS	50 Q	95 Q
Templeton Road/Route 2A at Route 2 WB Ramps															
Weekday PM Peak Hour															
EB Through	0.76	25.1	C	149	220	0.80	26.2	C	163	258	0.82	27.4	C	170	#284
EB Right	0.10	4.1	A	0	17	0.16	3.5	A	0	23	0.16	3.5	A	0	23
WB Left	0.07	12.1	B	3	11	0.15	14.0	B	5	18	0.19	15.2	B	6	21
WB Through	0.41	16.1	B	68	109	0.45	16.0	B	77	129	0.48	16.3	B	83	142
NB Left	0.47	13.0	B	95	184	0.57	15.4	B	128	225	0.59	15.9	B	132	225
NB Right	0.0	7.0	A	0	4	0.02	5.5	A	0	8	0.02	5.5	A	0	8
Overall		**18.0**	**B**				**18.6**	**B**				**19.3**	**B**		
Saturday Midday Peak Hour															
EB Through	0.71	20.3	C	155	192	0.74	19.9	B	169	223	0.76	19.8	B	176	250
EB Right	0.12	2.8	A	0	16	0.17	2.3	A	0	20	0.17	2.2	A	0	20
WB Left	0.09	10.0	A	4	12	0.18	11.1	B	7	19	0.24	12.2	B	8	24
WB Through	0.43	14.2	B	81	105	0.47	13.4	B	90	123	0.50	13.1	B	97	139
NB Left	0.35	14.0	B	62	143	0.47	17.0	B	91	187	0.50	18.2	B	97	187
NB Right	0.0	0.0	-	-	-	0.02	7.6	A	0	11	0.02	7.8	A	0	11
Overall		**16.0**	**B**				**15.8**	**B**				**16.0**	**B**		

[a] Volume-to-capacity ratio;
[b] Average control delay in seconds per vehicle;
[c] Level of service;
[d] 50th percentile queue in feet.
[e] 95th percentile queue in feet.
95th percentile volume exceeds capacity; queue may be longer.

Table 7
Unsignalized Intersection Level-of-Service Analysis Summary

Location/Peak Hour/Movement	2020 Existing				2027 No-Build				2027 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d]	V/C	Delay	LOS	Queue	V/C	Delay	LOS	Queue
State Road (Route 2A) at Route 2 EB Off-Ramp												
Weekday PM Peak Hour												
NB Left	0.01	8.3	A	0	0.01	8.5	A	0	0.01	8.5	A	0
EB All	0.12	14.0	B	25	0.14	15.2	C	25	0.16	15.9	C	25
Saturday Midday Peak Hour												
NB Left	0.01	8.4	A	0	0.01	8.6	A	0	0.01	8.7	A	0
EB All	0.19	16.1	C	25	0.23	18.3	C	25	0.27	20.0	C	50
State Road (Route 2A) at Baldwin Hill Road												
Weekday PM Peak Hour												
WB Left	0.02	12.3	B	0	0.02	13.0	B	0	0.02	13.6	B	25
SB All	0.01	7.9	A	0	0.01	7.9	A	0	0.01	8.0	A	0
Saturday Midday Peak Hour												
WB Left	0.02	13.0	B	25	0.02	14.1	B	25	0.02	15.3	C	25
SB All	0.01	8.1	A	0	0.01	8.2	A	0	0.01	8.4	A	0
State Road (Route 2A) at Route 2 EB On-Ramp												
Weekday PM Peak Hour												
EB Left	0.19	8.5	A	25	0.21	8.7	A	25	0.22	8.8	A	25
Saturday Midday Peak Hour												
EB Left	0.19	8.5	A	25	0.21	8.7	A	25	0.22	8.9	A	25
State Road (Route 2A) at Site Driveway												
Weekday PM Peak Hour												
WB All	-	-	-	-	-	-	-	-	0.10	13.7	B	25
SB Left	-	-	-	-	-	-	-	-	0.02	8.1	A	25
Saturday Midday Peak Hour												
WB All	-	-	-	-	-	-	-	-	0.19	16.2	C	25
SB Left	-	-	-	-	-	-	-	-	0.04	8.3	A	25

[a] Volume-to-capacity ratio;
[b] Average control delay in seconds per vehicle;
[c] Level of service;
[d] 95th percentile queue in feet, assuming 25 feet per vehicle.

As shown in Table 6, the signalized intersection of Templeton Road/Route 2A and the Route 2 ramps currently operates at an overall desirable LOS B during both the weekday PM and Saturday midday peak hours, with all movements operating at LOS C or better. Under future No-Build and Build traffic volume conditions, it is anticipated that the intersection of Templeton Road/Route 2A and the Route 2 ramps will continue to operate at an overall LOS B during both the weekday PM

peak hour and the Saturday midday peak hour. All movements through the intersection are expected to operate at an acceptable LOS of C or better.

As shown in Table 7, all movements at the existing unsignalized intersections of State Road (Route 2A) at the Route 2 eastbound on-ramp, State Road (Route 2A) at Baldwin Hill Road and State Road (Route 2A) at the Route 2 eastbound off-ramp currently operate at an acceptable LOS C or better and are expected to maintain acceptable levels of service under future No-Build and Build conditions.

All movements at the proposed site driveway intersection with State Road (Route 2A) are expected to operate at an acceptable LOS C or better during both the weekday PM and Saturday midday peak hours.

CONCLUSIONS

Existing and future conditions at the study area intersection have been described and analyzed with respect to traffic operations and the impact of the proposed site development. Conclusions of this effort and recommendations are presented below.

- Development of the site proposes the construction of a 4,000 square foot retail marijuana dispensary. Site access is proposed via one full access and egress drive on State Road (Route 2A).

- The proposed retail dispensary is expected to generate 1,010 weekday daily vehicle trips of which 87 trips (44 entering and 43 exiting) will occur during the PM peak hour. On a Saturday, the dispensary will generate 1,040 trips with 146 trips (76 entering and 70 exiting) occurring during the midday peak hour.

- Traffic increases as a result of the project are expected in the range of 56 to 95 vehicles on State Road (Route 2A) west of the site during the weekday PM and Saturday midday peak hours. On average, these increases represent approximately one to two additional vehicles per minute.

- Traffic increases as a result of the project are expected in the range of 31 to 51 vehicles on State Road (Route 2A) east of the site during the weekday PM and Saturday midday peak hours. On average, these increases and represent approximately one additional vehicle every one to two minutes.

- Sight distances at the proposed intersection of the site driveway and State Road (Route 2A) were analyzed. Assuming the clearing of vegetation within the sight triangles on both sides of the site driveway, the minimum required sight distances to provide safe operation can be exceeded.

- It is recommended that any proposed landscaping or signs in the vicinity of the driveways be kept low to the ground (less than 2 feet above street level) or set back sufficiently so as not to impede sight distances for drivers exiting the site.

- The proposed project is expected to result in minimal increases in delay and vehicle queues at the study area intersections during both the weekday PM and Saturday midday peak hours. None of the intersection movements are expected to be adversely impacted with the addition of site traffic and all study intersections will continue to operate at acceptable levels.

- The project proposes access to Route 2A, which is under MassDOT jurisdiction and the site driveway will accordingly need to meet MassDOT standards for commercial driveways. It is therefore recommended that the site driveway be 24 feet in width and provide 30-foot corner radii. It is further recommended that a STOP (R1-1) sign and stop line be installed at the driveway exit at its intersection with State Road (Route 2A).

- The project will require a Highway Access Permit from MassDOT District 2 for access to Route 2A. However, the project will not exceed any transportation-related review thresholds that could require MEPA review of the project.

APPENDIX

Traffic Count Data
Seasonal/Historical/Background Growth Adjustment Data
Crash Rate and Trip Generation Worksheets
Capacity Analysis Methodology and Worksheets

Traffic Count Data

Location Map: 197255 Phillipston, MA

Precision Data Industries, LLC 46 Morton Street, Framingham, MA 01702 ph: 508-875-0100 email: datarequests@pdillc.com



Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
RMA	R. Muller	19012	Thurs 11/7 thru Sat 11/9/2019	197255	Phillipston, MA

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

197255 A Volume
Site Code: 19012
Date Start: 11/07/19
Date End: 11/10/19

Start	EB				WB				Combined				11/07/19
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Thu
12:00	6		101		3		51		9		152		
12:15	4		97		2		44		6		141		
12:30	4		96		2		45		6		141		
12:45	1	15	71	365	0	7	41	181	1	22	112	546	
01:00	3		98		0		43		3		141		
01:15	5		104		3		50		8		154		
01:30	1		85		0		43		1		128		
01:45	0	9	97	384	0	3	57	193	0	12	154	577	
02:00	0		77		2		51		2		128		
02:15	7		99		2		45		9		144		
02:30	1		97		0		72		1		169		
02:45	3	11	105	378	0	4	66	234	3	15	171	612	
03:00	4		101		0		71		4		172		
03:15	4		113		0		69		4		182		
03:30	7		136		1		65		8		201		
03:45	6	21	100	450	2	3	62	267	8	24	162	717	
04:00	14		126		3		71		17		197		
04:15	24		129		1		60		25		189		
04:30	26		108		6		79		32		187		
04:45	28	92	93	456	7	17	58	268	35	109	151	724	
05:00	34		115		5		40		39		155		
05:15	50		110		13		58		63		168		
05:30	72		76		28		58		100		134		
05:45	68	224	70	371	18	64	46	202	86	288	116	573	
06:00	99		80		23		48		122		128		
06:15	115		81		18		40		133		121		
06:30	124		62		25		32		149		94		
06:45	105	443	46	269	47	113	27	147	152	556	73	416	
07:00	93		53		35		19		128		72		
07:15	115		30		40		19		155		49		
07:30	122		43		37		18		159		61		
07:45	89	419	28	154	55	167	32	88	144	586	60	242	
08:00	111		39		31		17		142		56		
08:15	107		29		45		17		152		46		
08:30	100		39		45		12		145		51		
08:45	84	402	32	139	44	165	13	59	128	567	45	198	
09:00	74		36		41		8		115		44		
09:15	61		28		49		12		110		40		
09:30	67		34		35		14		102		48		
09:45	73	275	13	111	48	173	8	42	121	448	21	153	
10:00	83		29		45		15		128		44		
10:15	76		16		42		9		118		25		
10:30	74		16		38		14		112		30		
10:45	86	319	7	68	40	165	4	42	126	484	11	110	
11:00	81		16		44		11		125		27		
11:15	89		7		38		9		127		16		
11:30	75		11		57		4		132		15		
11:45	67	312	4	38	57	196	7	31	124	508	11	69	
Total	2542		3183		1077		1754		3619		4937		
Percent	70.2%		64.5%		29.8%		35.5%						
Day Total		5725				2831				8556			
Peak	06:00	-	03:30	-	11:00	-	02:30	-	07:15	-	03:30	-	- -
Vol.	443	-	491	-	196	-	278	-	600	-	749	-	- -
P.H.F.	0.893		0.903		0.860		0.965		0.943		0.932		

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

197255 A Volume
Site Code: 19012
Date Start: 11/07/19
Date End: 11/10/19

Start	EB				WB				Combined				11/08/19
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Fri
12:00	9		101		1		55		10		156		
12:15	2		96		2		57		4		153		
12:30	3		110		3		43		6		153		
12:45	6	20	87	394	0	6	53	208	6	26	140	602	
01:00	4		85		1		58		5		143		
01:15	4		97		1		60		5		157		
01:30	2		90		2		38		4		128		
01:45	1	11	110	382	0	4	57	213	1	15	167	595	
02:00	4		118		0		61		4		179		
02:15	1		114		1		62		2		176		
02:30	4		121		0		69		4		190		
02:45	2	11	79	432	3	4	65	257	5	15	144	689	
03:00	6		116		1		74		7		190		
03:15	3		118		1		89		4		207		
03:30	10		143		1		75		11		218		
03:45	9	28	128	505	1	4	76	314	10	32	204	819	
04:00	9		122		0		69		9		191		
04:15	25		119		4		67		29		186		
04:30	22		128		6		69		28		197		
04:45	23	79	115	484	6	16	80	285	29	95	195	769	
05:00	41		128		9		60		50		188		
05:15	46		121		5		74		51		195		
05:30	72		98		21		67		93		165		
05:45	61	220	91	438	24	59	49	250	85	279	140	688	
06:00	79		91		18		37		97		128		
06:15	122		91		21		54		143		145		
06:30	105		69		27		30		132		99		
06:45	121	427	63	314	46	112	39	160	167	539	102	474	
07:00	94		64		35		19		129		83		
07:15	110		58		41		36		151		94		
07:30	109		50		49		23		158		73		
07:45	103	416	46	218	50	175	24	102	153	591	70	320	
08:00	104		42		36		23		140		65		
08:15	102		30		55		23		157		53		
08:30	85		39		47		22		132		61		
08:45	79	370	35	146	41	179	18	86	120	549	53	232	
09:00	74		39		49		18		123		57		
09:15	98		39		38		17		136		56		
09:30	92		28		43		13		135		41		
09:45	98	362	19	125	42	172	11	59	140	534	30	184	
10:00	82		20		43		20		125		40		
10:15	88		17		42		9		130		26		
10:30	83		18		55		23		138		41		
10:45	82	335	11	66	52	192	16	68	134	527	27	134	
11:00	79		14		44		13		123		27		
11:15	106		15		54		13		160		28		
11:30	81		11		52		11		133		22		
11:45	100	366	11	51	60	210	5	42	160	576	16	93	
Total	2645		3555		1133		2044		3778		5599		
Percent	70.0%		63.5%		30.0%		36.5%						
Day Total		6200				3177				9377			
Peak	06:15	-	03:30	-	11:00	-	03:00	-	07:30	-	03:15	-	- -
Vol.	442	-	512	-	210	-	314	-	608	-	820	-	- -
P.H.F.	0.906		0.895		0.875		0.882		0.962		0.940		

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

197255 A Volume
Site Code: 19012
Date Start: 11/07/19
Date End: 11/10/19

Start	EB				WB				Combined				11/09/19
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Sat
12:00	5		131		6		61		11		192		
12:15	13		117		2		73		15		190		
12:30	6		135		1		85		7		220		
12:45	4	28	114	497	7	16	60	279	11	44	174	776	
01:00	2		114		2		61		4		175		
01:15	6		128		0		72		6		200		
01:30	3		135		7		59		10		194		
01:45	1	12	105	482	4	13	66	258	5	25	171	740	
02:00	0		112		0		65		0		177		
02:15	4		111		2		70		6		181		
02:30	0		124		1		61		1		185		
02:45	0	4	110	457	0	3	61	257	0	7	171	714	
03:00	4		104		1		73		5		177		
03:15	3		122		1		61		4		183		
03:30	3		121		0		61		3		182		
03:45	3	13	104	451	1	3	65	260	4	16	169	711	
04:00	7		125		2		58		9		183		
04:15	7		121		0		45		7		166		
04:30	5		102		3		59		8		161		
04:45	11	30	111	459	4	9	55	217	15	39	166	676	
05:00	20		108		5		46		25		154		
05:15	19		97		1		43		20		140		
05:30	27		100		3		45		30		145		
05:45	24	90	96	401	9	18	41	175	33	108	137	576	
06:00	35		78		5		35		40		113		
06:15	42		66		10		42		52		108		
06:30	28		65		7		38		35		103		
06:45	41	146	66	275	14	36	28	143	55	182	94	418	
07:00	47		61		16		35		63		96		
07:15	49		37		29		34		78		71		
07:30	54		41		13		22		67		63		
07:45	61	211	42	181	27	85	19	110	88	296	61	291	
08:00	58		36		28		12		86		48		
08:15	59		38		22		23		81		61		
08:30	68		49		31		15		99		64		
08:45	70	255	47	170	43	124	17	67	113	379	64	237	
09:00	72		39		43		16		115		55		
09:15	82		27		47		19		129		46		
09:30	98		27		43		12		141		39		
09:45	101	353	23	116	67	200	15	62	168	553	38	178	
10:00	99		22		49		15		148		37		
10:15	103		19		71		19		174		38		
10:30	107		23		61		15		168		38		
10:45	111	420	13	77	75	256	7	56	186	676	20	133	
11:00	107		20		57		8		164		28		
11:15	121		9		58		12		179		21		
11:30	124		7		67		8		191		15		
11:45	114	466	16	52	74	256	1	29	188	722	17	81	
Total	2028		3618		1019		1913		3047		5531		
Percent	66.6%		65.4%		33.4%		34.6%						
Day Total		5646				2932				8578			
Peak	11:00	-	12:00	-	10:15	-	12:00	-	11:00	-	12:00	-	- -
Vol.	466	-	497	-	264	-	279	-	722	-	776	-	- -
P.H.F.	0.940		0.920		0.880		0.821		0.945		0.882		

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

197255 A Volume
Site Code: 19012
Date Start: 11/07/19
Date End: 11/10/19

Start	EB				WB				Combined				11/10/19
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Sun
12:00	5		99		1		44		6		143		
12:15	9		92		4		62		13		154		
12:30	5		111		5		60		10		171		
12:45	0	19	117	419	3	13	69	235	3	32	186	654	
01:00	4		98		5		55		9		153		
01:15	4		107		1		50		5		157		
01:30	0		106		0		60		0		166		
01:45	2	10	87	398	1	7	56	221	3	17	143	619	
02:00	1		122		2		51		3		173		
02:15	2		99		1		77		3		176		
02:30	1		111		0		58		1		169		
02:45	1	5	104	436	1	4	59	245	2	9	163	681	
03:00	2		108		1		54		3		162		
03:15	3		97		1		52		4		149		
03:30	2		104		0		68		2		172		
03:45	3	10	95	404	2	4	62	236	5	14	157	640	
04:00	4		95		1		51		5		146		
04:15	3		77		0		43		3		120		
04:30	4		80		0		38		4		118		
04:45	7	18	92	344	0	1	58	190	7	19	150	534	
05:00	7		91		1		37		8		128		
05:15	7		93		6		47		13		140		
05:30	12		95		1		46		13		141		
05:45	14	40	59	338	9	17	37	167	23	57	96	505	
06:00	15		60		4		38		19		98		
06:15	32		63		7		29		39		92		
06:30	30		52		17		21		47		73		
06:45	18	95	51	226	16	44	18	106	34	139	69	332	
07:00	21		34		13		21		34		55		
07:15	16		24		19		16		35		40		
07:30	44		27		13		14		57		41		
07:45	33	114	30	115	34	79	13	64	67	193	43	179	
08:00	60		30		20		15		80		45		
08:15	72		33		28		18		100		51		
08:30	58		23		40		16		98		39		
08:45	78	268	23	109	36	124	11	60	114	392	34	169	
09:00	69		32		33		12		102		44		
09:15	91		28		44		7		135		35		
09:30	90		25		27		8		117		33		
09:45	72	322	19	104	49	153	9	36	121	475	28	140	
10:00	78		14		51		2		129		16		
10:15	86		19		51		6		137		25		
10:30	97		11		59		16		156		27		
10:45	106	367	11	55	55	216	10	34	161	583	21	89	
11:00	112		14		62		6		174		20		
11:15	113		11		52		6		165		17		
11:30	110		9		61		1		171		10		
11:45	98	433	4	38	57	232	2	15	155	665	6	53	
Total	1701		2986		894		1609		2595		4595		
Percent	65.5%		65.0%		34.5%		35.0%						
Day Total		4687				2503				7190			
Peak	10:45	-	02:00	-	11:00	-	02:15	-	10:45	-	02:00	-	-	-
Vol.	441	-	436	-	232	-	248	-	671	-	681	-	-	-
P.H.F.	0.976		0.893		0.935		0.805		0.964		0.915			

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/07/1														
9	0	11	3	0	1	0	0	0	0	0	0	0	0	15
01:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9
02:00	0	7	4	0	0	0	0	0	0	0	0	0	0	11
03:00	0	14	4	1	2	0	0	0	0	0	0	0	0	21
04:00	0	59	28	0	4	1	0	0	0	0	0	0	0	92
05:00	0	147	64	2	6	1	0	2	2	0	0	0	0	224
06:00	0	325	97	2	13	3	1	1	1	0	0	0	0	443
07:00	1	311	76	3	17	3	0	5	3	0	0	0	0	419
08:00	1	285	64	3	39	6	0	1	3	0	0	0	0	402
09:00	0	191	55	1	18	7	0	0	3	0	0	0	0	275
10:00	0	229	51	4	31	3	0	1	0	0	0	0	0	319
11:00	0	235	51	3	14	5	0	2	2	0	0	0	0	312
12 PM	0	283	62	3	13	3	0	0	1	0	0	0	0	365
13:00	0	303	56	5	15	2	0	0	2	1	0	0	0	384
14:00	1	269	88	3	10	4	0	2	1	0	0	0	0	378
15:00	0	340	88	3	18	0	0	1	0	0	0	0	0	450
16:00	2	352	82	0	17	3	0	0	0	0	0	0	0	456
17:00	1	311	45	1	11	1	0	0	1	0	0	0	0	371
18:00	0	205	50	3	11	0	0	0	0	0	0	0	0	269
19:00	0	121	30	0	3	0	0	0	0	0	0	0	0	154
20:00	0	108	25	0	5	0	0	0	1	0	0	0	0	139
21:00	0	89	18	0	4	0	0	0	0	0	0	0	0	111
22:00	0	57	9	1	1	0	0	0	0	0	0	0	0	68
23:00	0	30	7	0	0	0	0	0	1	0	0	0	0	38
Total	6	4289	1059	38	253	42	1	15	21	1	0	0	0	5725
Percent	0.1%	74.9%	18.5%	0.7%	4.4%	0.7%	0.0%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	06:00	06:00	10:00	08:00	09:00	06:00	07:00	07:00					06:00
Vol.	1	325	97	4	39	7	1	5	3					443
PM Peak	16:00	16:00	14:00	13:00	15:00	14:00		14:00	13:00	13:00				16:00
Vol.	2	352	88	5	18	4		2	2	1				456

PRECISION
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/08/1														
9	0	15	3	0	2	0	0	0	0	0	0	0	0	20
01:00	0	8	2	0	1	0	0	0	0	0	0	0	0	11
02:00	0	5	3	0	2	0	0	0	1	0	0	0	0	11
03:00	0	22	5	0	0	1	0	0	0	0	0	0	0	28
04:00	0	45	31	0	3	0	0	0	0	0	0	0	0	79
05:00	0	146	65	0	6	0	0	2	1	0	0	0	0	220
06:00	1	312	95	1	13	1	0	2	2	0	0	0	0	427
07:00	0	333	59	2	15	5	0	2	0	0	0	0	0	416
08:00	1	252	78	4	24	5	1	0	5	0	0	0	0	370
09:00	2	238	88	5	22	5	0	1	1	0	0	0	0	362
10:00	0	249	63	2	13	4	0	1	3	0	0	0	0	335
11:00	0	251	85	3	20	5	0	1	1	0	0	0	0	366
12 PM	0	280	81	1	23	5	0	3	1	0	0	0	0	394
13:00	1	268	70	3	28	6	0	3	3	0	0	0	0	382
14:00	0	325	81	3	17	3	0	0	3	0	0	0	0	432
15:00	0	387	97	2	15	0	0	2	2	0	0	0	0	505
16:00	0	397	76	0	10	0	0	0	0	0	1	0	0	484
17:00	1	348	70	2	14	1	0	2	0	0	0	0	0	438
18:00	0	237	65	2	10	0	0	0	0	0	0	0	0	314
19:00	0	149	49	1	19	0	0	0	0	0	0	0	0	218
20:00	0	111	24	0	10	0	0	0	0	1	0	0	0	146
21:00	0	98	24	0	3	0	0	0	0	0	0	0	0	125
22:00	1	33	27	0	4	1	0	0	0	0	0	0	0	66
23:00	0	29	12	0	10	0	0	0	0	0	0	0	0	51
Total	7	4538	1253	31	284	42	1	19	23	1	1	0	0	6200
Percent	0.1%	73.2%	20.2%	0.5%	4.6%	0.7%	0.0%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	07:00	06:00	09:00	08:00	07:00	08:00	05:00	08:00					06:00
Vol.	2	333	95	5	24	5	1	2	5					427
PM Peak	13:00	16:00	15:00	13:00	13:00	13:00		12:00	13:00	20:00	16:00			15:00
Vol.	1	397	97	3	28	6		3	3	1	1			505

PRECISION
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/1														
9	0	19	4	0	5	0	0	0	0	0	0	0	0	28
01:00	0	9	2	0	0	0	0	1	0	0	0	0	0	12
02:00	0	1	2	1	0	0	0	0	0	0	0	0	0	4
03:00	0	1	12	0	0	0	0	0	0	0	0	0	0	13
04:00	0	6	14	0	10	0	0	0	0	0	0	0	0	30
05:00	0	53	21	1	14	0	0	1	0	0	0	0	0	90
06:00	1	101	25	1	16	1	0	1	0	0	0	0	0	146
07:00	0	145	47	2	14	1	0	0	2	0	0	0	0	211
08:00	0	199	45	0	11	0	0	0	0	0	0	0	0	255
09:00	0	259	68	0	23	0	0	1	2	0	0	0	0	353
10:00	0	293	111	1	11	1	0	3	0	0	0	0	0	420
11:00	0	381	72	0	10	1	0	2	0	0	0	0	0	466
12 PM	0	413	68	1	13	1	0	1	0	0	0	0	0	497
13:00	1	397	71	2	11	0	0	0	0	0	0	0	0	482
14:00	0	374	67	0	14	0	0	2	0	0	0	0	0	457
15:00	0	369	72	0	10	0	0	0	0	0	0	0	0	451
16:00	0	369	74	0	15	0	0	0	1	0	0	0	0	459
17:00	0	316	69	0	16	0	0	0	0	0	0	0	0	401
18:00	0	229	41	3	2	0	0	0	0	0	0	0	0	275
19:00	0	151	28	0	2	0	0	0	0	0	0	0	0	181
20:00	0	137	27	0	6	0	0	0	0	0	0	0	0	170
21:00	0	95	18	0	3	0	0	0	0	0	0	0	0	116
22:00	0	69	8	0	0	0	0	0	0	0	0	0	0	77
23:00	0	41	11	0	0	0	0	0	0	0	0	0	0	52
Total	2	4427	977	12	206	5	0	12	5	0	0	0	0	5646
Percent	0.0%	78.4%	17.3%	0.2%	3.6%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	11:00	10:00	07:00	09:00	06:00		10:00	07:00					11:00
Vol.	1	381	111	2	23	1		3	2					466
PM Peak	13:00	12:00	16:00	18:00	17:00	12:00		14:00	16:00					12:00
Vol.	1	413	74	3	16	1		2	1					497

PRECISION
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/10/1														
9	0	18	1	0	0	0	0	0	0	0	0	0	0	19
01:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
02:00	0	4	0	0	0	0	0	0	1	0	0	0	0	5
03:00	0	6	3	0	0	0	0	1	0	0	0	0	0	10
04:00	0	12	3	0	3	0	0	0	0	0	0	0	0	18
05:00	0	30	8	0	2	0	0	0	0	0	0	0	0	40
06:00	0	74	14	0	7	0	0	0	0	0	0	0	0	95
07:00	0	88	24	0	1	1	0	0	0	0	0	0	0	114
08:00	0	213	50	0	5	0	0	0	0	0	0	0	0	268
09:00	0	264	53	0	5	0	0	0	0	0	0	0	0	322
10:00	1	290	68	0	7	0	0	1	0	0	0	0	0	367
11:00	0	350	77	0	6	0	0	0	0	0	0	0	0	433
12 PM	2	351	59	0	5	0	0	1	1	0	0	0	0	419
13:00	4	337	47	0	9	1	0	0	0	0	0	0	0	398
14:00	0	350	74	0	11	0	0	1	0	0	0	0	0	436
15:00	2	340	58	0	4	0	0	0	0	0	0	0	0	404
16:00	0	286	49	0	7	0	0	1	1	0	0	0	0	344
17:00	0	278	51	0	9	0	0	0	0	0	0	0	0	338
18:00	0	179	39	1	6	0	0	0	1	0	0	0	0	226
19:00	0	94	18	0	3	0	0	0	0	0	0	0	0	115
20:00	0	91	18	0	0	0	0	0	0	0	0	0	0	109
21:00	0	92	12	0	0	0	0	0	0	0	0	0	0	104
22:00	0	49	6	0	0	0	0	0	0	0	0	0	0	55
23:00	0	29	6	0	3	0	0	0	0	0	0	0	0	38
Total	9	3834	739	1	93	2	0	5	4	0	0	0	0	4687
Percent	0.2%	81.8%	15.8%	0.0%	2.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00		06:00	07:00		03:00	02:00					11:00
Vol.	1	350	77		7	1		1	1					433
PM Peak	13:00	12:00	14:00	18:00	14:00	13:00		12:00	12:00					14:00
Vol.	4	351	74	1	11	1		1	1					436

PRECISION
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/07/1														
9	0	6	1	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	1	0	0	1	0	0	0	0	0	0	0	3
02:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
04:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
05:00	0	50	13	0	1	0	0	0	0	0	0	0	0	64
06:00	0	75	29	1	5	1	1	0	0	1	0	0	0	113
07:00	0	115	39	0	7	1	3	1	1	0	0	0	0	167
08:00	0	127	31	1	2	1	3	0	0	0	0	0	0	165
09:00	0	136	24	0	8	1	2	1	1	0	0	0	0	173
10:00	0	130	22	2	6	2	2	1	0	0	0	0	0	165
11:00	0	145	39	0	6	2	2	2	0	0	0	0	0	196
12 PM	0	143	28	0	5	1	3	1	0	0	0	0	0	181
13:00	1	155	28	1	6	0	2	0	0	0	0	0	0	193
14:00	0	192	33	2	3	0	3	1	0	0	0	0	0	234
15:00	0	206	47	2	11	1	0	0	0	0	0	0	0	267
16:00	2	214	41	1	8	1	0	0	1	0	0	0	0	268
17:00	0	166	28	0	8	0	0	0	0	0	0	0	0	202
18:00	0	120	20	2	4	0	0	1	0	0	0	0	0	147
19:00	0	76	11	0	1	0	0	0	0	0	0	0	0	88
20:00	0	49	10	0	0	0	0	0	0	0	0	0	0	59
21:00	0	38	4	0	0	0	0	0	0	0	0	0	0	42
22:00	0	39	3	0	0	0	0	0	0	0	0	0	0	42
23:00	0	27	4	0	0	0	0	0	0	0	0	0	0	31
Total	3	2227	463	12	81	12	21	8	3	1	0	0	0	2831
Percent	0.1%	78.7%	16.4%	0.4%	2.9%	0.4%	0.7%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00	07:00	10:00	09:00	10:00	07:00	11:00	07:00	06:00				11:00
Vol.		145	39	2	8	2	3	2	1	1				196
PM Peak	16:00	16:00	15:00	14:00	15:00	12:00	12:00	12:00	16:00					16:00
Vol.	2	214	47	2	11	1	3	1	1					268

PRECISION
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/08/1														
9	0	4	1	0	1	0	0	0	0	0	0	0	0	6
01:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
02:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
03:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	13	3	0	0	0	0	0	0	0	0	0	0	16
05:00	0	44	13	0	1	0	0	1	0	0	0	0	0	59
06:00	0	87	20	1	2	1	1	0	0	0	0	0	0	112
07:00	1	120	40	0	5	5	2	1	1	0	0	0	0	175
08:00	1	130	30	2	14	0	2	0	0	0	0	0	0	179
09:00	0	124	36	2	7	0	3	0	0	0	0	0	0	172
10:00	0	144	35	1	6	2	3	1	0	0	0	0	0	192
11:00	0	173	30	0	4	2	1	0	0	0	0	0	0	210
12 PM	0	160	34	0	12	0	2	0	0	0	0	0	0	208
13:00	0	157	39	1	10	0	4	1	1	0	0	0	0	213
14:00	0	194	47	3	8	3	1	1	0	0	0	0	0	257
15:00	0	244	57	1	10	1	0	1	0	0	0	0	0	314
16:00	1	224	50	1	9	0	0	0	0	0	0	0	0	285
17:00	1	188	49	2	9	0	0	1	0	0	0	0	0	250
18:00	0	118	26	1	14	0	0	0	1	0	0	0	0	160
19:00	0	47	39	0	16	0	0	0	0	0	0	0	0	102
20:00	0	54	19	0	13	0	0	0	0	0	0	0	0	86
21:00	0	30	25	0	4	0	0	0	0	0	0	0	0	59
22:00	0	34	23	0	11	0	0	0	0	0	0	0	0	68
23:00	0	25	12	0	5	0	0	0	0	0	0	0	0	42
Total	4	2322	631	15	162	14	19	7	3	0	0	0	0	3177
Percent	0.1%	73.1%	19.9%	0.5%	5.1%	0.4%	0.6%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	07:00	08:00	08:00	07:00	09:00	05:00	07:00					11:00
Vol.	1	173	40	2	14	5	3	1	1					210
PM Peak	16:00	15:00	15:00	14:00	19:00	14:00	13:00	13:00	13:00					15:00
Vol.	1	244	57	3	16	3	4	1	1					314

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/1														
9	0	10	6	0	0	0	0	0	0	0	0	0	0	16
01:00	0	9	4	0	0	0	0	0	0	0	0	0	0	13
02:00	0	0	1	0	2	0	0	0	0	0	0	0	0	3
03:00	0	0	3	0	0	0	0	0	0	0	0	0	0	3
04:00	0	2	4	0	3	0	0	0	0	0	0	0	0	9
05:00	0	5	10	0	3	0	0	0	0	0	0	0	0	18
06:00	0	20	11	0	5	0	0	0	0	0	0	0	0	36
07:00	0	50	20	0	15	0	0	0	0	0	0	0	0	85
08:00	0	86	27	0	9	0	0	2	0	0	0	0	0	124
09:00	0	146	39	0	13	1	0	1	0	0	0	0	0	200
10:00	1	204	41	0	10	0	0	0	0	0	0	0	0	256
11:00	1	201	40	2	10	0	0	2	0	0	0	0	0	256
12 PM	0	241	36	0	2	0	0	0	0	0	0	0	0	279
13:00	0	213	40	0	5	0	0	0	0	0	0	0	0	258
14:00	2	220	29	0	5	0	0	1	0	0	0	0	0	257
15:00	0	220	33	0	6	0	0	1	0	0	0	0	0	260
16:00	1	168	36	0	11	0	0	1	0	0	0	0	0	217
17:00	1	140	26	0	8	0	0	0	0	0	0	0	0	175
18:00	1	113	27	1	1	0	0	0	0	0	0	0	0	143
19:00	0	92	17	0	1	0	0	0	0	0	0	0	0	110
20:00	0	60	5	0	2	0	0	0	0	0	0	0	0	67
21:00	0	52	9	0	1	0	0	0	0	0	0	0	0	62
22:00	0	46	8	0	2	0	0	0	0	0	0	0	0	56
23:00	0	23	6	0	0	0	0	0	0	0	0	0	0	29
Total	7	2321	478	3	114	1	0	8	0	0	0	0	0	2932
Percent	0.2%	79.2%	16.3%	0.1%	3.9%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	10:00	10:00	11:00	07:00	09:00		08:00						10:00
Vol.	1	204	41	2	15	1		2						256
PM Peak	14:00	12:00	13:00	18:00	16:00			14:00						12:00
Vol.	2	241	40	1	11			1						279

PRECISION
D A T A
INDUSTRIES, LLC
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Class
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/10/1														
9	0	13	0	0	0	0	0	0	0	0	0	0	0	13
01:00	0	5	2	0	0	0	0	0	0	0	0	0	0	7
02:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
03:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	14	0	0	3	0	0	0	0	0	0	0	0	17
06:00	0	33	11	0	0	0	0	0	0	0	0	0	0	44
07:00	0	59	18	0	2	0	0	0	0	0	0	0	0	79
08:00	0	101	21	0	2	0	0	0	0	0	0	0	0	124
09:00	0	121	28	0	4	0	0	0	0	0	0	0	0	153
10:00	2	170	42	0	2	0	0	0	0	0	0	0	0	216
11:00	0	183	45	0	4	0	0	0	0	0	0	0	0	232
12 PM	1	188	40	0	5	0	0	1	0	0	0	0	0	235
13:00	6	171	38	0	6	0	0	0	0	0	0	0	0	221
14:00	1	203	38	0	2	1	0	0	0	0	0	0	0	245
15:00	2	194	34	0	6	0	0	0	0	0	0	0	0	236
16:00	2	156	29	0	3	0	0	0	0	0	0	0	0	190
17:00	0	135	25	0	7	0	0	0	0	0	0	0	0	167
18:00	0	76	25	0	5	0	0	0	0	0	0	0	0	106
19:00	0	48	14	0	2	0	0	0	0	0	0	0	0	64
20:00	0	47	13	0	0	0	0	0	0	0	0	0	0	60
21:00	0	33	3	0	0	0	0	0	0	0	0	0	0	36
22:00	0	24	10	0	0	0	0	0	0	0	0	0	0	34
23:00	0	11	4	0	0	0	0	0	0	0	0	0	0	15
Total	14	1992	442	0	53	1	0	1	0	0	0	0	0	2503
Percent	0.6%	79.6%	17.7%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00		09:00									11:00
Vol.	2	183	45		4									232
PM Peak	13:00	14:00	12:00		17:00	14:00		12:00						14:00
Vol.	6	203	40		7	1		1						245

PRECISION DATA INDUSTRIES, LLC
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/07/ 19	0	0	0	0	0	1	6	6	0	2	0	0	0	15	48	46
01:00	0	0	0	0	0	0	2	5	2	0	0	0	0	9	50	47
02:00	0	0	0	0	0	2	4	2	1	2	0	0	0	11	54	46
03:00	0	0	0	0	0	0	4	9	4	4	0	0	0	21	55	49
04:00	0	0	0	0	0	1	6	39	38	8	0	0	0	92	53	50
05:00	0	0	0	0	1	11	53	84	63	7	**3**	**1**	**1**	224	52	47
06:00	0	0	0	0	4	20	**137**	**192**	85	4	1	0	0	**443**	50	46
07:00	**2**	0	0	0	2	27	103	187	**88**	**9**	1	0	0	419	50	46
08:00	0	0	0	0	1	24	123	171	77	5	1	0	0	402	50	46
09:00	0	0	0	0	**5**	18	94	114	42	2	0	0	0	275	49	45
10:00	0	0	0	**1**	2	25	108	136	44	3	0	0	0	319	48	45
11:00	0	0	0	1	3	**37**	136	100	32	3	0	0	0	312	48	44
12 PM	0	0	0	**5**	4	34	151	**140**	29	1	0	0	**1**	365	48	44
13:00	0	0	0	0	9	43	186	124	22	0	0	0	0	384	47	43
14:00	0	0	0	0	1	54	186	121	13	**3**	0	0	0	378	47	43
15:00	0	0	0	1	6	72	205	133	**30**	3	0	0	0	450	47	43
16:00	0	0	0	1	16	84	**226**	105	23	1	0	0	0	**456**	46	42
17:00	0	**2**	**5**	1	25	**90**	141	86	19	2	0	0	0	371	46	41
18:00	0	0	0	0	**31**	66	89	68	15	0	0	0	0	269	47	41
19:00	0	0	0	0	6	31	58	45	12	1	**1**	0	0	154	47	43
20:00	0	0	0	0	4	31	69	24	11	0	0	0	0	139	46	42
21:00	0	0	0	0	4	18	52	30	5	2	0	0	0	111	47	43
22:00	0	0	0	0	5	10	27	20	5	1	0	0	0	68	47	43
23:00	0	0	0	0	2	8	16	7	3	2	0	0	0	38	48	43
Total	2	2	5	10	131	707	2182	1948	663	65	7	1	2	5725		
%	0.0%	0.0%	0.1%	0.2%	2.3%	12.3%	38.1%	34.0%	11.6%	1.1%	0.1%	0.0%	0.0%			
AM Peak	07:00			10:00	09:00	11:00	06:00	06:00	07:00	07:00	05:00	05:00	05:00	06:00		
Vol.	2			1	5	37	137	192	88	9	3	1	1	443		
PM Peak		17:00	17:00	12:00	18:00	17:00	16:00	12:00	15:00	14:00	19:00		12:00	16:00		
Vol.		2	5	5	31	90	226	140	30	3	1		1	456		

Stats

15th Percentile :	39 MPH
50th Percentile :	43 MPH
85th Percentile :	48 MPH
95th Percentile :	52 MPH
Mean Speed(Average) :	44 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	4130
Percent in Pace :	72.1%
Number of Vehicles > 45 MPH :	2296
Percent of Vehicles > 45 MPH :	40.1%

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/08/ 19	0	0	0	0	0	3	7	6	2	1	1	0	0	20	51	45
01:00	0	0	**1**	0	0	2	3	4	1	0	0	0	0	11	48	42
02:00	0	0	0	0	0	5	4	2	0	0	0	0	0	11	44	41
03:00	0	0	0	0	1	3	10	5	7	2	0	0	0	28	52	46
04:00	0	0	0	0	0	2	25	34	17	1	0	0	0	79	50	46
05:00	0	0	0	0	0	22	82	79	32	5	0	0	0	220	49	45
06:00	0	0	0	0	2	31	153	**197**	43	1	0	0	0	**427**	48	45
07:00	0	0	0	2	3	**55**	**183**	142	28	3	0	0	0	416	47	44
08:00	0	0	0	**3**	**5**	22	117	157	**55**	**9**	**2**	0	0	370	49	46
09:00	**1**	0	0	0	4	23	126	158	40	9	1	0	0	362	48	45
10:00	0	0	0	2	2	19	144	134	27	5	2	0	0	335	48	45
11:00	0	0	0	0	1	26	130	148	54	6	1	0	0	366	49	45
12 PM	0	0	0	0	1	20	139	162	68	4	0	0	0	394	49	46
13:00	0	0	0	0	3	21	129	173	52	4	0	0	0	382	48	45
14:00	0	0	0	1	**9**	54	192	144	28	4	0	0	0	432	47	44
15:00	0	0	0	0	3	40	**225**	**197**	38	2	0	0	0	**505**	48	44
16:00	0	0	0	0	9	**65**	203	166	37	4	0	0	0	484	48	44
17:00	0	0	0	**6**	4	52	174	167	30	5	0	0	0	438	48	44
18:00	0	0	0	0	0	17	114	132	43	7	1	0	0	314	49	46
19:00	0	0	0	0	0	10	37	78	**71**	**17**	**5**	0	0	218	53	48
20:00	0	0	0	0	0	3	37	57	33	13	3	0	0	146	53	48
21:00	0	0	0	0	0	4	24	57	29	7	3	**1**	0	125	52	48
22:00	0	0	0	0	0	0	10	16	26	11	3	0	0	66	55	51
23:00	0	0	0	0	0	1	10	14	15	8	2	1	0	51	56	50
Total	1	0	1	14	47	500	2278	2429	776	128	24	2	0	6200		
%	0.0%	0.0%	0.0%	0.2%	0.8%	8.1%	36.7%	39.2%	12.5%	2.1%	0.4%	0.0%	0.0%			
AM Peak	09:00		01:00	08:00	08:00	07:00	07:00	06:00	08:00	08:00	08:00			06:00		
Vol.	1		1	3	5	55	183	197	55	9	2			427		
PM Peak				17:00	14:00	16:00	15:00	15:00	19:00	19:00	19:00	21:00		15:00		
Vol.				6	9	65	225	197	71	17	5	1		505		

Stats

15th Percentile :	39 MPH
50th Percentile :	44 MPH
85th Percentile :	49 MPH
95th Percentile :	52 MPH
Mean Speed(Average) :	45 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	4707
Percent in Pace :	75.9%
Number of Vehicles > 45 MPH :	2873
Percent of Vehicles > 45 MPH :	46.3%

PRECISION DATA INDUSTRIES, LLC
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State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/09/ 19	0	0	0	0	0	1	7	6	10	4	0	0	0	28	53	49
01:00	0	0	0	0	0	0	2	5	4	1	0	0	0	12	52	49
02:00	0	0	0	0	0	0	1	1	2	0	0	0	0	4	52	48
03:00	0	0	0	0	0	0	2	1	2	4	**4**	0	0	13	61	55
04:00	0	0	0	0	0	0	0	0	10	16	3	**1**	0	30	58	56
05:00	0	0	0	0	0	0	5	23	36	21	4	0	**1**	90	56	52
06:00	0	0	0	0	0	1	23	51	46	**22**	2	0	1	146	54	49
07:00	0	0	0	0	1	10	50	86	46	18	0	0	0	211	52	47
08:00	0	0	0	0	2	11	57	130	49	6	0	0	0	255	50	47
09:00	0	0	0	0	2	16	119	147	**59**	8	1	0	1	353	50	46
10:00	0	0	0	0	0	**32**	**159**	167	55	7	0	0	0	420	48	45
11:00	0	0	0	**2**	**5**	26	148	**222**	59	4	0	0	0	**466**	48	45
12 PM	0	0	0	0	**14**	35	203	205	38	2	0	0	0	**497**	48	44
13:00	0	0	0	1	0	38	**209**	193	**39**	2	0	0	0	482	48	44
14:00	**1**	0	0	0	2	47	161	**209**	36	1	0	0	0	457	48	44
15:00	0	0	0	**2**	11	**64**	198	142	30	**4**	0	0	0	451	47	43
16:00	0	0	0	0	7	44	192	182	32	1	1	0	0	459	48	44
17:00	0	0	0	0	11	61	165	127	32	3	**2**	0	0	401	48	44
18:00	0	0	0	0	3	26	113	109	22	2	0	0	0	275	48	44
19:00	0	0	0	0	1	11	73	74	20	0	2	0	0	181	48	45
20:00	0	0	0	0	1	18	72	62	15	0	2	0	0	170	48	44
21:00	0	0	0	0	1	6	60	35	13	0	1	0	0	116	48	44
22:00	0	0	0	0	0	2	24	36	13	0	2	0	0	77	50	46
23:00	0	0	0	0	1	7	12	25	6	1	0	0	0	52	48	45
Total	1	0	0	5	62	456	2055	2238	674	127	24	1	3	5646		
%	0.0%	0.0%	0.0%	0.1%	1.1%	8.1%	36.4%	39.6%	11.9%	2.2%	0.4%	0.0%	0.1%			
AM Peak				11:00	11:00	10:00	10:00	11:00	09:00	06:00	03:00	04:00	05:00	11:00		
Vol.				2	5	32	159	222	59	22	4	1	1	466		
PM Peak	14:00			15:00	12:00	15:00	13:00	14:00	13:00	15:00	17:00			12:00		
Vol.	1			2	14	64	209	209	39	4	2			497		

Stats

15th Percentile :	39 MPH
50th Percentile :	44 MPH
85th Percentile :	48 MPH
95th Percentile :	53 MPH
Mean Speed(Average) :	45 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	4293
Percent in Pace :	76.0%
Number of Vehicles > 45 MPH :	2619
Percent of Vehicles > 45 MPH :	46.4%

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197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

EB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/10/ 19	0	0	0	0	1	1	9	5	2	1	0	0	0	19	49	44
01:00	0	0	0	0	0	0	6	4	0	0	0	0	0	10	47	44
02:00	0	0	0	0	0	1	1	2	1	0	0	0	0	5	50	45
03:00	0	0	0	0	0	0	3	5	2	0	0	0	0	10	50	47
04:00	0	0	0	0	0	1	3	2	8	4	0	0	0	18	55	50
05:00	0	0	0	0	0	0	3	15	16	6	0	0	0	40	54	50
06:00	0	0	0	0	0	0	13	33	32	**16**	**1**	0	0	95	54	50
07:00	**1**	0	0	0	0	2	29	54	22	5	0	0	**1**	114	51	47
08:00	0	0	0	0	0	15	73	140	35	5	0	0	0	268	48	46
09:00	0	0	0	0	0	23	120	148	28	2	1	0	0	322	48	45
10:00	0	0	0	0	**5**	19	157	145	**38**	2	1	0	0	367	48	45
11:00	0	0	0	0	4	**27**	**167**	**195**	35	4	1	0	0	**433**	48	45
12 PM	0	0	0	1	5	36	182	163	29	3	0	0	0	419	48	44
13:00	0	0	0	0	2	9	149	**188**	**41**	**9**	0	0	0	398	48	46
14:00	0	0	0	5	2	33	**190**	169	33	4	0	0	0	**436**	48	44
15:00	0	0	0	1	6	40	188	138	31	0	0	0	0	404	47	44
16:00	0	0	0	0	4	44	133	136	27	0	0	0	0	344	48	44
17:00	0	0	0	**6**	**8**	**47**	152	102	22	1	0	0	0	338	47	43
18:00	0	0	0	0	3	19	98	82	19	5	0	0	0	226	48	44
19:00	0	0	0	0	1	6	38	56	10	3	0	**1**	0	115	48	46
20:00	0	**1**	0	0	0	6	40	45	16	1	0	0	0	109	49	45
21:00	0	0	0	0	1	7	39	44	12	0	0	1	0	104	48	45
22:00	0	0	0	0	1	6	16	21	8	2	**1**	0	0	55	50	46
23:00	0	0	0	0	2	1	10	12	10	2	1	0	0	38	52	47
Total	1	1	0	13	45	343	1819	1904	477	75	6	2	1	4687		
%	0.0%	0.0%	0.0%	0.3%	1.0%	7.3%	38.8%	40.6%	10.2%	1.6%	0.1%	0.0%	0.0%			
AM Peak	07:00				10:00	11:00	11:00	11:00	10:00	06:00	06:00		07:00	11:00		
Vol.	1				5	27	167	195	38	16	1		1	433		
PM Peak		20:00		17:00	17:00	17:00	14:00	13:00	13:00	13:00	22:00	19:00		14:00		
Vol.		1		6	8	47	190	188	41	9	1	1		436		

Stats

15th Percentile :	39 MPH
50th Percentile :	44 MPH
85th Percentile :	48 MPH
95th Percentile :	52 MPH
Mean Speed(Average) :	45 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	3723
Percent in Pace :	79.4%
Number of Vehicles > 45 MPH :	2084
Percent of Vehicles > 45 MPH :	44.5%

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/07/ 19	0	0	0	0	0	0	3	2	2	0	0	0	0	7	51	46
01:00	0	0	0	0	0	0	0	2	1	0	0	0	0	3	51	49
02:00	0	0	0	0	0	0	1	2	0	1	0	0	0	4	56	48
03:00	0	0	0	0	0	0	1	0	2	0	0	0	0	3	52	49
04:00	0	0	0	0	0	0	4	8	3	2	0	0	0	17	53	48
05:00	0	0	0	0	0	1	19	27	14	3	0	0	0	64	51	47
06:00	0	0	0	**1**	**2**	13	37	44	12	4	0	0	0	113	48	45
07:00	0	0	0	0	1	12	51	67	31	**5**	0	0	0	167	50	46
08:00	0	0	0	0	1	0	43	85	**32**	3	**1**	0	0	165	50	47
09:00	0	0	0	0	0	16	54	77	24	2	0	0	0	173	49	45
10:00	0	0	0	0	0	8	62	75	19	1	0	0	0	165	48	45
11:00	0	0	0	0	0	**20**	**68**	**92**	16	0	0	0	0	**196**	48	45
12 PM	0	0	0	0	3	13	69	69	22	**5**	0	0	0	181	48	45
13:00	0	0	0	0	1	14	74	83	21	0	0	0	0	193	48	45
14:00	0	0	0	0	0	18	99	92	25	0	0	0	0	234	48	45
15:00	0	**3**	**2**	0	4	32	97	101	**28**	0	0	0	0	267	48	44
16:00	0	0	0	0	1	15	**131**	**102**	18	1	0	0	0	**268**	47	44
17:00	0	0	0	0	**7**	**36**	93	55	10	1	0	0	0	202	47	43
18:00	0	0	0	0	3	22	79	36	7	0	0	0	0	147	46	43
19:00	0	0	0	0	0	16	44	23	4	1	0	0	0	88	47	43
20:00	0	0	0	0	2	14	26	15	1	1	0	0	0	59	46	42
21:00	0	0	0	0	0	8	14	17	2	1	0	0	0	42	48	44
22:00	0	0	0	0	1	15	14	8	3	1	0	0	0	42	47	42
23:00	0	0	0	**1**	2	10	11	6	1	0	0	0	0	31	45	41
Total	0	3	2	2	28	283	1094	1088	298	32	1	0	0	2831		
%	0.0%	0.1%	0.1%	0.1%	1.0%	10.0%	38.6%	38.4%	10.5%	1.1%	0.0%	0.0%	0.0%			
AM Peak				06:00	06:00	11:00	11:00	11:00	08:00	07:00	08:00			11:00		
Vol.				1	2	20	68	92	32	5	1			196		
PM Peak		15:00	15:00	23:00	17:00	17:00	16:00	16:00	15:00	12:00				16:00		
Vol.		3	2	1	7	36	131	102	28	5				268		

Stats

15th Percentile :	39 MPH
50th Percentile :	44 MPH
85th Percentile :	48 MPH
95th Percentile :	52 MPH
Mean Speed(Average) :	45 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	2182
Percent in Pace :	77.1%
Number of Vehicles > 45 MPH :	1201
Percent of Vehicles > 45 MPH :	42.4%

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/08/ 19	0	0	0	0	1	0	3	1	1	0	0	0	0	6	49	43
01:00	0	0	**1**	0	0	0	1	1	1	0	0	0	0	4	51	41
02:00	0	0	0	0	0	1	0	3	0	0	0	0	0	4	48	44
03:00	0	0	0	0	0	2	1	1	0	0	0	0	0	4	46	41
04:00	0	0	0	0	2	2	3	5	3	1	0	0	0	16	51	44
05:00	0	0	1	0	**4**	16	23	13	2	0	0	0	0	59	46	41
06:00	0	0	0	0	3	17	48	37	6	1	0	0	0	112	47	43
07:00	0	0	0	0	3	**24**	72	61	13	2	0	0	0	175	48	44
08:00	0	0	0	0	2	8	41	80	41	**7**	0	0	0	179	51	47
09:00	0	0	0	0	0	13	54	71	29	4	**1**	0	0	172	50	46
10:00	0	0	0	0	0	16	**82**	72	19	3	0	0	0	192	48	45
11:00	0	0	0	0	0	5	53	**105**	**44**	2	1	0	0	**210**	50	47
12 PM	0	0	0	0	0	6	35	114	48	5	0	0	0	208	51	47
13:00	0	0	0	0	0	**10**	70	106	24	3	0	0	0	213	48	46
14:00	0	0	0	0	**1**	6	95	112	39	4	0	0	0	257	49	46
15:00	0	0	0	0	0	7	**109**	**150**	45	3	0	0	0	**314**	49	46
16:00	**1**	0	0	0	0	10	77	143	**51**	3	0	0	0	285	50	46
17:00	1	0	0	0	1	10	88	118	28	4	0	0	0	250	48	45
18:00	0	0	0	0	0	2	23	66	50	15	3	1	0	160	53	49
19:00	0	0	0	0	0	0	6	29	44	16	**7**	0	0	102	56	51
20:00	0	0	0	0	0	0	9	24	37	15	0	1	0	86	55	51
21:00	0	0	0	0	0	0	3	15	19	19	3	0	0	59	57	52
22:00	0	0	0	0	0	0	5	13	20	**21**	6	**3**	0	68	58	53
23:00	0	0	0	0	0	0	0	5	21	11	3	2	0	42	58	54
Total	2	0	2	0	17	155	901	1345	585	139	24	7	0	3177		
%	0.1%	0.0%	0.1%	0.0%	0.5%	4.9%	28.4%	42.3%	18.4%	4.4%	0.8%	0.2%	0.0%			
AM Peak			01:00		05:00	07:00	10:00	11:00	11:00	08:00	09:00			11:00		
Vol.			1		4	24	82	105	44	7	1			210		
PM Peak	16:00				14:00	13:00	15:00	15:00	16:00	22:00	19:00	22:00		15:00		
Vol.	1				1	10	109	150	51	21	7	3		314		

Stats

15th Percentile :	40 MPH
50th Percentile :	45 MPH
85th Percentile :	51 MPH
95th Percentile :	54 MPH
Mean Speed(Average) :	46 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	2246
Percent in Pace :	70.7%
Number of Vehicles > 45 MPH :	1831
Percent of Vehicles > 45 MPH :	57.6%

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/09/ 19	0	0	0	0	0	0	0	6	5	4	1	0	0	16	57	52
01:00	0	0	0	0	0	0	0	3	3	3	**3**	1	0	13	62	55
02:00	0	0	0	0	0	0	0	0	1	0	0	**2**	0	3	67	62
03:00	0	0	0	0	0	0	1	0	0	1	0	1	0	3	66	55
04:00	0	0	0	0	0	0	0	1	1	4	1	2	0	9	65	58
05:00	0	0	0	0	0	0	0	0	7	10	1	0	0	18	58	55
06:00	0	0	0	0	0	0	0	9	12	10	3	2	0	36	58	54
07:00	0	0	0	0	0	1	8	30	33	13	0	0	0	85	54	50
08:00	0	0	0	0	0	0	14	52	44	13	1	0	0	124	53	49
09:00	0	0	0	0	0	3	24	87	70	**14**	2	0	0	200	52	49
10:00	0	0	0	0	0	4	48	120	**76**	8	0	0	0	**256**	52	48
11:00	0	0	**1**	0	0	**8**	**49**	**135**	54	8	1	0	0	256	51	47
12 PM	0	0	0	0	1	1	51	146	**78**	2	0	0	0	**279**	51	47
13:00	0	0	0	0	0	3	53	**148**	47	**7**	0	0	0	258	50	47
14:00	0	0	0	0	0	5	56	118	72	4	1	0	**1**	257	51	47
15:00	0	0	0	0	0	7	**61**	143	42	7	0	0	0	260	50	47
16:00	0	0	0	0	1	4	59	104	45	4	0	0	0	217	50	47
17:00	0	0	0	0	**3**	**9**	43	82	32	5	1	0	0	175	50	46
18:00	**1**	0	0	0	0	8	36	70	21	4	**3**	0	0	143	50	46
19:00	0	0	0	0	0	5	39	39	23	3	1	0	0	110	51	46
20:00	0	0	0	0	0	1	24	26	14	2	0	0	0	67	51	46
21:00	0	0	0	0	0	1	23	25	12	1	0	0	0	62	50	46
22:00	0	0	0	0	0	2	11	28	14	1	0	0	0	56	51	47
23:00	0	0	0	0	0	2	7	16	4	0	0	0	0	29	48	46
Total	1	0	1	0	5	64	607	1388	710	128	19	8	1	2932		
%	0.0%	0.0%	0.0%	0.0%	0.2%	2.2%	20.7%	47.3%	24.2%	4.4%	0.6%	0.3%	0.0%			
AM Peak			11:00			11:00	11:00	11:00	10:00	09:00	01:00	02:00		10:00		
Vol.			1			8	49	135	76	14	3	2		256		
PM Peak	18:00				17:00	17:00	15:00	13:00	12:00	13:00	18:00		14:00	12:00		
Vol.	1				3	9	61	148	78	7	3		1	279		

Stats

15th Percentile :	42 MPH
50th Percentile :	46 MPH
85th Percentile :	51 MPH
95th Percentile :	54 MPH
Mean Speed(Average) :	47 MPH
10 MPH Pace Speed :	45-54 MPH
Number in Pace :	2098
Percent in Pace :	71.6%
Number of Vehicles > 45 MPH :	1976
Percent of Vehicles > 45 MPH :	67.4%

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

State Road (Route 2A)
north of Route 202
City, State: Phillipston, MA
Client: RMA / R. Muller

197255 A Speed
Site Code: 19012
Date Start: 07-Nov-19
Date End: 10-Nov-19

WB

Start Time	1 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59	60 64	65 69	70 9999	Total	85th Perce	Avera (Mean
11/10/ 19	0	0	0	0	0	0	6	4	3	0	0	0	0	13	50	46
01:00	0	0	0	0	0	0	2	3	2	0	0	0	0	7	51	47
02:00	0	0	0	0	0	0	0	1	3	0	0	0	0	4	53	51
03:00	0	0	0	0	0	1	0	0	2	1	0	0	0	4	56	49
04:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	53	52
05:00	0	0	0	0	0	0	2	6	4	4	**1**	0	0	17	57	51
06:00	0	0	0	0	0	1	8	18	13	4	0	0	0	44	52	48
07:00	0	0	0	0	0	2	14	29	25	**7**	1	**1**	0	79	53	49
08:00	0	0	0	0	0	2	25	68	26	2	0	0	**1**	124	50	47
09:00	0	0	0	0	0	2	36	85	24	5	1	0	0	153	50	47
10:00	0	0	0	0	0	2	43	**125**	40	4	1	0	1	216	50	47
11:00	0	0	0	0	0	**9**	**61**	111	**46**	5	0	0	0	**232**	50	47
12 PM	0	0	0	0	1	2	**60**	**124**	44	4	0	0	0	235	50	47
13:00	0	0	0	0	0	3	41	105	54	**17**	**1**	0	0	221	52	48
14:00	0	0	0	0	0	6	52	119	**62**	6	0	0	0	**245**	51	47
15:00	0	0	0	0	**3**	**7**	49	118	50	9	0	0	0	236	51	47
16:00	0	0	0	0	0	6	42	101	34	6	1	0	0	190	50	47
17:00	0	0	0	0	0	6	51	80	26	4	0	0	0	167	49	46
18:00	0	0	0	0	0	7	24	52	21	2	0	0	0	106	50	46
19:00	0	0	0	0	0	1	14	26	18	5	0	0	0	64	52	48
20:00	0	0	0	0	0	1	14	32	8	4	1	0	0	60	51	47
21:00	0	0	0	0	2	3	7	14	8	1	0	**1**	0	36	51	46
22:00	0	0	0	0	1	0	2	18	11	2	0	0	0	34	52	48
23:00	0	0	0	0	0	0	3	2	8	2	0	0	0	15	53	50
Total	0	0	0	0	7	61	556	1241	533	94	7	2	2	2503		
%	0.0%	0.0%	0.0%	0.0%	0.3%	2.4%	22.2%	49.6%	21.3%	3.8%	0.3%	0.1%	0.1%			
AM Peak						11:00	11:00	10:00	11:00	07:00	05:00	07:00	08:00	11:00		
Vol.						9	61	125	46	7	1	1	1	232		
PM Peak					15:00	15:00	12:00	12:00	14:00	13:00	13:00	21:00		14:00		
Vol.					3	7	60	124	62	17	1	1		245		

Stats

15th Percentile :	41 MPH
50th Percentile :	46 MPH
85th Percentile :	51 MPH
95th Percentile :	53 MPH
Mean Speed(Average) :	47 MPH
10 MPH Pace Speed :	40-49 MPH
Number in Pace :	1797
Percent in Pace :	71.8%
Number of Vehicles > 45 MPH :	1631
Percent of Vehicles > 45 MPH :	65.2%

Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 Baldwin Hill-State Rd PM
Site Code : 19012
Start Date : 10/24/2019
Page No : 1

E-W Street: State Road/Rte 2A
N-S Street: Baldwin Hill Road

Groups Printed- Cars - Trucks

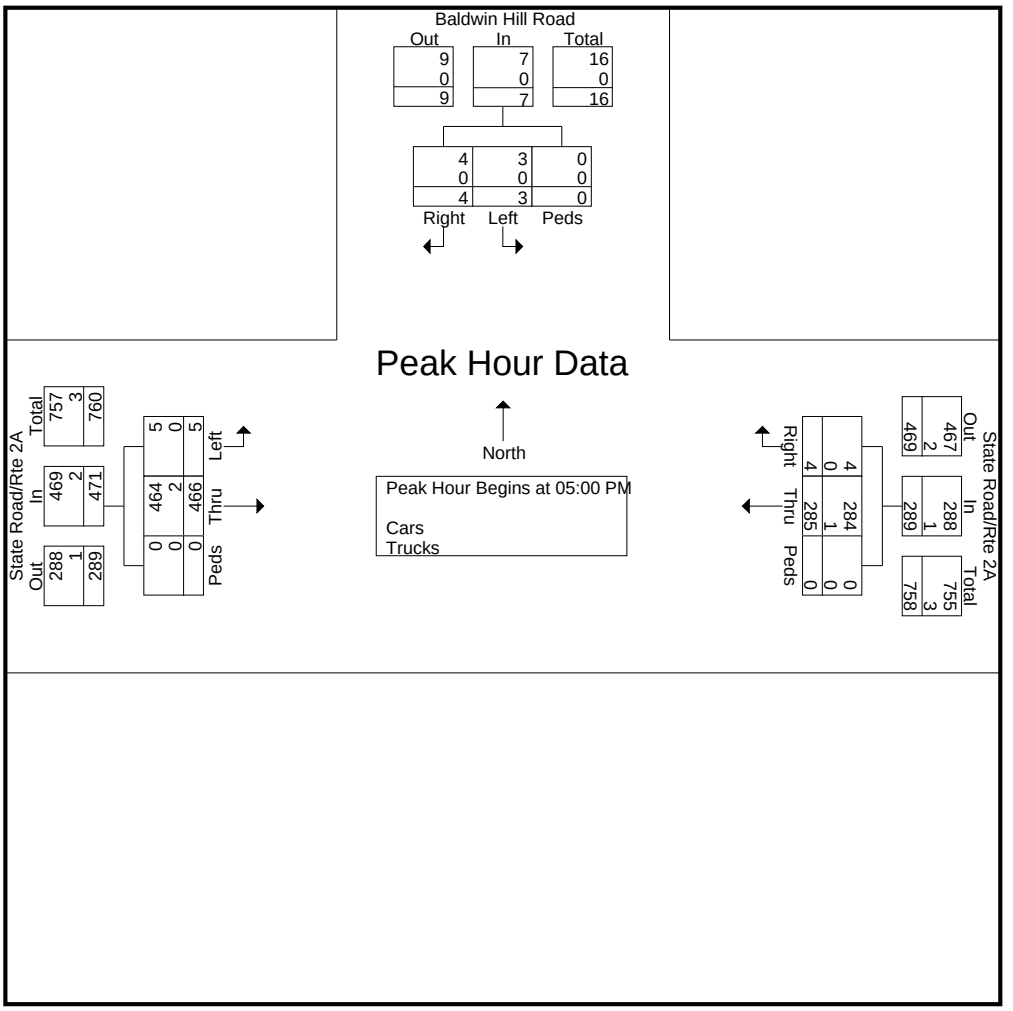
	Baldwin Hill Road From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
04:00 PM	3	1	0	4	61	0	0	61	1	101	0	102	167
04:15 PM	1	0	0	1	55	3	0	58	2	109	0	111	170
04:30 PM	1	0	0	1	52	4	0	56	1	124	0	125	182
04:45 PM	2	1	0	3	63	1	0	64	2	103	0	105	172
Total	7	2	0	9	231	8	0	239	6	437	0	443	691
05:00 PM	0	0	0	0	55	1	0	56	0	126	0	126	182
05:15 PM	0	1	0	1	76	0	0	76	1	123	0	124	201
05:30 PM	3	1	0	4	88	1	0	89	1	97	0	98	191
05:45 PM	0	2	0	2	66	2	0	68	3	120	0	123	193
Total	3	4	0	7	285	4	0	289	5	466	0	471	767
Grand Total	10	6	0	16	516	12	0	528	11	903	0	914	1458
Apprch %	62.5	37.5	0		97.7	2.3	0		1.2	98.8	0		
Total %	0.7	0.4	0	1.1	35.4	0.8	0	36.2	0.8	61.9	0	62.7	
Cars	10	6	0	16	515	12	0	527	11	899	0	910	1453
% Cars	100	100	0	100	99.8	100	0	99.8	100	99.6	0	99.6	99.7
Trucks	0	0	0	0	1	0	0	1	0	4	0	4	5
% Trucks	0	0	0	0	0.2	0	0	0.2	0	0.4	0	0.4	0.3

Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 Baldwin Hill-State Rd PM
Site Code : 19012
Start Date : 10/24/2019
Page No : 2

E-W Street: State Road/Rte 2A
N-S Street: Baldwin Hill Road

	Baldwin Hill Road From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	55	1	0	56	0	**126**	0	**126**	182
05:15 PM	0	1	0	1	76	0	0	76	1	123	0	124	**201**
05:30 PM	**3**	1	0	**4**	**88**	1	0	**89**	1	97	0	98	191
05:45 PM	0	**2**	0	2	66	**2**	0	68	**3**	120	0	123	193
Total Volume	3	4	0	7	285	4	0	289	5	466	0	471	767
% App. Total	42.9	57.1	0		98.6	1.4	0		1.1	98.9	0		
PHF	.250	.500	.000	.438	.810	.500	.000	.812	.417	.925	.000	.935	.954
Cars	3	4	0	7	284	4	0	288	5	464	0	469	764
% Cars	100	100	0	100	99.6	100	0	99.7	100	99.6	0	99.6	99.6
Trucks	0	0	0	0	1	0	0	1	0	2	0	2	3
% Trucks	0	0	0	0	0.4	0	0	0.3	0	0.4	0	0.4	0.4



Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 Baldwin Hill-State Rd Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 1

E-W Street: State Road/Rte 2A
N-S Street: Baldwin Hill Road

Groups Printed- Cars - Trucks

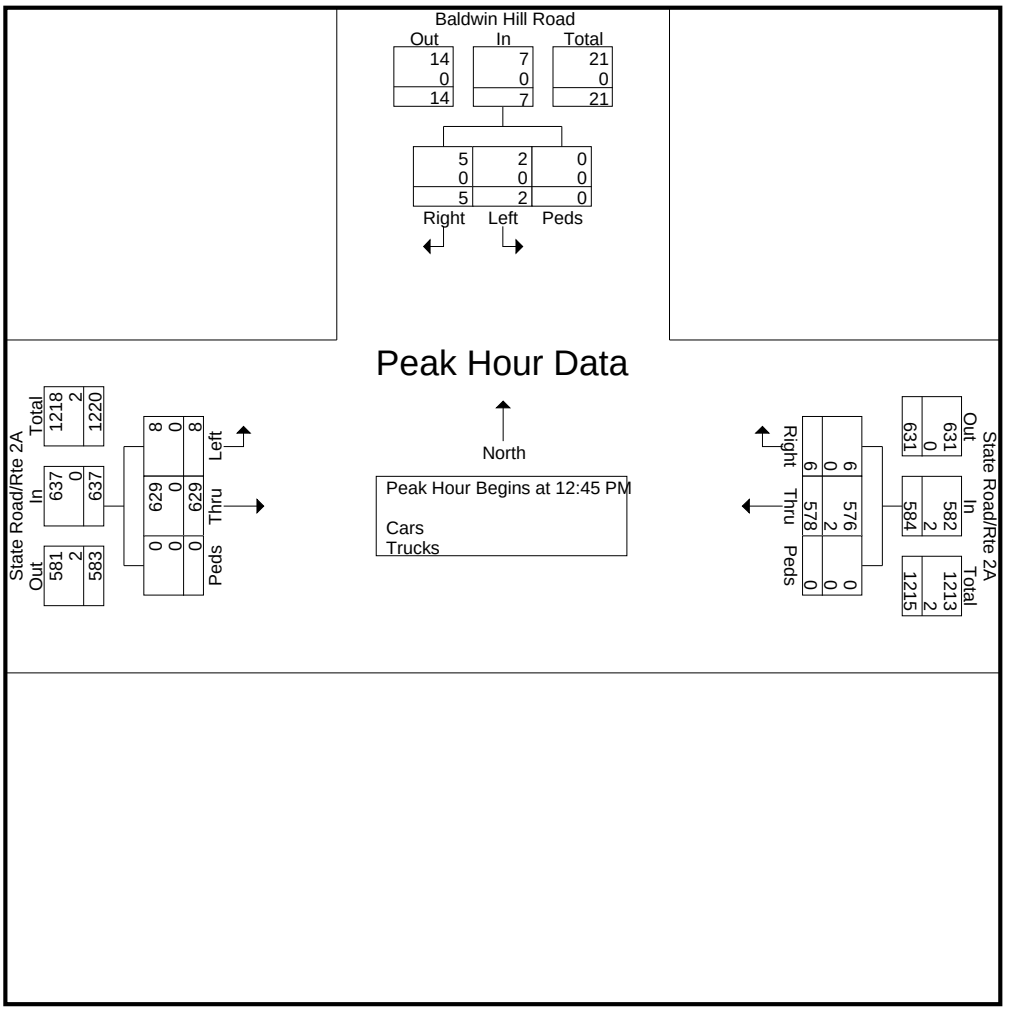
	Baldwin Hill Road From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
11:00 AM	1	0	0	1	64	0	0	64	0	104	0	104	169
11:15 AM	0	0	0	0	83	0	0	83	1	119	0	120	203
11:30 AM	2	0	0	2	66	0	0	66	1	128	0	129	197
11:45 AM	1	1	0	2	78	3	0	81	4	118	0	122	205
Total	4	1	0	5	291	3	0	294	6	469	0	475	774
12:00 PM	1	1	0	2	92	1	0	93	0	116	0	116	211
12:15 PM	0	2	0	2	79	0	0	79	1	129	0	130	211
12:30 PM	0	1	0	1	107	0	0	107	2	150	0	152	260
12:45 PM	1	1	0	2	109	2	0	111	4	111	0	115	228
Total	2	5	0	7	387	3	0	390	7	506	0	513	910
01:00 PM	1	2	0	3	115	0	0	115	2	170	0	172	290
01:15 PM	0	1	0	1	184	3	0	187	2	185	0	187	375
01:30 PM	0	1	0	1	170	1	0	171	0	163	0	163	335
01:45 PM	0	0	0	0	62	0	0	62	2	98	0	100	162
Total	1	4	0	5	531	4	0	535	6	616	0	622	1162
Grand Total	7	10	0	17	1209	10	0	1219	19	1591	0	1610	2846
Apprch %	41.2	58.8	0		99.2	0.8	0		1.2	98.8	0		
Total %	0.2	0.4	0	0.6	42.5	0.4	0	42.8	0.7	55.9	0	56.6	
Cars	7	10	0	17	1206	10	0	1216	19	1588	0	1607	2840
% Cars	100	100	0	100	99.8	100	0	99.8	100	99.8	0	99.8	99.8
Trucks	0	0	0	0	3	0	0	3	0	3	0	3	6
% Trucks	0	0	0	0	0.2	0	0	0.2	0	0.2	0	0.2	0.2

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Traffic Engineering and Consulting Services

File Name : 19012 Baldwin Hill-State Rd Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 2

E-W Street: State Road/Rte 2A
N-S Street: Baldwin Hill Road

	Baldwin Hill Road From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	**1**	1	0	2	109	2	0	111	**4**	111	0	115	228
01:00 PM	1	**2**	0	**3**	115	0	0	115	2	170	0	172	290
01:15 PM	0	1	0	1	**184**	**3**	0	**187**	2	**185**	0	**187**	**375**
01:30 PM	0	1	0	1	170	1	0	171	0	163	0	163	335
Total Volume	2	5	0	7	578	6	0	584	8	629	0	637	1228
% App. Total	28.6	71.4	0		99	1	0		1.3	98.7	0		
PHF	.500	.625	.000	.583	.785	.500	.000	.781	.500	.850	.000	.852	.819
Cars	2	5	0	7	576	6	0	582	8	629	0	637	1226
% Cars	100	100	0	100	99.7	100	0	99.7	100	100	0	100	99.8
Trucks	0	0	0	0	2	0	0	2	0	0	0	0	2
% Trucks	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0.2



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Traffic Engineering and Consulting Services

File Name : 19012 State Rd- Rte 2 EB Off-Ramp PM
Site Code : 19012
Start Date : 10/24/2019
Page No : 1

E-W Street: Route 2 EB Ramp
N-S Street: State Road/Rte 2A

Groups Printed- Cars - Trucks

	State Road /Rte 2A From North				State Road /Rte 2A From South				Route 2 EB Ramp From West				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
04:00 PM	110	0	0	110	3	59	0	62	8	9	0	17	189
04:15 PM	113	1	0	114	1	52	0	53	9	6	0	15	182
04:30 PM	122	2	0	124	3	55	0	58	2	6	0	8	190
04:45 PM	102	0	0	102	1	63	0	64	4	9	0	13	179
Total	447	3	0	450	8	229	0	237	23	30	0	53	740
05:00 PM	117	2	0	119	2	49	0	51	4	3	0	7	177
05:15 PM	117	1	0	118	0	62	0	62	6	7	0	13	193
05:30 PM	97	0	0	97	5	63	0	68	7	8	0	15	180
05:45 PM	111	1	0	112	1	65	0	66	6	6	0	12	190
Total	442	4	0	446	8	239	0	247	23	24	0	47	740
Grand Total	889	7	0	896	16	468	0	484	46	54	0	100	1480
Apprch %	99.2	0.8	0		3.3	96.7	0		46	54	0		
Total %	60.1	0.5	0	60.5	1.1	31.6	0	32.7	3.1	3.6	0	6.8	
Cars	874	7	0	881	16	458	0	474	45	51	0	96	1451
% Cars	98.3	100	0	98.3	100	97.9	0	97.9	97.8	94.4	0	96	98
Trucks	15	0	0	15	0	10	0	10	1	3	0	4	29
% Trucks	1.7	0	0	1.7	0	2.1	0	2.1	2.2	5.6	0	4	2

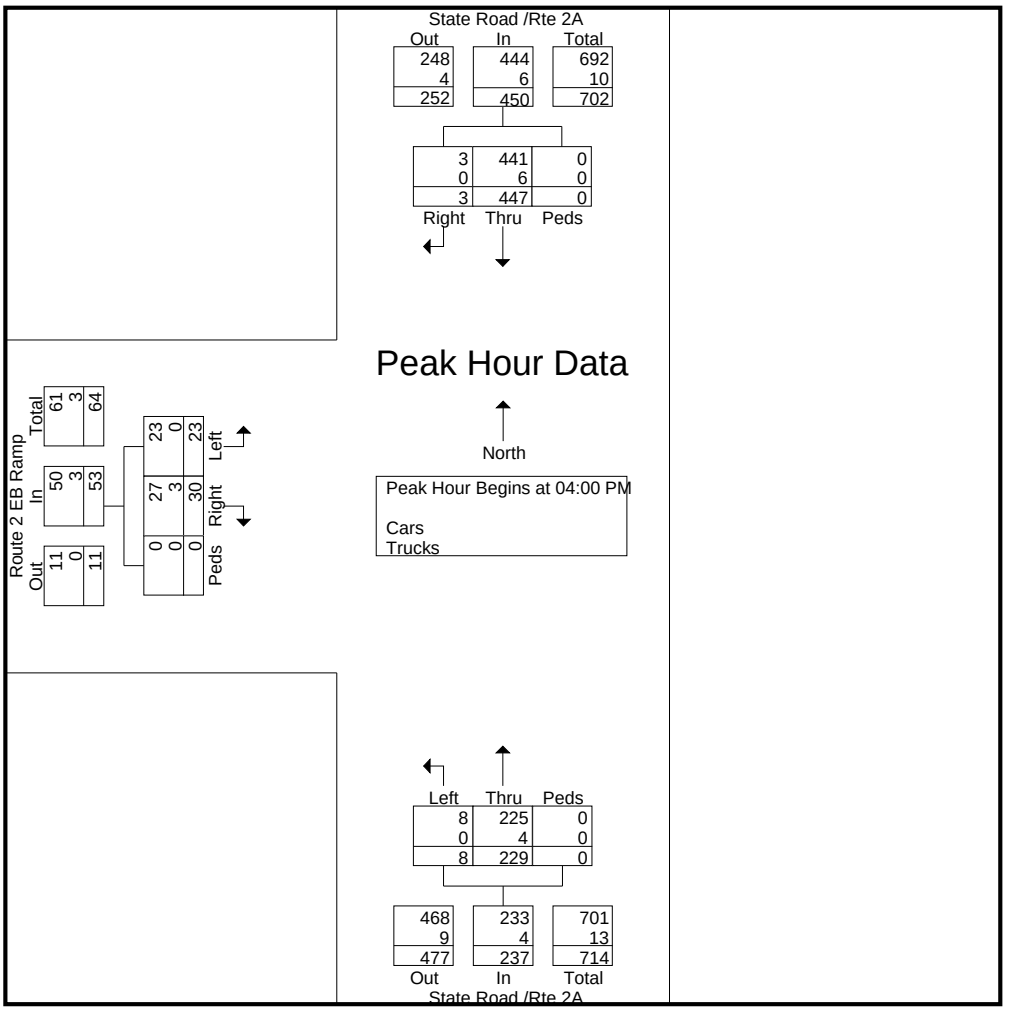
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Traffic Engineering and Consulting Services

File Name : 19012 State Rd- Rte 2 EB Off-Ramp PM
Site Code : 19012
Start Date : 10/24/2019
Page No : 2

E-W Street: Route 2 EB Ramp
N-S Street: State Road/Rte 2A

	State Road /Rte 2A From North				State Road /Rte 2A From South				Route 2 EB Ramp From West				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	110	0	0	110	**3**	59	0	62	8	**9**	0	**17**	189
04:15 PM	113	1	0	114	1	52	0	53	**9**	6	0	15	182
04:30 PM	**122**	**2**	0	**124**	3	55	0	58	2	6	0	8	**190**
04:45 PM	102	0	0	102	1	**63**	0	**64**	4	9	0	13	179
Total Volume	447	3	0	450	8	229	0	237	23	30	0	53	740
% App. Total	99.3	0.7	0		3.4	96.6	0		43.4	56.6	0		
PHF	.916	.375	.000	.907	.667	.909	.000	.926	.639	.833	.000	.779	.974
Cars	441	3	0	444	8	225	0	233	23	27	0	50	727
% Cars	98.7	100	0	98.7	100	98.3	0	98.3	100	90.0	0	94.3	98.2
Trucks	6	0	0	6	0	4	0	4	0	3	0	3	13
% Trucks	1.3	0	0	1.3	0	1.7	0	1.7	0	10.0	0	5.7	1.8



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Traffic Engineering and Consulting Services

File Name : 19012 State Rd- Rte 2 EB Off-Ramp Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 1

E-W Street: Route 2 EB Ramp
N-S Street: State Road/Rte 2A

Groups Printed- Cars - Trucks

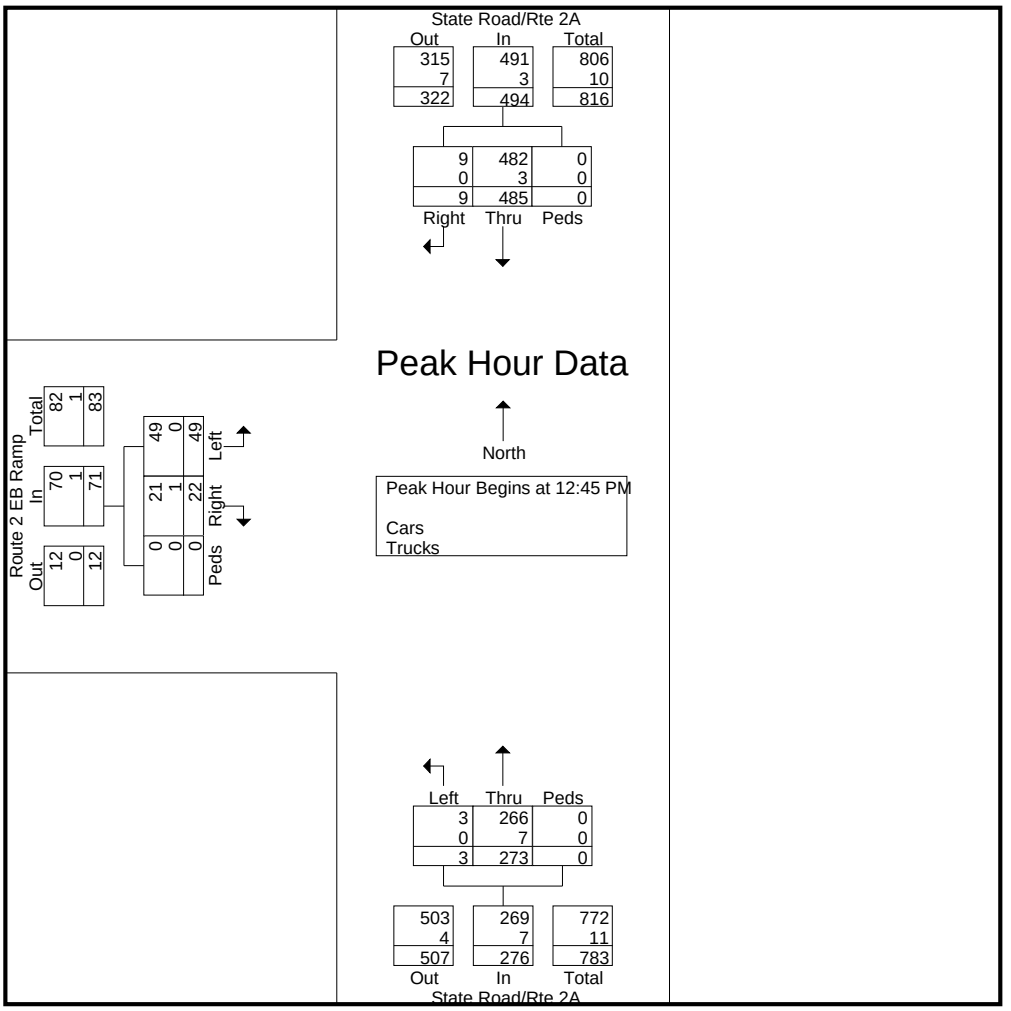
	State Road/Rte 2A From North				State Road/Rte 2A From South				Route 2 EB Ramp From West				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:00 AM	106	3	0	109	0	59	0	59	7	6	0	13	181
11:15 AM	133	0	0	133	0	60	0	60	9	3	0	12	205
11:30 AM	131	2	0	133	1	56	0	57	11	4	0	15	205
11:45 AM	118	3	0	121	0	76	0	76	10	6	0	16	213
Total	488	8	0	496	1	251	0	252	37	19	0	56	804
12:00 PM	116	0	0	116	0	75	0	75	13	9	0	22	213
12:15 PM	125	1	0	126	0	58	0	58	7	4	0	11	195
12:30 PM	110	1	0	111	1	65	0	66	18	4	0	22	199
12:45 PM	116	1	0	117	0	74	0	74	17	7	0	24	215
Total	467	3	0	470	1	272	0	273	55	24	0	79	822
01:00 PM	124	3	0	127	1	57	0	58	7	3	0	10	195
01:15 PM	123	3	0	126	1	73	0	74	16	3	0	19	219
01:30 PM	122	2	0	124	1	69	0	70	9	9	0	18	212
01:45 PM	112	4	0	116	1	58	0	59	10	3	0	13	188
Total	481	12	0	493	4	257	0	261	42	18	0	60	814
Grand Total	1436	23	0	1459	6	780	0	786	134	61	0	195	2440
Apprch %	98.4	1.6	0		0.8	99.2	0		68.7	31.3	0		
Total %	58.9	0.9	0	59.8	0.2	32	0	32.2	5.5	2.5	0	8	
Cars	1416	22	0	1438	6	763	0	769	134	60	0	194	2401
% Cars	98.6	95.7	0	98.6	100	97.8	0	97.8	100	98.4	0	99.5	98.4
Trucks	20	1	0	21	0	17	0	17	0	1	0	1	39
% Trucks	1.4	4.3	0	1.4	0	2.2	0	2.2	0	1.6	0	0.5	1.6

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Traffic Engineering and Consulting Services

File Name : 19012 State Rd- Rte 2 EB Off-Ramp Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 2

E-W Street: Route 2 EB Ramp
N-S Street: State Road/Rte 2A

	State Road/Rte 2A From North				State Road/Rte 2A From South				Route 2 EB Ramp From West				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	116	1	0	117	0	**74**	0	**74**	**17**	7	0	**24**	215
01:00 PM	**124**	**3**	0	**127**	**1**	57	0	58	7	3	0	10	195
01:15 PM	123	3	0	126	1	73	0	74	16	3	0	19	**219**
01:30 PM	122	2	0	124	1	69	0	70	9	**9**	0	18	212
Total Volume	485	9	0	494	3	273	0	276	49	22	0	71	841
% App. Total	98.2	1.8	0		1.1	98.9	0		69	31	0		
PHF	.978	.750	.000	.972	.750	.922	.000	.932	.721	.611	.000	.740	.960
Cars	482	9	0	491	3	266	0	269	49	21	0	70	830
% Cars	99.4	100	0	99.4	100	97.4	0	97.5	100	95.5	0	98.6	98.7
Trucks	3	0	0	3	0	7	0	7	0	1	0	1	11
% Trucks	0.6	0	0	0.6	0	2.6	0	2.5	0	4.5	0	1.4	1.3



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Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 EB On-Ramp PM
Site Code : 19012
Start Date : 10/29/2019
Page No : 1

E-W Street: State Road/ Rte 2A
N-S Street: Rte 2 EB On-Ramp

Groups Printed- Cars - Trucks

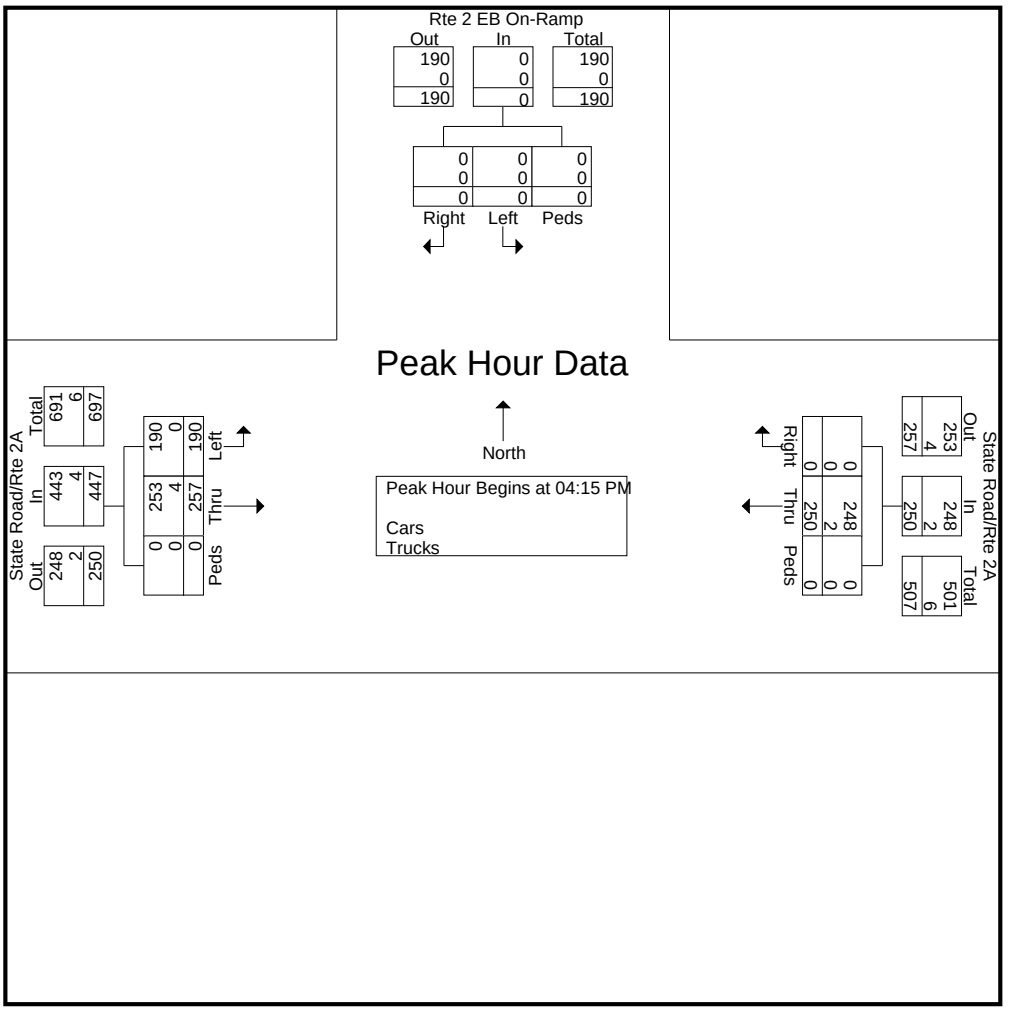
	Rte 2 EB On-Ramp From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	42	0	0	42	47	62	0	109	151
04:15 PM	0	0	0	0	66	0	0	66	52	69	0	121	187
04:30 PM	0	0	0	0	54	0	0	54	46	62	0	108	162
04:45 PM	0	0	0	0	61	0	0	61	37	56	0	93	154
Total	0	0	0	0	223	0	0	223	182	249	0	431	654
05:00 PM	0	0	0	0	69	0	0	69	55	70	0	125	194
05:15 PM	0	0	0	0	45	2	0	47	46	80	0	126	173
05:30 PM	0	0	0	0	62	0	0	62	44	52	0	96	158
05:45 PM	0	0	0	0	47	0	0	47	42	54	0	96	143
Total	0	0	0	0	223	2	0	225	187	256	0	443	668
Grand Total	0	0	0	0	446	2	0	448	369	505	0	874	1322
Apprch %	0	0	0		99.6	0.4	0		42.2	57.8	0		
Total %	0	0	0	0	33.7	0.2	0	33.9	27.9	38.2	0	66.1	
Cars	0	0	0	0	443	2	0	445	369	501	0	870	1315
% Cars	0	0	0	0	99.3	100	0	99.3	100	99.2	0	99.5	99.5
Trucks	0	0	0	0	3	0	0	3	0	4	0	4	7
% Trucks	0	0	0	0	0.7	0	0	0.7	0	0.8	0	0.5	0.5

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Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 EB On-Ramp PM
Site Code : 19012
Start Date : 10/29/2019
Page No : 2

E-W Street: State Road/ Rte 2A
N-S Street: Rte 2 EB On-Ramp

	Rte 2 EB On-Ramp From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	0	0	0	66	0	0	66	52	69	0	121	187
04:30 PM	0	0	0	0	54	0	0	54	46	62	0	108	162
04:45 PM	0	0	0	0	61	0	0	61	37	56	0	93	154
05:00 PM	0	0	0	0	**69**	0	0	**69**	**55**	**70**	0	**125**	**194**
Total Volume	0	0	0	0	250	0	0	250	190	257	0	447	697
% App. Total	0	0	0		100	0	0		42.5	57.5	0		
PHF	.000	.000	.000	.000	.906	.000	.000	.906	.864	.918	.000	.894	.898
Cars	0	0	0	0	248	0	0	248	190	253	0	443	691
% Cars	0	0	0	0	99.2	0	0	99.2	100	98.4	0	99.1	99.1
Trucks	0	0	0	0	2	0	0	2	0	4	0	4	6
% Trucks	0	0	0	0	0.8	0	0	0.8	0	1.6	0	0.9	0.9



Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 EB On-Ramp Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 1

E-W Street: State Road/Rte 2A
N-S Street: Rte 2 EB On-Ramp

Groups Printed- Cars - Trucks

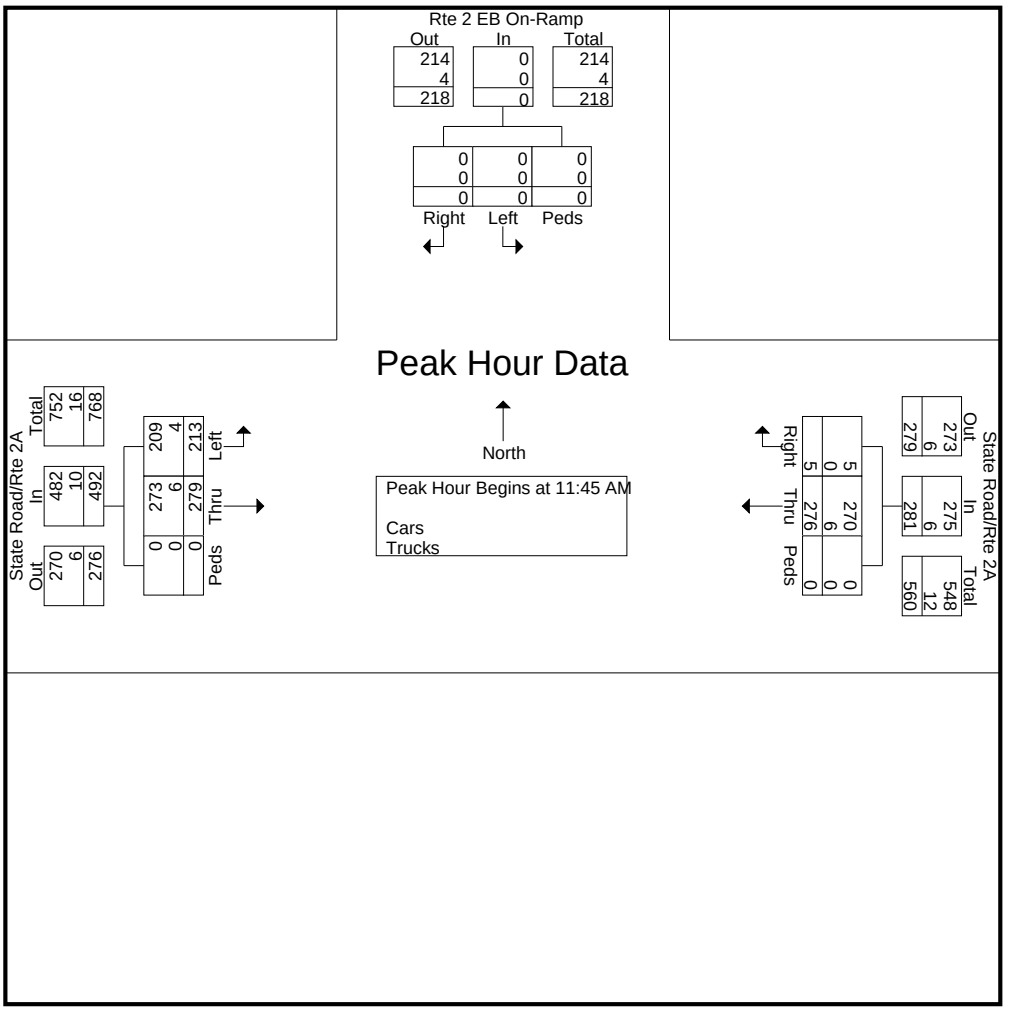
	Rte 2 EB On-Ramp From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	55	1	0	56	39	63	0	102	158
11:15 AM	0	0	0	0	55	1	0	56	65	71	0	136	192
11:30 AM	0	0	0	0	40	0	0	40	51	60	0	111	151
11:45 AM	0	0	0	0	77	0	0	77	53	66	0	119	196
Total	0	0	0	0	227	2	0	229	208	260	0	468	697
12:00 PM	0	0	0	0	73	1	0	74	66	65	0	131	205
12:15 PM	0	0	0	0	57	3	0	60	47	77	0	124	184
12:30 PM	0	0	0	0	69	1	0	70	47	71	0	118	188
12:45 PM	0	0	0	0	72	1	0	73	64	56	0	120	193
Total	0	0	0	0	271	6	0	277	224	269	0	493	770
01:00 PM	0	0	0	0	53	1	0	54	59	66	0	125	179
01:15 PM	0	0	0	0	74	0	0	74	53	76	0	129	203
01:30 PM	0	0	0	0	66	3	0	69	50	77	0	127	196
01:45 PM	0	0	0	0	59	2	0	61	47	69	0	116	177
Total	0	0	0	0	252	6	0	258	209	288	0	497	755
Grand Total	0	0	0	0	750	14	0	764	641	817	0	1458	2222
Apprch %	0	0	0		98.2	1.8	0		44	56	0		
Total %	0	0	0	0	33.8	0.6	0	34.4	28.8	36.8	0	65.6	
Cars	0	0	0	0	732	14	0	746	634	802	0	1436	2182
% Cars	0	0	0	0	97.6	100	0	97.6	98.9	98.2	0	98.5	98.2
Trucks	0	0	0	0	18	0	0	18	7	15	0	22	40
% Trucks	0	0	0	0	2.4	0	0	2.4	1.1	1.8	0	1.5	1.8

Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 EB On-Ramp Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 2

E-W Street: State Road/Rte 2A
N-S Street: Rte 2 EB On-Ramp

	Rte 2 EB On-Ramp From North				State Road/Rte 2A From East				State Road/Rte 2A From West				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	0	0	0	0	**77**	0	0	**77**	53	66	0	119	196
12:00 PM	0	0	0	0	73	1	0	74	**66**	65	0	**131**	**205**
12:15 PM	0	0	0	0	57	**3**	0	60	47	**77**	0	124	184
12:30 PM	0	0	0	0	69	1	0	70	47	71	0	118	188
Total Volume	0	0	0	0	276	5	0	281	213	279	0	492	773
% App. Total	0	0	0		98.2	1.8	0		43.3	56.7	0		
PHF	.000	.000	.000	.000	.896	.417	.000	.912	.807	.906	.000	.939	.943
Cars	0	0	0	0	270	5	0	275	209	273	0	482	757
% Cars	0	0	0	0	97.8	100	0	97.9	98.1	97.8	0	98.0	97.9
Trucks	0	0	0	0	6	0	0	6	4	6	0	10	16
% Trucks	0	0	0	0	2.2	0	0	2.1	1.9	2.2	0	2.0	2.1



Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 WB Ramps PM
Site Code : 19012
Start Date : 10/22/2019
Page No : 1

E-W Street: Tempelton-State Road/Rte 2A
N-S Street: Route 2 WB Ramp

Groups Printed- Cars - Trucks

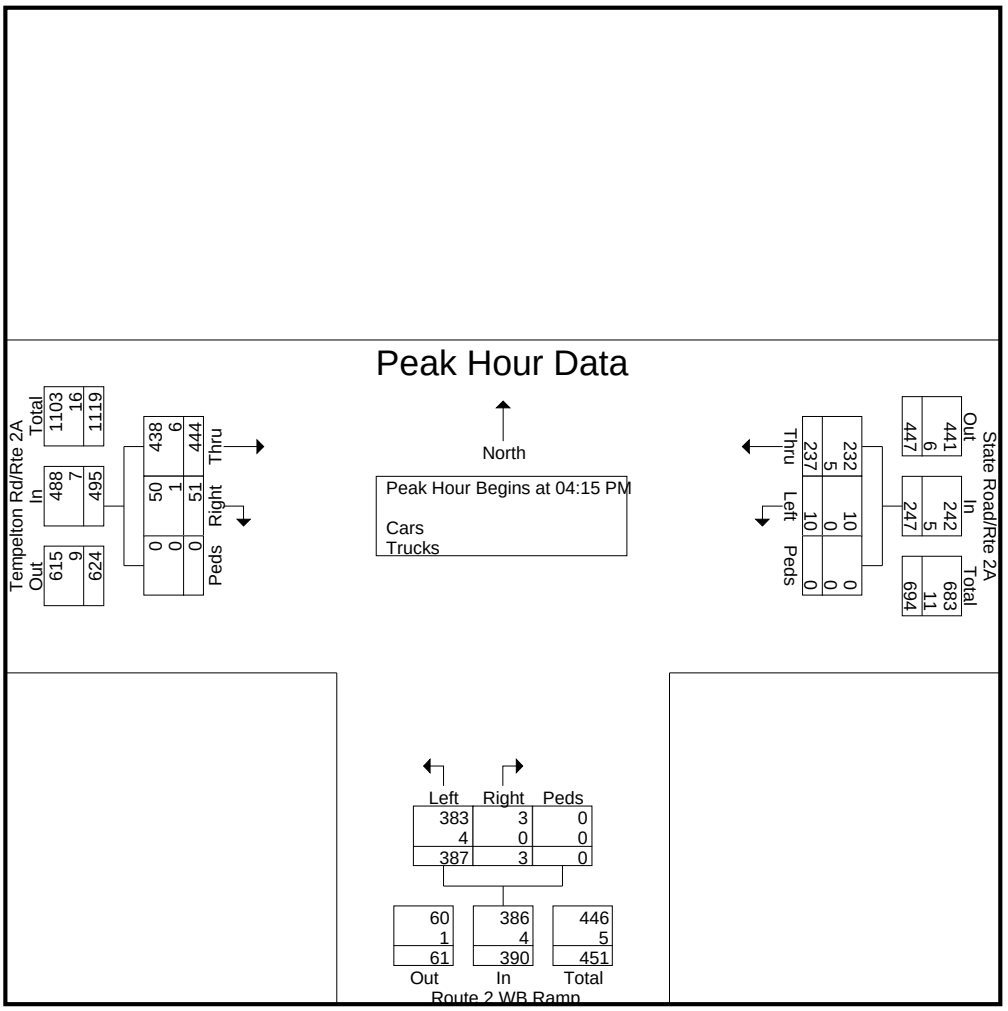
	State Road/Rte 2A From East				Route 2 WB Ramp From South				Tempelton Rd/Rte 2A From West				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	1	67	0	68	73	2	0	75	104	15	0	119	262
04:15 PM	5	56	0	61	99	1	0	100	113	13	0	126	287
04:30 PM	1	55	0	56	107	0	0	107	128	18	0	146	309
04:45 PM	3	47	0	50	98	1	0	99	108	11	0	119	268
Total	10	225	0	235	377	4	0	381	453	57	0	510	1126
05:00 PM	1	79	0	80	83	1	0	84	95	9	0	104	268
05:15 PM	3	53	0	56	100	0	0	100	102	15	0	117	273
05:30 PM	5	59	0	64	113	0	0	113	93	9	0	102	279
05:45 PM	4	46	0	50	86	2	0	88	94	14	0	108	246
Total	13	237	0	250	382	3	0	385	384	47	0	431	1066
Grand Total	23	462	0	485	759	7	0	766	837	104	0	941	2192
Apprch %	4.7	95.3	0		99.1	0.9	0		88.9	11.1	0		
Total %	1	21.1	0	22.1	34.6	0.3	0	34.9	38.2	4.7	0	42.9	
Cars	23	456	0	479	754	7	0	761	829	103	0	932	2172
% Cars	100	98.7	0	98.8	99.3	100	0	99.3	99	99	0	99	99.1
Trucks	0	6	0	6	5	0	0	5	8	1	0	9	20
% Trucks	0	1.3	0	1.2	0.7	0	0	0.7	1	1	0	1	0.9

Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 WB Ramps PM
Site Code : 19012
Start Date : 10/22/2019
Page No : 2

E-W Street: Tempelton-State Road/Rte 2A
N-S Street: Route 2 WB Ramp

	State Road/Rte 2A From East				Route 2 WB Ramp From South				Tempelton Rd/Rte 2A From West				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	**5**	56	0	61	99	**1**	0	100	113	13	0	126	287
04:30 PM	1	55	0	56	**107**	0	0	**107**	**128**	**18**	0	**146**	**309**
04:45 PM	3	47	0	50	98	1	0	99	108	11	0	119	268
05:00 PM	1	**79**	0	**80**	83	1	0	84	95	9	0	104	268
Total Volume	10	237	0	247	387	3	0	390	444	51	0	495	1132
% App. Total	4	96	0		99.2	0.8	0		89.7	10.3	0		
PHF	.500	.750	.000	.772	.904	.750	.000	.911	.867	.708	.000	.848	.916
Cars	10	232	0	242	383	3	0	386	438	50	0	488	1116
% Cars	100	97.9	0	98.0	99.0	100	0	99.0	98.6	98.0	0	98.6	98.6
Trucks	0	5	0	5	4	0	0	4	6	1	0	7	16
% Trucks	0	2.1	0	2.0	1.0	0	0	1.0	1.4	2.0	0	1.4	1.4



Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 WB Ramps Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 1

E-W Street: Tempelton-State Road/Rte 2A
N-S Street: Route 2 WB Ramp

Groups Printed- Cars - Trucks

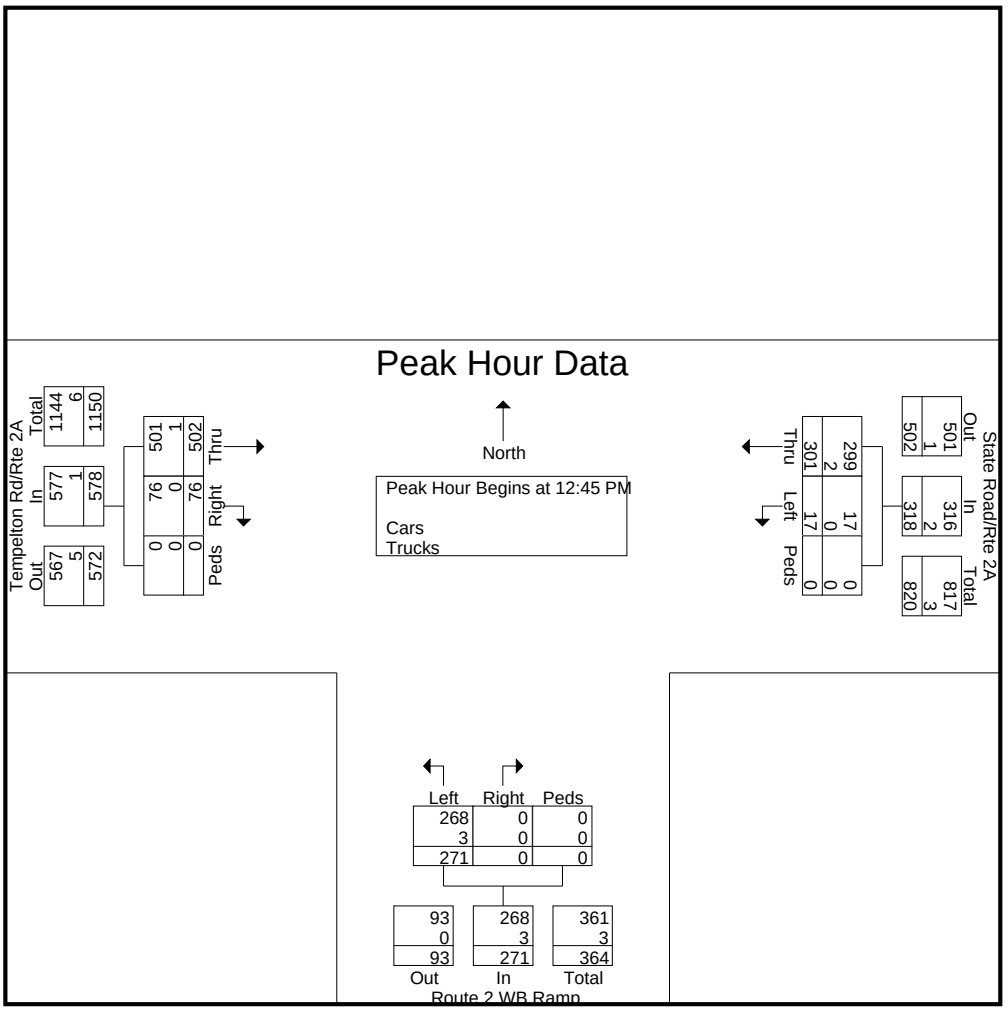
	State Road/Rte 2A From East				Route 2 WB Ramp From South				Tempelton Rd/Rte 2A From West				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	5	71	0	76	54	0	0	54	108	13	0	121	251
11:15 AM	6	61	0	67	62	0	0	62	135	17	0	152	281
11:30 AM	3	61	0	64	70	2	0	72	133	22	0	155	291
11:45 AM	3	81	0	84	54	1	0	55	121	16	0	137	276
Total	17	274	0	291	240	3	0	243	497	68	0	565	1099
12:00 PM	9	78	0	87	77	0	0	77	121	13	0	134	298
12:15 PM	7	57	0	64	64	1	0	65	119	16	0	135	264
12:30 PM	2	79	0	81	76	0	0	76	110	22	0	132	289
12:45 PM	5	88	0	93	75	0	0	75	119	17	0	136	304
Total	23	302	0	325	292	1	0	293	469	68	0	537	1155
01:00 PM	5	63	0	68	66	0	0	66	127	24	0	151	285
01:15 PM	5	72	0	77	65	0	0	65	127	13	0	140	282
01:30 PM	2	78	0	80	65	0	0	65	129	22	0	151	296
01:45 PM	2	72	0	74	67	0	0	67	110	17	0	127	268
Total	14	285	0	299	263	0	0	263	493	76	0	569	1131
Grand Total	54	861	0	915	795	4	0	799	1459	212	0	1671	3385
Apprch %	5.9	94.1	0		99.5	0.5	0		87.3	12.7	0		
Total %	1.6	25.4	0	27	23.5	0.1	0	23.6	43.1	6.3	0	49.4	
Cars	54	858	0	912	787	4	0	791	1453	211	0	1664	3367
% Cars	100	99.7	0	99.7	99	100	0	99	99.6	99.5	0	99.6	99.5
Trucks	0	3	0	3	8	0	0	8	6	1	0	7	18
% Trucks	0	0.3	0	0.3	1	0	0	1	0.4	0.5	0	0.4	0.5

Ron Müller & Associates
Traffic Engineering and Consulting Services

File Name : 19012 State Rd-Rte 2 WB Ramps Sat
Site Code : 19012
Start Date : 10/26/2019
Page No : 2

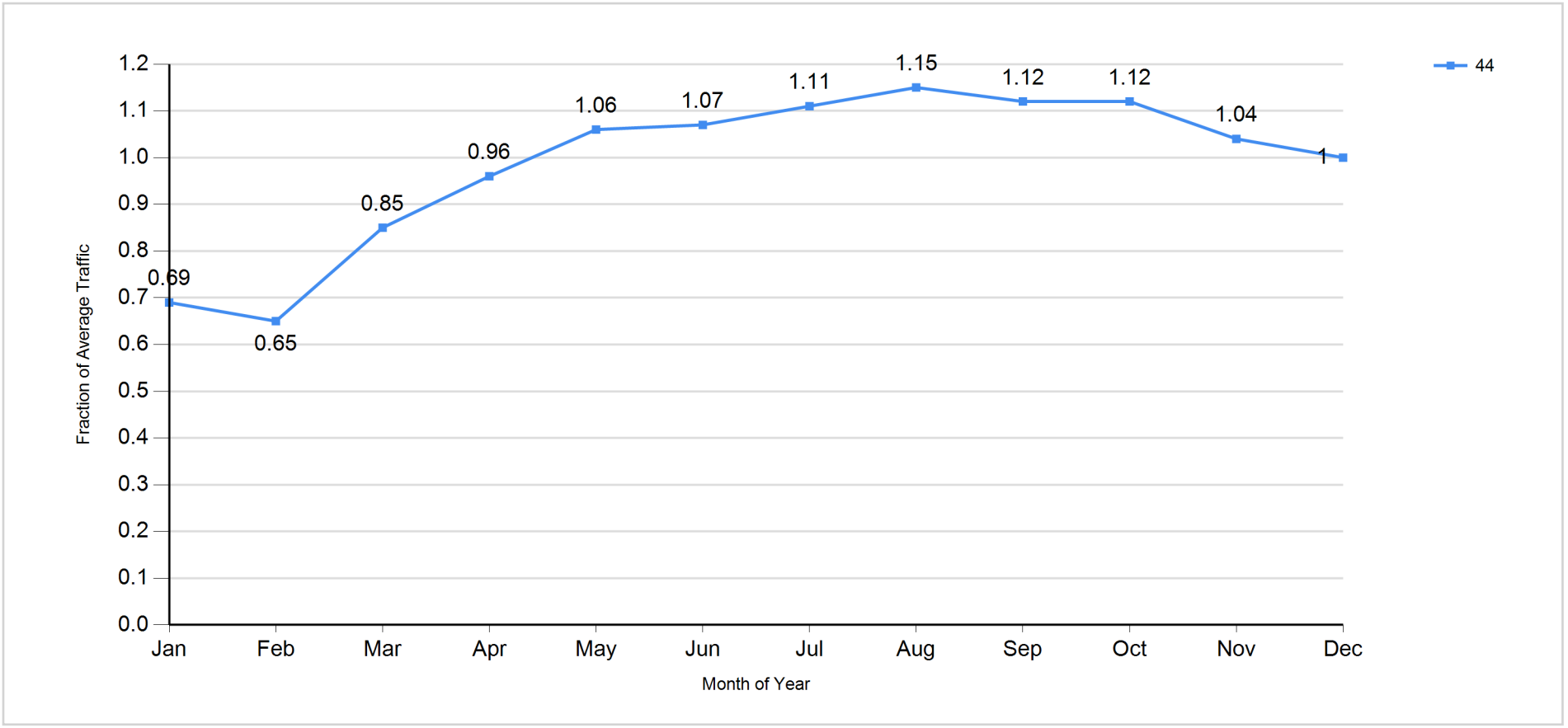
E-W Street: Tempelton-State Road/Rte 2A
N-S Street: Route 2 WB Ramp

	State Road/Rte 2A From East				Route 2 WB Ramp From South				Tempelton Rd/Rte 2A From West				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	**5**	**88**	0	**93**	**75**	0	0	**75**	119	17	0	136	**304**
01:00 PM	5	63	0	68	66	0	0	66	127	**24**	0	**151**	285
01:15 PM	5	72	0	77	65	0	0	65	127	13	0	140	282
01:30 PM	2	78	0	80	65	0	0	65	**129**	22	0	151	296
Total Volume	17	301	0	318	271	0	0	271	502	76	0	578	1167
% App. Total	5.3	94.7	0		100	0	0		86.9	13.1	0		
PHF	.850	.855	.000	.855	.903	.000	.000	.903	.973	.792	.000	.957	.960
Cars	17	299	0	316	268	0	0	268	501	76	0	577	1161
% Cars	100	99.3	0	99.4	98.9	0	0	98.9	99.8	100	0	99.8	99.5
Trucks	0	2	0	2	3	0	0	3	1	0	0	1	6
% Trucks	0	0.7	0	0.6	1.1	0	0	1.1	0.2	0	0	0.2	0.5



Seasonal/Historical and Background Growth Adjustment Data

Traffic Pattern by Month for 1/1/2015 - 12/31/2015

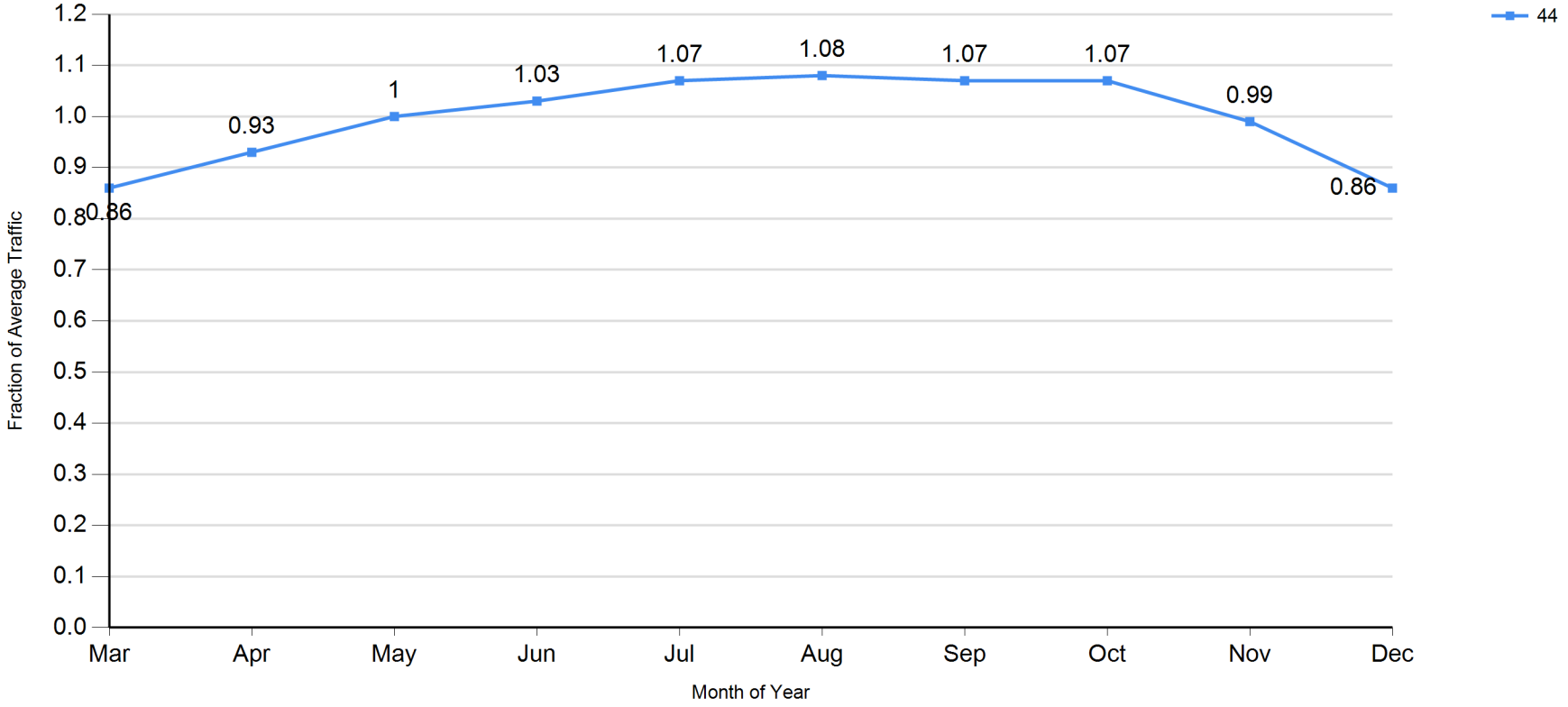


Traffic Pattern by Month for 1/1/2015 - 12/31/2015

Factor Group	Station	Weight	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
U2	44	1	0.693	0.653	0.851	0.955	1.056	1.068	1.108	1.150	1.123	1.117	1.044	1.001
	Average of Weighted Factors		**0.693**	**0.653**	**0.851**	**0.955**	**1.056**	**1.068**	**1.108**	**1.150**	**1.123**	**1.117**	**1.044**	**1.001**

Massachusetts Highway Department

Traffic Pattern by Month for 1/1/2016 - 12/31/2016



Traffic Pattern by Month for 1/1/2016 - 12/31/2016

Factor Group	Station	Weight	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
U2	44	1			0.857	0.931	1.001	1.030	1.070	1.082	1.069	1.065	0.987	0.861
	Average of Weighted Factors		**0.000**	**0.000**	**0.857**	**0.931**	**1.001**	**1.030**	**1.070**	**1.082**	**1.069**	**1.065**	**0.987**	**0.861**

MassDOT Transportation Data Management System

STATION 44 - Route 2 Mohawk Trail East of Orange

YEAR #	YEAR	AADT
1	2009	14710
2	2010	11274
3	2011	11384
4	2012	10825
5	2013	10615
6	2014	10965
7	2015	11514
8	2016	12699
9	2017	
10	2018	14910

Traffic Growth Calculations

Year 1-2	-23.36%	Year 2-3	0.98%	Year 3-4	-4.91%	Year 4-5	-1.94%	Year 5-6	3.30%
Year 1-3	-11.31%	Year 2-4	-1.99%	Year 3-5	-3.38%	Year 4-6	0.65%	Year 5-7	4.23%
Year 1-4	-8.80%	Year 2-5	-1.95%	Year 3-6	-1.23%	Year 4-7	2.12%	Year 5-8	6.54%
Year 1-5	-6.96%	Year 2-6	-0.69%	Year 3-7	0.29%	Year 4-8	4.33%	Year 5-9	
Year 1-6	-5.09%	Year 2-7	0.43%	Year 3-8	2.31%	Year 4-9		Year 5-10	8.09%
Year 1-7	-3.62%	Year 2-8	2.11%	Year 3-9		Year 4-10	6.29%		
Year 1-8	-1.95%	Year 2-9		Year 3-10	4.42%				
Year 1-9		Year 2-10	4.03%						
Year 1-10	0.15%								

Year 6-7	5.01%	Year 7-8	10.29%	Year 8-9		Year 9-10
Year 6-8	7.91%	Year 7-9		Year 8-10	8.71%	
Year 6-9		Year 7-10	9.83%			
Year 6-10	8.99%					

2009-2018 Annual Average Traffic Growth Rate: **0.66%**

Crash Rate and Trip Generation Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Phillipston COUNT DATE : Oct-19

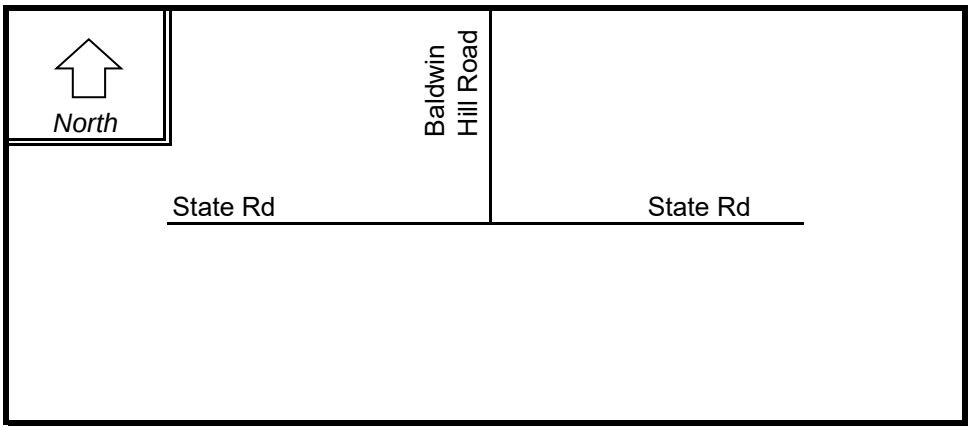
DISTRICT : 2 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Route 2A

MINOR STREET(S) : Baldwin Hill Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB	EB		
PEAK HOURLY VOLUMES (PM) :	500	7	322			**829**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,211**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.10**

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

Comments : MassDOT Crash Portal 2015-2017

Project Title & Date:

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Athol COUNT DATE : Oct-19

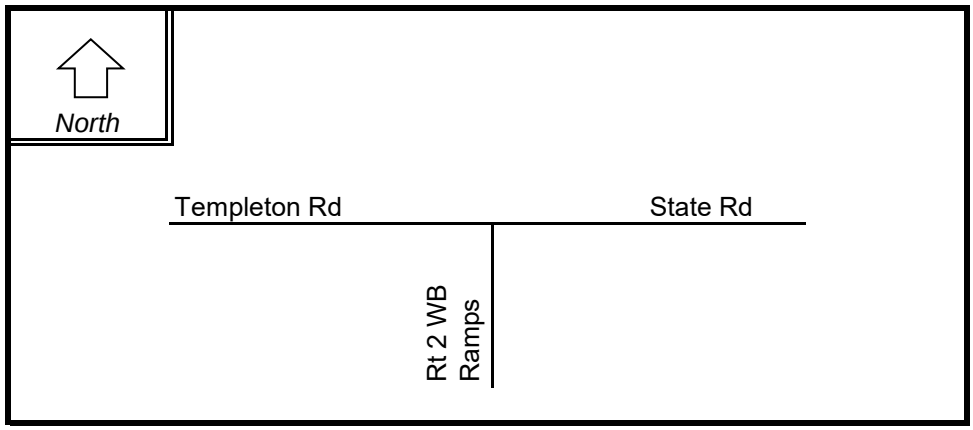
DISTRICT : 2 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : State Road/Templeton Road

MINOR STREET(S) : Route 2 WB Ramps

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB	EB		
PEAK HOURLY VOLUMES (PM) :		318	271	578		**1,167**

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,967**

TOTAL # OF CRASHES : 7

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **2.33**

CRASH RATE CALCULATION : **0.49**

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

Comments : MassDOT Crash Portal 2015-2017

Project Title & Date:

Institute of Transportation Engineers (ITE); 10th Edition
Land Use Code (LUC) 882 - Marijuana Dispensary

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area
Independent Variable (X): 4.000 ksf

AVERAGE WEEKDAY DAILY (730 - 3410 sf)

T = 252.70 * (X)
T = 1010.80
T = 1,010 vehicle trips
with 50% (505 vpd) entering and 50% (505 vpd) exiting.

WEEKDAY AM PEAK HOUR OF ADJACENT STREET TRAFFIC (730 - 3410 sf)

T = 10.44 * (X)
T = 41.76
T = 42 vehicle trips
with 56% (24 vph) entering and 44% (18 vph) exiting.

WEEKDAY PM PEAK HOUR OF ADJACENT STREET TRAFFIC (680 - 3410 sf)

T = 21.83 * (X)
T = 87.32
T = 87 vehicle trips
with 50% (44 vph) entering and 50% (43 vph) exiting.

SATURDAY DAILY (730 - 3410 sf)

T = 259.31 * (X)
T = 1037.24
T = 1,040 vehicle trips
with 50% (520 vpd) entering and 50% (520 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR (730 - 3410 sf)

T = 36.43 * (X)
T = 145.72
T = 146 vehicle trips
with 52% (76 vph) entering and 48% (70 vph) exiting.
enter/exit split assumed to be the same as LUC 820 (Shopping Center)

Capacity Analysis Methodology and Worksheets

General

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

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

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

Unsignalized Intersections

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

Signalized Intersections

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

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

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

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

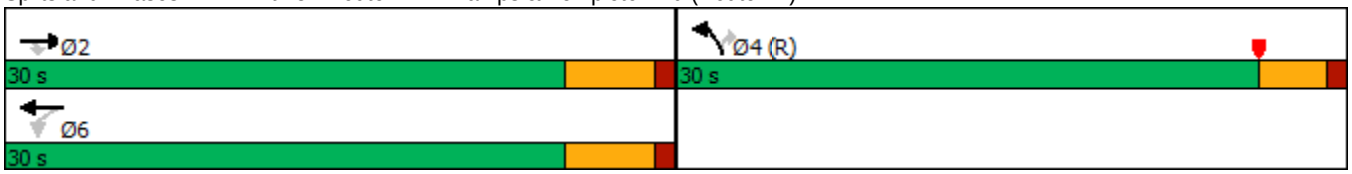


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	448	52	10	239	391	3
Future Volume (vph)	448	52	10	239	391	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1881	1583	1805	1863	1787	1615
Flt Permitted			0.259		0.950	
Satd. Flow (perm)	1881	1583	492	1863	1787	1615
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		57				3
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	0%	2%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	487	57	11	260	425	3
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	20.6	20.6	20.6	20.6	30.4	30.4
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.51	0.51
v/c Ratio	0.76	0.10	0.07	0.41	0.47	0.00
Control Delay	25.1	4.1	12.1	16.1	13.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	4.1	12.1	16.1	13.0	7.0
LOS	C	A	B	B	B	A
Approach Delay	22.9			16.0	13.0	
Approach LOS	C			B	B	
Queue Length 50th (ft)	149	0	3	68	95	0
Queue Length 95th (ft)	220	17	11	109	184	4
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			300
Base Capacity (vph)	783	692	205	776	906	820

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.62	0.08	0.05	0.34	0.47	0.00

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 43 (72%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	213	288	277	0	0	0
Future Vol, veh/h	213	288	277	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	237	320	308	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	308	0	-	0	1102	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	794	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1264	-	-	-	236	737
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1264	-	-	-	192	737
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1264	-	-	-	-
HCM Lane V/C Ratio	0.187	-	-	-	-
HCM Control Delay (s)	8.5	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.7	-	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	30	8	269	471	3
Future Vol, veh/h	23	30	8	269	471	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	10	0	2	1	0
Mvmt Flow	24	31	8	277	486	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	781	488	489	0	-	0
Stage 1	488	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	366	564	1085	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	564	1085	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1085	-	455	-	-
HCM Lane V/C Ratio	0.008	-	0.12	-	-
HCM Control Delay (s)	8.3	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	288	4	5	471
Future Vol, veh/h	3	4	288	4	5	471
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	303	4	5	496

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	811	305	0	0	307	0
Stage 1	305	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	352	740	-	-	1265	-
Stage 1	752	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	350	740	-	-	1265	-
Mov Cap-2 Maneuver	350	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	501	1265	-
HCM Lane V/C Ratio	-	-	0.015	0.004	-
HCM Control Delay (s)	-	-	12.3	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

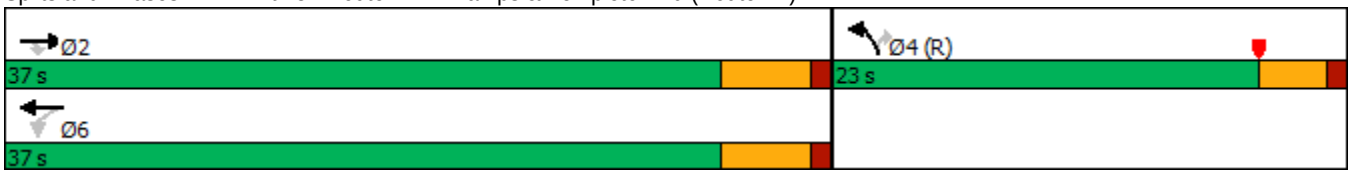


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	507	77	17	304	274	0
Future Volume (vph)	507	77	17	304	274	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1900	1615	1805	1881	1787	1900
Flt Permitted			0.264		0.950	
Satd. Flow (perm)	1900	1615	502	1881	1787	1900
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		80				
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	80	18	317	285	0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	23.4	23.4	23.4	23.4	27.6	
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.46	
v/c Ratio	0.71	0.12	0.09	0.43	0.35	
Control Delay	20.3	2.8	10.0	14.2	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.3	2.8	10.0	14.2	14.0	
LOS	C	A	A	B	B	
Approach Delay	18.0			13.9	14.0	
Approach LOS	B			B	B	
Queue Length 50th (ft)	155	0	4	81	62	
Queue Length 95th (ft)	192	16	12	105	143	
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			
Base Capacity (vph)	1013	898	267	1003	820	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.52	0.09	0.07	0.32	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 47 (78%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	221	291	279	5	0	0
Future Vol, veh/h	221	291	279	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	0	0	0
Mvmt Flow	235	310	297	5	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	297	0	-	0	1080	300
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	780	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1264	-	-	-	244	744
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	455	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1264	-	-	-	199	744
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	455	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1264	-	-	-	-
HCM Lane V/C Ratio	0.186	-	-	-	-
HCM Control Delay (s)	8.5	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.7	-	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	22	3	276	490	9
Future Vol, veh/h	49	22	3	276	490	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	3	1	0
Mvmt Flow	51	23	3	288	510	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	809	515	519	0	-	0
Stage 1	515	-	-	-	-	-
Stage 2	294	-	-	-	-	-
Critical Hdwy	6.4	6.25	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	2.2	-	-	-
Pot Cap-1 Maneuver	353	554	1057	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	352	554	1057	-	-	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1057	-	397	-	-
HCM Lane V/C Ratio	0.003	-	0.186	-	-
HCM Control Delay (s)	8.4	0	16.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	319	6	8	497
Future Vol, veh/h	2	5	319	6	8	497
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	6	389	7	10	606

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1019	393	0	0	396	0
Stage 1	393	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	265	660	-	-	1174	-
Stage 1	686	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	262	660	-	-	1174	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	460	1174	-
HCM Lane V/C Ratio	-	-	0.019	0.008	-
HCM Control Delay (s)	-	-	13	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

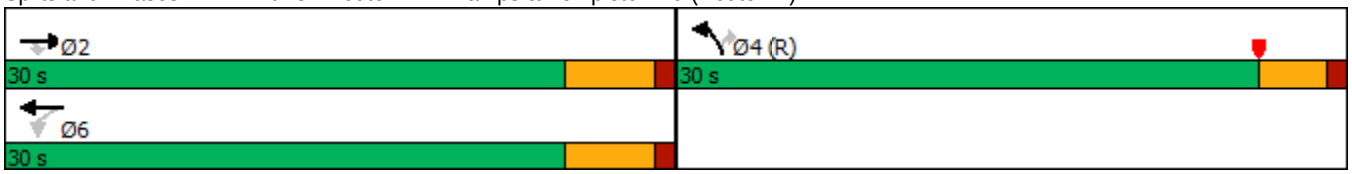


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	504	97	20	281	457	13
Future Volume (vph)	504	97	20	281	457	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1881	1583	1805	1863	1787	1615
Flt Permitted			0.214		0.950	
Satd. Flow (perm)	1881	1583	407	1863	1787	1615
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		105				14
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	0%	2%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	548	105	22	305	497	14
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	21.9	21.9	21.9	21.9	29.1	29.1
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.48	0.48
v/c Ratio	0.80	0.16	0.15	0.45	0.57	0.02
Control Delay	26.2	3.5	14.0	16.0	15.4	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	3.5	14.0	16.0	15.4	5.5
LOS	C	A	B	B	B	A
Approach Delay	22.6			15.9	15.2	
Approach LOS	C			B	B	
Queue Length 50th (ft)	163	0	5	77	128	0
Queue Length 95th (ft)	258	23	18	129	225	8
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			300
Base Capacity (vph)	783	720	169	776	866	789

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.70	0.15	0.13	0.39	0.57	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 43 (72%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 59.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	228	323	311	0	0	0
Future Vol, veh/h	228	323	311	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	253	359	346	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	346	0	-	0	1211	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	865	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1224	-	-	-	203	702
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1224	-	-	-	161	702
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1224	-	-	-	-
HCM Lane V/C Ratio	0.207	-	-	-	-
HCM Control Delay (s)	8.7	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.8	-	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	32	9	302	519	3
Future Vol, veh/h	25	32	9	302	519	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	10	0	2	1	0
Mvmt Flow	26	33	9	311	535	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	866	537	538	0	-	0
Stage 1	537	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	326	529	1040	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	323	529	1040	-	-	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1040	-	413	-	-
HCM Lane V/C Ratio	0.009	-	0.142	-	-
HCM Control Delay (s)	8.5	0	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	323	4	5	519
Future Vol, veh/h	3	4	323	4	5	519
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	340	4	5	546

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	898	342	0	0	344	0
Stage 1	342	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	312	705	-	-	1226	-
Stage 1	724	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	310	705	-	-	1226	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	456	1226	-
HCM Lane V/C Ratio	-	-	0.016	0.004	-
HCM Control Delay (s)	-	-	13	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

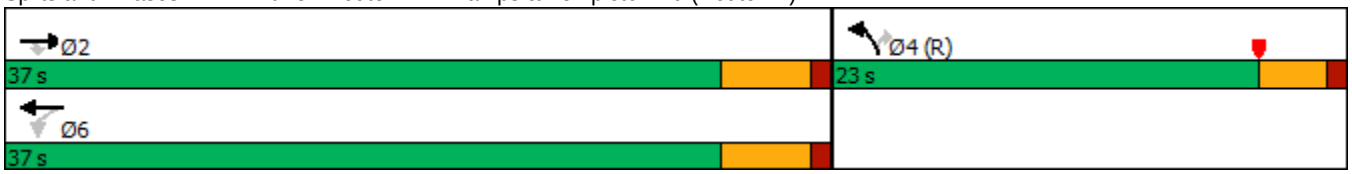


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	579	128	32	362	343	14
Future Volume (vph)	579	128	32	362	343	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1900	1615	1805	1881	1787	1615
Flt Permitted			0.226		0.950	
Satd. Flow (perm)	1900	1615	429	1881	1787	1615
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		133				15
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	603	133	33	377	357	15
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	25.6	25.6	25.6	25.6	25.4	25.4
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.42	0.42
v/c Ratio	0.74	0.17	0.18	0.47	0.47	0.02
Control Delay	19.9	2.3	11.1	13.4	17.0	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	2.3	11.1	13.4	17.0	7.6
LOS	B	A	B	B	B	A
Approach Delay	16.7			13.2	16.7	
Approach LOS	B			B	B	
Queue Length 50th (ft)	169	0	7	90	91	0
Queue Length 95th (ft)	223	20	19	123	187	11
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			300
Base Capacity (vph)	1013	923	228	1003	756	692

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.60	0.14	0.14	0.38	0.47	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 47 (78%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	237	334	320	5	0	0
Future Vol, veh/h	237	334	320	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	0	0	0
Mvmt Flow	252	355	340	5	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	340	0	-	0	1202	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	859	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1219	-	-	-	206	704
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	418	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1219	-	-	-	163	704
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	418	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1219	-	-	-	-
HCM Lane V/C Ratio	0.207	-	-	-	-
HCM Control Delay (s)	8.7	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.8	-	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	24	3	317	547	10
Future Vol, veh/h	53	24	3	317	547	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	3	1	0
Mvmt Flow	55	25	3	330	570	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	911	575	580	0	-	0
Stage 1	575	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.4	6.25	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	2.2	-	-	-
Pot Cap-1 Maneuver	307	512	1004	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	306	512	1004	-	-	-
Mov Cap-2 Maneuver	306	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1004	-	350	-	-
HCM Lane V/C Ratio	0.003	-	0.229	-	-
HCM Control Delay (s)	8.6	0	18.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	364	6	9	555
Future Vol, veh/h	2	5	364	6	9	555
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	6	444	7	11	677

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1147	448	0	0	451	0
Stage 1	448	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	222	615	-	-	1120	-
Stage 1	648	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	615	-	-	1120	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	489	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	405	1120	-
HCM Lane V/C Ratio	-	-	0.021	0.01	-
HCM Control Delay (s)	-	-	14.1	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



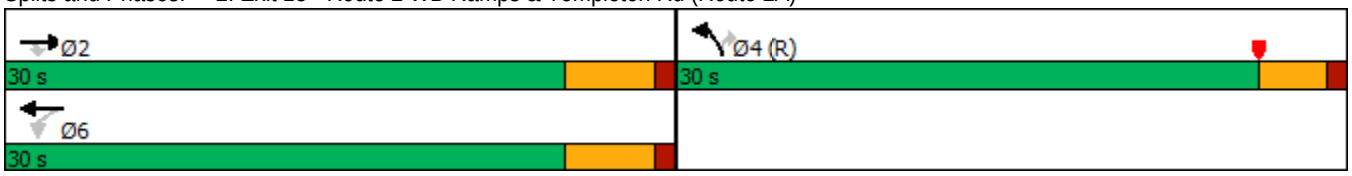
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	530	97	24	307	457	13
Future Volume (vph)	530	97	24	307	457	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1881	1583	1805	1863	1787	1615
Flt Permitted			0.196		0.950	
Satd. Flow (perm)	1881	1583	372	1863	1787	1615
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		105				14
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	0%	2%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	576	105	26	334	497	14
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	22.5	22.5	22.5	22.5	28.5	28.5
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.48	0.48
v/c Ratio	0.82	0.16	0.19	0.48	0.59	0.02
Control Delay	27.4	3.5	15.2	16.3	15.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	3.5	15.2	16.3	15.9	5.5
LOS	C	A	B	B	B	A
Approach Delay	23.7			16.2	15.6	
Approach LOS	C			B	B	
Queue Length 50th (ft)	170	0	6	83	132	0
Queue Length 95th (ft)	#284	23	21	142	225	8
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			300
Base Capacity (vph)	783	720	155	776	849	774

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.74	0.15	0.17	0.43	0.59	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 43 (72%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	234	330	324	0	0	0
Future Vol, veh/h	234	330	324	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	260	367	360	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	360	0	-	0	1247	360
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	887	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1210	-	-	-	193	689
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	406	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1210	-	-	-	152	689
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	406	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1210	-	-	-	-
HCM Lane V/C Ratio	0.215	-	-	-	-
HCM Control Delay (s)	8.8	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.8	-	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	32	9	315	532	3
Future Vol, veh/h	30	32	9	315	532	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	10	0	2	1	0
Mvmt Flow	31	33	9	325	548	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	893	550	551	0	-	0
Stage 1	550	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	315	520	1029	-	-	-
Stage 1	582	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	312	520	1029	-	-	-
Mov Cap-2 Maneuver	312	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1029	-	393	-	-
HCM Lane V/C Ratio	0.009	-	0.163	-	-
HCM Control Delay (s)	8.5	0	15.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	353	4	5	545
Future Vol, veh/h	3	4	353	4	5	545
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	372	4	5	574

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	958	374	0	0	376	0
Stage 1	374	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	288	677	-	-	1194	-
Stage 1	700	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	286	677	-	-	1194	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	427	1194	-
HCM Lane V/C Ratio	-	-	0.017	0.004	-
HCM Control Delay (s)	-	-	13.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	30	327	18	26	522
Future Vol, veh/h	13	30	327	18	26	522
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	33	355	20	28	567

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	988	365	0	0	375	0
Stage 1	365	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	274	680	-	-	1183	-
Stage 1	702	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	264	680	-	-	1183	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	516	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	1183	-
HCM Lane V/C Ratio	-	-	0.101	0.024	-
HCM Control Delay (s)	-	-	13.7	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

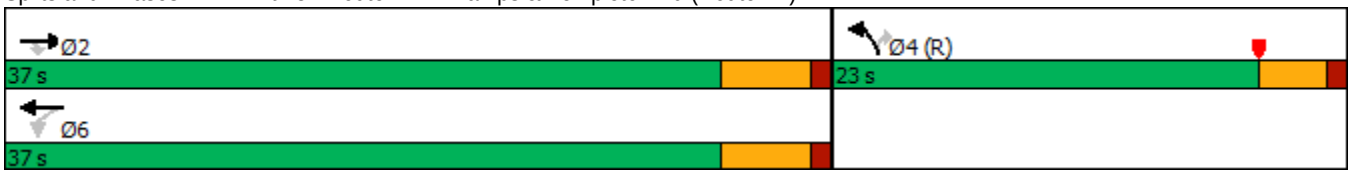


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	625	128	39	404	343	14
Future Volume (vph)	625	128	39	404	343	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		350	300		0	300
Storage Lanes		1	1		1	1
Taper Length (ft)			100		25	
Satd. Flow (prot)	1900	1615	1805	1881	1787	1615
Flt Permitted			0.204		0.950	
Satd. Flow (perm)	1900	1615	388	1881	1787	1615
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		133				15
Link Speed (mph)	30			30	30	
Link Distance (ft)	481			1104	920	
Travel Time (s)	10.9			25.1	20.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	651	133	41	421	357	15
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases		2	6			4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.0	23.0	23.0	23.0	22.0	22.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	Min	C-Min	C-Min
Act Effct Green (s)	26.9	26.9	26.9	26.9	24.1	24.1
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.40	0.40
v/c Ratio	0.76	0.17	0.24	0.50	0.50	0.02
Control Delay	19.8	2.2	12.2	13.1	18.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	2.2	12.2	13.1	18.2	7.8
LOS	B	A	B	B	B	A
Approach Delay	16.8			13.0	17.8	
Approach LOS	B			B	B	
Queue Length 50th (ft)	176	0	8	97	97	0
Queue Length 95th (ft)	250	20	24	139	187	11
Internal Link Dist (ft)	401			1024	840	
Turn Bay Length (ft)		350	300			300
Base Capacity (vph)	1013	923	206	1003	717	657

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	0.64	0.14	0.20	0.42	0.50	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 47 (78%), Referenced to phase 4:NBL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Exit 18 - Route 2 WB Ramps & Templeton Rd (Route 2A)



Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	247	345	343	5	0	0
Future Vol, veh/h	247	345	343	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	0	0	0
Mvmt Flow	263	367	365	5	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	365	0	-	0	1261	368
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	893	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1194	-	-	-	190	682
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	403	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1194	-	-	-	148	682
Mov Cap-2 Maneuver	-	-	-	-	148	-
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	403	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	-
HCM Lane V/C Ratio	0.22	-	-	-	-
HCM Control Delay (s)	8.9	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.8	-	-	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	24	3	340	568	10
Future Vol, veh/h	60	24	3	340	568	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	3	1	0
Mvmt Flow	63	25	3	354	592	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	957	597	602	0	-	0
Stage 1	597	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	6.4	6.25	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	2.2	-	-	-
Pot Cap-1 Maneuver	288	497	985	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	287	497	985	-	-	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	985	-	326	-	-
HCM Lane V/C Ratio	0.003	-	0.268	-	-
HCM Control Delay (s)	8.7	0	20	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	413	6	9	601
Future Vol, veh/h	2	5	413	6	9	601
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	6	504	7	11	733

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1263	508	0	0	511	0
Stage 1	508	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	189	569	-	-	1065	-
Stage 1	608	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	186	569	-	-	1065	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	358	1065	-
HCM Lane V/C Ratio	-	-	0.024	0.01	-
HCM Control Delay (s)	-	-	15.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	49	370	30	46	557
Future Vol, veh/h	21	49	370	30	46	557
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	53	402	33	50	605

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1124	419	0	0	435	0
Stage 1	419	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	227	634	-	-	1125	-
Stage 1	664	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	212	634	-	-	1125	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	397	1125	-
HCM Lane V/C Ratio	-	-	0.192	0.044	-
HCM Control Delay (s)	-	-	16.2	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-