TRAFFIC IMPACT AND ACCESS STUDY

ANCHOR POINT RESIDENTIAL DEVELOPMENT
SOHIER ROAD / TOZER ROAD
BEVERLY, MASSACHUSETTS

GPI

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SEPTEMBER 2018

GPI

Traffic Impact and Access Study
Anchor Point Residential Development – Sohier Road
Beverly, Massachusetts
September 2018

TECHNICAL MEMORANDUM

REF: MAX-2018123.00

DATE: September 17, 2018

TO: Ms. Kristin Carlson
Harborlight Community Partners
P.O. Box 507
Beverly, MA 01915

FROM: Ms. Rebecca L. Brown, P.E., P.T.O.E., Project Manager
Mr. Douglas S. Halpert, P.E., Project Engineer

RE: Traffic Impact and Access Study
Planning Board Submission
Anchor Point Residential Development
Sohier Road / Tozer Road – Beverly, Massachusetts

INTRODUCTION

Greenman-Pedersen, Inc. (GPI) has prepared this Traffic Impact and Access Study (TIAS) for the proposed 75-unit residential development and ±5,000 office space to be located on the northwest corner of the Sohier Road / Tozer Road intersection in Beverly, Massachusetts. The project consists of clearing the existing vacant parking lot and vegetation on site, and constructing a total of 75 residential apartment units, a community building and 5,000 square feet (SF) of office space on the second floor of the community building to house Harborlight Community Partners' corporate offices. Access and egress to the parcel will be provided via two full access/egress driveways along Sohier Road approximately opposite the Hilltop Drive intersections. This study has been conducted to evaluate the traffic impacts and access/egress requirements for the proposed development.

The site is bounded by Northshore Education Consortium and Northshore Academy Upper School to the north; Tozer Road to the west and south; and Sohier Road to the east. As Sohier Road is under the jurisdiction of the City of Beverly, only local review and approval will be required for the proposed driveways. The site location in relation to the surrounding roadways is shown on the

map on Figure 1. A description of the geometric and traffic control characteristics of the study area intersections is provided below, followed by quantification of existing traffic volumes, collision history, vehicle speeds, and sight distance.

EXISTING CONDITIONS

Study Area

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

- Sohier Road / Brimbal Avenue (Roundabout)
- Sohier Road / Route 128 Northbound Ramps – Exit 19 (Roundabout)
- Sohier Road / Hilltop Drive North (unsignalized)
- Sohier Road / Hilltop Drive South (unsignalized)
- Sohier Road / Tozer Road (unsignalized)
- Sohier Road / Herrick Street (signalized)

Sohier Road

Sohier Road is an urban minor arterial roadway that is aligned in an overall north-south direction. The roadway is under the jurisdiction of the City of Beverly and provides connection between Route 128 (Yankee Division Highway) to the north and Route 1A (Rantoul Street / Cabot Street) to the south. Directional flow is separated by a striped double-yellow line. Sohier Road has a posted speed limit of 30 miles per hour (MPH) in both directions. Land uses along Sohier Road near the site consists of educational, commercial, and residential uses. There are designated bicycle shoulders painted along both sides of the roadway between the Route 128 roundabout and Tozer Road.

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Figure 1
Project Location Map

Sohier Road / Brimbal Avenue

Brimbal Avenue intersects Sohier Road to form a three-legged roundabout intersection. The Brimbal Avenue northbound approach consists of an exclusive left-turn and a through lane with directional traffic separated by a raised-grass median. The Brimbal Avenue southbound approach consists of a single general-purpose lane with directional traffic separated by a raised-grass median. The Sohier Road eastbound approach consists of an exclusive left-turn lane and an exclusive right-turn lane with directional traffic separated by a raised concrete median. Sidewalks are provided along both sides of all intersection approaches. Crosswalks and wheelchair ramps are provided across all legs of the intersection and a dedicated bicycle shoulder is provided along the Brimbal Avenue southbound and Sohier Road eastbound approaches.

Sohier Road / Route 128 Northbound Ramps – Exit 19

The Route 128 Northbound Ramps intersect Sohier Road to form a three-legged roundabout intersection. The Sohier Road northbound and westbound approaches both consist of an exclusive left-turn lane and an exclusive right-turn lane with directional traffic separated by a raised concrete median and a raised-grass median, respectively. The Route 128 Northbound Off-Ramp southbound approach consists of an exclusive left-turn lane and a by-pass through lane with directional traffic separated by a raised-grass median. There are no crosswalks or wheelchair ramps present at this intersection.

Sohier Road / Hilltop Drive North

Hilltop Drive North intersects Sohier Road to form a three-legged unsignalized intersection. The Sohier Road northbound and southbound approaches both consist of a single general-purpose travel lane with directional traffic separated by a striped double-yellow centerline. Hilltop Drive North westbound approach consists of a single general-purpose travel lane with no pavement markings separating directional traffic. The Hilltop Drive North westbound approach operates under STOP sign control, while Sohier Road is free-flowing. Sidewalks are provided along the easterly side of Sohier Road; however, there are no crosswalks are provided at the intersection.

Sohier Road / Hilltop Drive South

Hilltop Drive South intersects Sohier Road to form a three-legged unsignalized intersection. The Sohier Road northbound and southbound approaches both consist of a single general-purpose travel lane with directional traffic separated by a striped double-yellow centerline. Hilltop Drive South westbound approach consists of a single general-purpose travel lane with no pavement markings separating directional traffic. The Hilltop Drive South westbound approach operates under STOP sign control, while Sohier Road is free-flowing. Sidewalks are provided along the easterly side of Sohier Road; however, there are no crosswalks are provided at the intersection.

Sohier Road / Tozer Road

Tozer Road intersects Sohier Road to form a three-legged unsignalized intersection. The Sohier Road northbound and southbound approaches both consist of a single general-purpose travel lane with directional traffic separated by a striped double-yellow centerline. Tozer Road eastbound approach consists of a single general-purpose travel lane with directional traffic separated by a striped double-yellow centerline. The Tozer Road eastbound approach operates under STOP sign control, while Sohier Road is free-flowing. Sidewalks are provided along the westerly side of Sohier Road south of the intersection and along the easterly side both north and south of the intersection. Dedicated bicycle shoulders are provided along both sides of Sohier Road north of the intersection. Dedicated bicycle shoulders are provided along both sides of Tozer Road within 500 feet of the intersection.

Sohier Road / Herrick Street

Herrick Street intersects Sohier Road to form a four-legged signalized intersection. The Sohier Road northbound approach consists of a single through / right-turn travel lane with directional traffic separated by a striped double-yellow centerline. Northbound left-turn movements at this intersection are restricted. The Sohier Road southbound approach consists of an exclusive left-turn lane and a shared through / right-turn lane with directional traffic separated by a striped double-yellow centerline. The Herrick Street eastbound and westbound approaches both consist of a single general-purpose travel lane with a channelized right-turn lane under STOP control and directional traffic separated by a striped double-yellow centerline. Sidewalks are provided along both sides of all approaches with ramps and crosswalks across all legs. The traffic signal provides an exclusive pedestrian phase for crossing in all directions.

Public Transportation

The Massachusetts Bay Transportation Authority (MBTA) provides public transportation services within the Greater Boston Metropolitan Area, which includes the City of Beverly. The Beverly Depot train station is located approximately 1.5 miles southwest of the proposed site location and is a stop for the MBTA's Newburyport/Rockport Commuter Line. The line provides service from North Station in Boston to Newburyport and to Rockport via the Beverly Depot station. The average travel time between North Station / Newburyport is 60 minutes while travel time between North Station / Rockport is 70 minutes. On a typical weekday, this service runs between 4:55 AM and 12:00 AM for inbound travel, and between 6:26 AM and 1:22 AM for outbound travel. On a typical weekend, this service runs between 7:00 AM and 11:11 PM for inbound travel, and between 8:30 AM and 12:42 AM for outbound travel.

The fare for the commuter line ranges from $2.25 to $12.50 for adults while seniors and persons with disabilities pay 50% off the regular fare. Children 11 years of age and under ride for free.

In addition to the commuter line, MBTA also provides public transportation services within the vicinity of the project through one of its bus lines. The Bus Line 451 connecting Salem Depot and North Beverly passes through Cabot Street to the east of the proposed site location. On a typical weekday, this service runs from 6:50 AM to 7:56 PM, with the average travel time from one end to another of 30 minutes. The fare for MBTA buses ranges from $1.70 with CharlieCard to $2.00 for cash-on-board for adults while seniors, persons with disabilities, and students pay $0.85 per ride. Children 11 years of age and under ride for free.

The Cape Ann Transportation Operating Company (CATOC) provides shuttle service throughout the City of Beverly under contract with the City of Beverly and the MBTA via the Yellow Line – Beverly Shuttle Bus Route. CATOC provides service to numerous destinations in Beverly, including the Bridge Variety Store, Beverly Depot Commuter Rail Station, City Hall, North Beverly Plaza, Beverly Hospital, Montserrat Commuter Rail Station, Cedar Street Apartments, and Cummings Center. Weekday service operates from 6:45 AM to 5:00 PM, while Saturday service operates from 7:00 AM to 4:30 PM with 60 to 120-minute headways. The closest stop to the site is located on Herrick Street just west of Sohier Road.

Traffic Volumes

Base traffic conditions within the study area were developed by conducting manual turning movement counts (TMCs) and vehicle classification counts at the study area locations. The TMCs and vehicle classification counts were performed during the weekday AM peak period (7:00 to 9:00 AM) and the weekday PM peak period (4:00 to 6:00 PM) on Thursday, August 30, 2018. It is important to note that the North Shore Music Theater was hosting a showing of Mama Mia! on the evening that the TMCs were collected, which likely resulted in higher traffic volumes, particularly through the two roundabout intersections, than on a non-event day. Automatic traffic recorders (ATR) were collected on Wednesday, August 29, 2018 to Thursday, August 30, 2018 and used to obtain 48-hours of daily traffic volumes on Sohier Road. All traffic-count data is provided in detail in the Appendix.

Seasonal Adjustment

Traffic on a given roadway typically fluctuates throughout the year depending on the area and the type of roadway. To determine if the August traffic-volume data needed to be adjusted to account for this fluctuation, traffic-volume data from Massachusetts Department of Transportation (MassDOT) Permanent Count Stations in the area were researched.[1] Based on the MassDOT traffic-volume data, traffic during the month of August are 12.7 percent higher than average-month conditions. Therefore, the August traffic volumes were unadjusted to represent a conservative

[1] *MassDOT Traffic Volumes*; Permanent Count Stations 35 – Route 128 north of Brimble Avenue (Beverly), 5557 – Route I-95 south of Route 62 (Danvers), 5558 – Route I-95 north of Route 62 (Danvers), 5048 – Route I-95 north of Route 1 (Topsfield).

(worse case) scenario of average-month conditions. The MassDOT seasonal adjustment data are provided in the Appendix.

Table 1 summarizes the existing daily and peak-hour traffic volumes on Sohier Road adjacent to the site. The 2018 Existing traffic-flow networks for the weekday AM and weekday PM peak hours are shown graphically on Figure 2.

Table 1
EXISTING TRAFFIC VOLUME SUMMARY – AVERAGE-MONTH CONDITIONS

Location/Day of Week	Daily Volume (vpd) [a]	Peak Hour Volume (vph) [b]	K Factor (%) [c]	Directional Distribution [d]
Sohier Road south of Hilltop Drive North:				
Weekday	8,620			
AM Peak Hour		905	10.5	63% SB
PM Peak Hour		655	7.6	51% NB

[a] In vehicles per day.
[b] In vehicles per hour.
[c] Percentage of daily traffic occurring during the peak hour.
[d] NB = northbound, SB = southbound

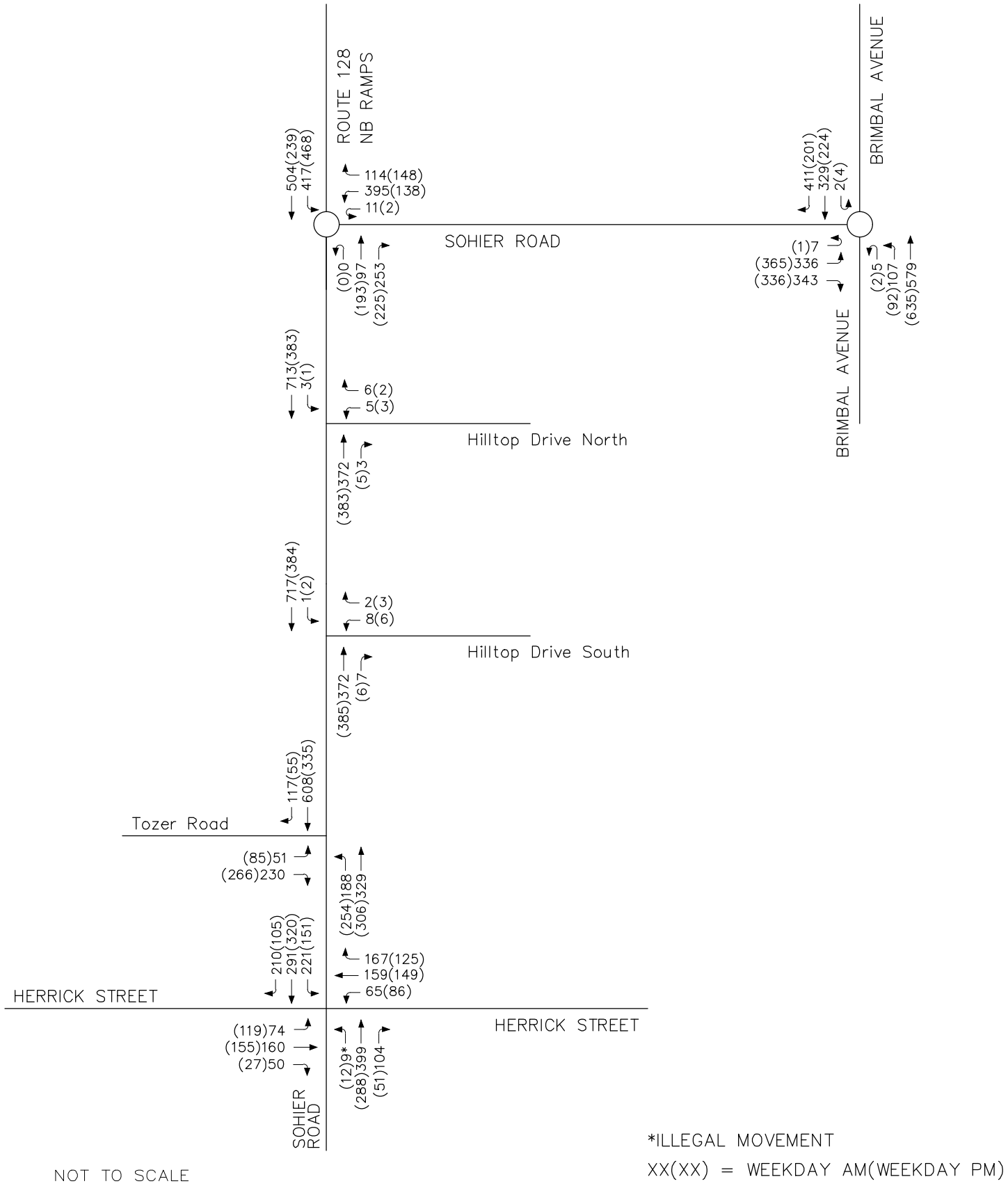

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Figure 2

2018 Existing
Peak Hour Traffic Volumes

Collisions

Collision data for the study area intersections was obtained from the MassDOT for the most recent available five-year period (2012 through 2016). A summary of the crashes at the study area intersections are provided in Table 2.

In addition to the collision summary, crash occurrence also should be compared to the volume of traffic through a particular intersection or on a particular classification of roadway to determine any significance. Accordingly, the crash rate was calculated for the study area intersections and compared with the statewide and district-wide averages. An intersection crash rate is a measure of the frequency of collisions compared to the volume of traffic through an intersection and is presented in crashes per million entering vehicles (c/mev). For unsignalized intersections, the statewide average and the District 4 average is 0.57 c/mev. For signalized intersections, the statewide average is 0.78 c/mev and the District 4 average is 0.73 c/mev. A comparison of the calculated crash rate to these averages can be used to establish the significance of collision occurrence and whether or not potential safety problems exist. All crash rate worksheets are provided in the Appendix.

The intersection of Sohier Road / Brimbal Avenue experienced an average of 4.4 collisions per year over the five-year study period, and a crash rate (0.51 c/mev) less than the statewide and District (0.57 c/mev) crash rate. The majority of the collisions (13 of 22) were angle collisions involving vehicles exiting Sohier Road eastbound colliding with through vehicles on Brimbal Avenue. It is important to note that this intersection was recently reconstructed and a roundabout installed, which is likely to have reduced or eliminated this type of angle collision. A Road Safety Audit[2] was performed in 2014 as part of the design for the Sohier Road / Brimbal Avenue and Sohier Road / Route 128 Northbound Ramps – Exit 19 intersections. However, there is not adequate crash data available following construction of the roundabouts to assess current collision patterns.

The intersection of Sohier Road / Route 128 Northbound Ramps experienced an average of 2.2 collisions per year over the five-year study period, and a crash rate (0.33 c/mev) less than the statewide and District (0.57 c/mev) crash rate. The majority of the collisions (7 of 11) were angle collisions, and over half of the collisions (7 of 11) resulted in personal injury. The construction of the roundabout at this location is likely to have reduced or eliminated these angle-type collisions. However, there is not sufficient data available following installation of the roundabout to assess collision patterns under the current geometric conditions.

The intersection of Sohier Road / Tozer Road experienced an average of 3.4 collisions per year over the five-year study period, and a crash rate (0.56 c/mev) less than the statewide and District (0.57 c/mev) crash rate. The majority of the collisions (7 of 17) were angle collisions and over 70 percent (5 of 7) occurred during wet/icy roadways, indicating that poor drainage combined with

[2] *Road Safety Audit – Brimbal Avenue / Sohier Road / Access Road;* McMahon Associates, Inc.; September 2014.

steep slopes through the intersection may be contributing to the occurrence of collisions. Approximately 47 percent (8 of 17) of the collisions resulted in personal injury and one fatal injury was recorded, which involved a motorcyclist traveling at an excessive speed and failing to keep in the proper lane. Approximately 35 percent (6 of 17) of collisions occurred during peak commute hours which suggests congestion may also be a contributing factor to collisions at this location. The City of Beverly has applied for a MassWorks Grant to construct geometric improvements at this intersection, which include realigning Tozer Road to a more T-type intersection and improving the grades turning to/from Tozer Road, as well as installing a southbound channelized right-turn lane and northbound left-turn lane on Sohier Road, which will improve the operations and safety of the intersection.

The remaining intersections experienced fewer than three collisions per year and a crash rate below the statewide and District-wide averages, indicating a safety issue does not exist.

Table 2
COLLISION SUMMARY

Location	Number of Collisions			Severity [a]				Collision Type [b]					Percent During	
	Total	Average per Year	Crash Rate [c]	PD	PI	F	NR	SS	RE	CM	HO	SV	Commuter Peak [d]	Wet/Icy Conditions [e]
Sohier Rd at Brimbal Ave. [f]	22	4.4	0.51	18	4	--	--	1	6	13	1	1	32%	23%
Sohier Rd at Route 128 NB Ramps [f]	11	2.2	0.33	4	7	--	--	--	3	7	1	--	18%	27%
Sohier Rd at Hilltop Drive North	2	0.4	0.11	1	1	--	--	--	--	1	1	--	50%	50%
Sohier Rd at Hilltop Drive South	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sohier Rd at Tozer Road	17	3.4	0.56	8	8	1	--	2	3	7	--	5	35%	24%
Sohier Rd at Herrick Street	8	1.6	0.22	6	2	--	--	2	2	2	1	--	0%	63%

Source: MassDOT (2012-2016).
[a] PD = property damage only; PI = personal injury; F = fatality, NR = not reported.
[b] SS = sideswipe; RE = rear end; CM = cross movement/angle; HO = head on; SV = single vehicle.
[c] Measured in crashes per million entering vehicles for intersections and in crashes per million vehicle miles traveled for roadway segments.
[d] Percent of vehicle incidents that occurred during the weekday AM (7:00 AM-9:00 AM) and weekday PM (4:00 PM -6:00 PM) commuter peak periods.
[e] Represents the percentage of only "known" collisions occurring during inclement weather conditions.
[f] Crash data obtained from years prior to reconstruction of intersection and installation of roundabout.

Vehicle Speeds

Vehicle speed measurements were conducted along Sohier Road by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints. The travel times were recorded using ATRs and the speeds were derived by dividing the elapsed time into the measured distance between checkpoints. The primary use of this information is explained in the *Sight Distance* section where the speeds are correlated to sight distance measurements taken at the location of the site driveways to assure that adequate sight distances exist at the driveways to provide safe operation. The results of the speed measurements are summarized in Table 3.

Table 3
OBSERVED TRAVEL SPEEDS [a]

Location/Direction	Posted Speed Limit [a]	Average Speed [b]	85th Percentile Speed [c]
Sohier Road south of Hilltop Drive North:			
Northbound	35	31	36
Southbound	35	33	37

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

As shown in Table 3, the average speeds along Sohier Road were found to be 31-33 miles per hour (MPH), while the 85th percentile speeds were 36-37 MPH. The observed speeds were found to be generally consistent with the posted speed limit of 35 MPH.

Sight Distance

To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at each of the driveway locations 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)[3].

[3] *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2011.

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 the road. 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.

Intersection sight distance (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. Intersection sight distance is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level.

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. The available SSD and ISD at the proposed site driveway locations were measured and compared to minimum requirements as established by AASHTO as shown in Table 4.

Table 4
SIGHT DISTANCE SUMMARY

	Stopping Sight Distance (feet)		Intersection Sight Distance (feet)		
Location / Direction	Measured	Minimum Required [a]	Measured [b]	Minimum Required [a]	Desirable [c]
Sohier Rd at North Site Drive:					
North of Driveway	320	270	320	270	335
South of Driveway	350	255	350	255	390
Sohier Rd at South Site Drive:					
North of Driveway	370	295	350	295	350
South of Driveway	+500	240	360	240	390

[a] Values based on AASHTO requirements for minimum SSD based on 85th percentile speeds of 36 MPH NB and 37 MPH SB; and ±6% approach grades at South Site Drive.
[b] Values measured with the assumption of vegetation clearing along the westerly side of Sohier Road.
[c] Values based on AASHTO recommendation for desirable ISD for posted speed of 35 MPH on Sohier Road and ±6% approach grade at South Site Drive.

As indicated in Table 4, although the available ISD do not meet AASHTO's recommendations for desirable ISD to avoid slowing of traffic on Sohier Road, all of the available SSD and ISD at the proposed site driveways will exceed AASHTO's recommendations for minimum sight distance for safe operation. The sight lines looking north at both site driveways are restricted by the

horizontal and vertical curvature of Sohier Road and vegetation along the roadway. However, the sight lines can be improved with the clearing of overgrown vegetation, and removal of select trees. Therefore, there will be adequate sight distance to allow vehicles on Sohier Road to safely stop for a vehicle exiting or turning into the driveways. It is recommended that any proposed plantings, vegetation, landscaping, and signing along the site frontage be kept low to the ground (no more than 3.0 feet above street level) or set back sufficiently from Sohier Road so as not to inhibit the available sight lines.

FUTURE CONDITIONS

To estimate the impact of site-generated traffic within the study area, existing traffic volumes were projected to the year 2025, representing a seven-year design horizon in accordance with state guidelines. The proposed development is expected to be completed and fully operational well within this time frame. Traffic volumes on the roadway network at that time will include existing traffic and new traffic due to normal traffic growth. Consideration of these factors resulted in the development of 2025 No-Build traffic volumes, which assume that the proposed development is not built. The incremental impacts of the proposed project may then be determined by adding site-generated traffic volumes (Build conditions) and making comparisons to the No-Build conditions.

Traffic Growth

To develop the 2025 No-Build (seven-year) forecast volumes, two components of traffic growth were considered. First, an annual growth percentage was determined. Based on historic traffic-volume counts provided by MassDOT, traffic volumes in the area have been increasing at a rate of approximately 0.8 percent per year.[4] Therefore, to provide a conservative (worse than expected) analysis scenario, a 1.0 percent compounded annual growth was assumed for the project area. The MassDOT adjustment 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 considered. Based on discussions with the Planning Department, the following projects were identified:

- 52 Dunham Road – Cummings Properties proposes a 54-acre mixed-use development at 52 Dunham Road in Beverly. The Applicant has submitted an Environmental Notification Form (ENF) to the Beverly Planning & Development Department (EEA #15820). The project consists of one existing building (Building #50), 500 surface parking spaces, two 5-story mixed-use buildings (Building #52) with a separate parking garage, a 118-unit

[4] *MassDOT Transportation Data Management System;* Beverly, MA.

assisted living building (Building #54), 25,000 sf building (Building #40), and 150,000 sf of manufacturing / storage / office space (Building #42).

- North Shore Crossing – CEA Beverly, LLC. proposes a 35,340 square foot (sf) supermarket, 27,000 sf retail/restaurant space, and 20,000 sf medical office space located between Brimbal Avenue and Sohier Road south of the connector roadway between the two roadways. Access and egress to the site is proposed via a right-in / right-out driveway at the Connector Road at the northerly edge of the site and a full access / right-turn only egress on Brimbal Avenue. A Traffic Impact and Access Study (TIAS) prepared by Ron Muller & Associates (RMA) dated August 25, 201 identifies the impacts on surrounding roads resulting from the proposed site-generated traffic. The study was peer reviewed by The Engineering Corp (TEC) through multiple comment letters November 14, 2014 and December 31, 2014 which were addressed by RMA.

- Soccer Etc. – This project consists of redeveloping the existing indoor sports complex, located just north of the project site, into a self-storage facility. The City of Beverly did not require a traffic study for this project as it was determined that the resulting traffic would decrease from the existing use.

Accordingly, traffic associated with the developments by others were included in the projection of future year traffic volumes. The resulting Specific Development by Others traffic volumes are shown for the weekday morning and weekday evening peak hours in Figure 3A and Figure 3B, respectively. The trip-generation data associated with these developments is provided in the Appendix.

Planned Roadway Improvements

The City recently applied for a MassWorks Grant (submitted August 10, 2018) to construct sidewalks along Tozer Road and Sohier Road in the vicinity of the project. The construction plan includes approximately 1,370 feet on Tozer Road and approximately 1,100 feet on Sohier Road that will improve pedestrian safety and mobility. Within the vicinity of the site, the project includes the following improvements:

- Construction of a 5-foot sidewalk with vertical granite curbing along the northerly side of Tozer Road from the intersection of Sohier Road to a point approximately 1,370 feet to the west to connect to the existing sidewalk;

- Construction of a 5-foot sidewalk with a variable width landscaped strip along the westerly side of Sohier Road for approximately 1,100 feet from Reservoir Road to Tozer Road;

- Reconstruct Tozer Road to provide a 12-foot travel lane with a 2-foot shoulder eastbound and an 11-foot travel lane with a 5-foot dedicated bike lane westbound;

- Reconstruct the Sohier Road / Tozer Road intersection to provide a more perpendicular Tozer Road eastbound approach. The proposed reconstruction will also include:
    - Adjusting roadway approach grade and providing a southbound slip, right-turn lane;
    - Construction of a raised concrete turning island with a semi-mountable rumble area for heavy vehicles;
    - Widening on Sohier Road northbound to provide an exclusive left-turn lane; and
    - Continuation of bicycle lanes along Tozer Road for approximately 1,800 feet from Sohier Road.

The Proponent, Harborlight Community Parners, has agreed to construct the sections of sidewalk along Sohier Road and Tozer Road along the site frontage as mitigation for the proposed residential development to improve pedestrian access to the site.

No-Build Conditions

The 2025 No-Build networks were accordingly developed by applying a compounded 1.0 percent annual traffic growth rate (7.2 percent over seven years) to the 2018 Existing traffic volumes and adding the traffic to be generated by the developments by others. The 2025 No-Build peak-hour traffic-flow networks are shown graphically on Figure 4 for the weekday AM and weekday PM peak hours.

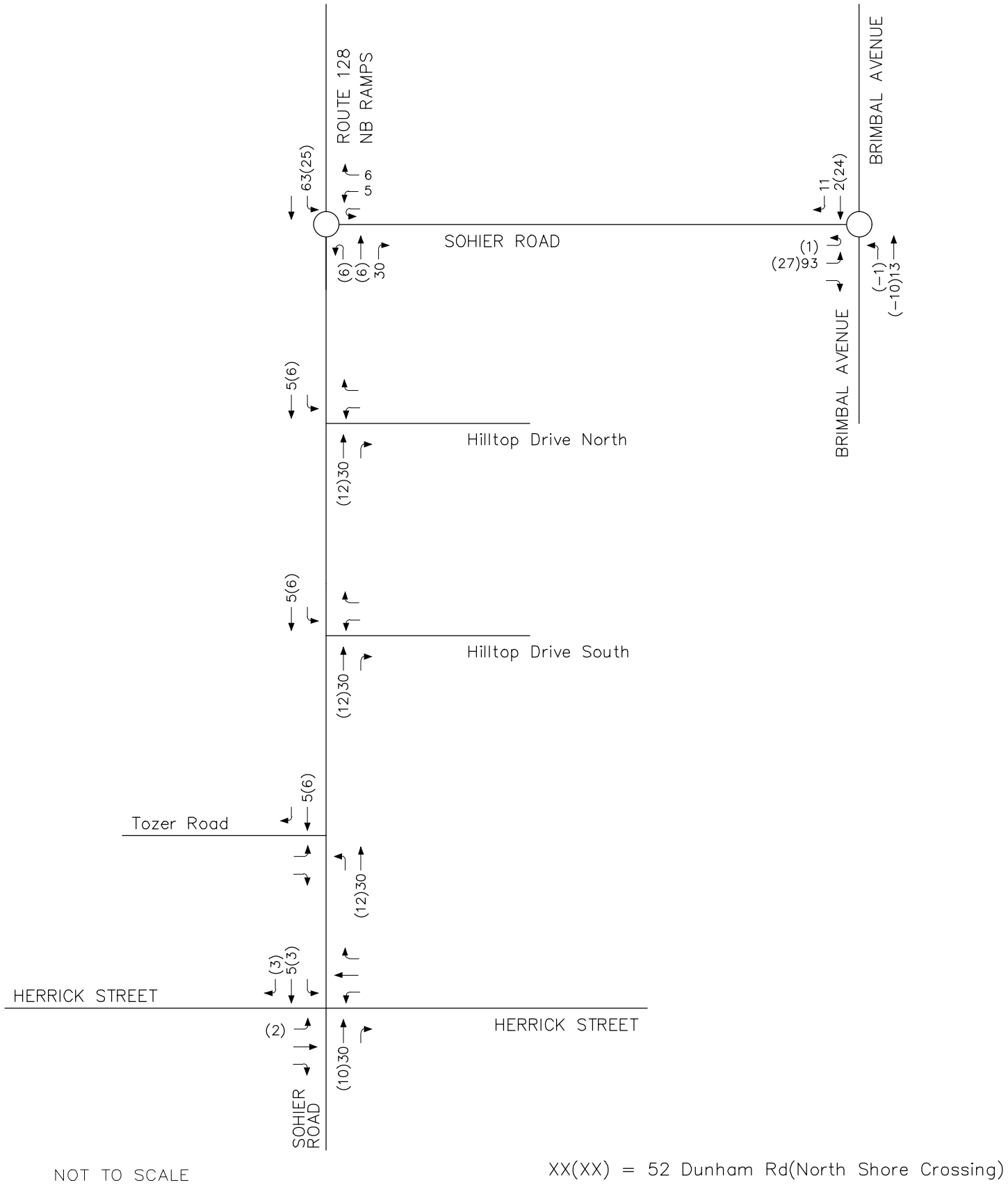


Figure 3A

Other Developments
Weekday AM
Peak Hour Traffic Volumes

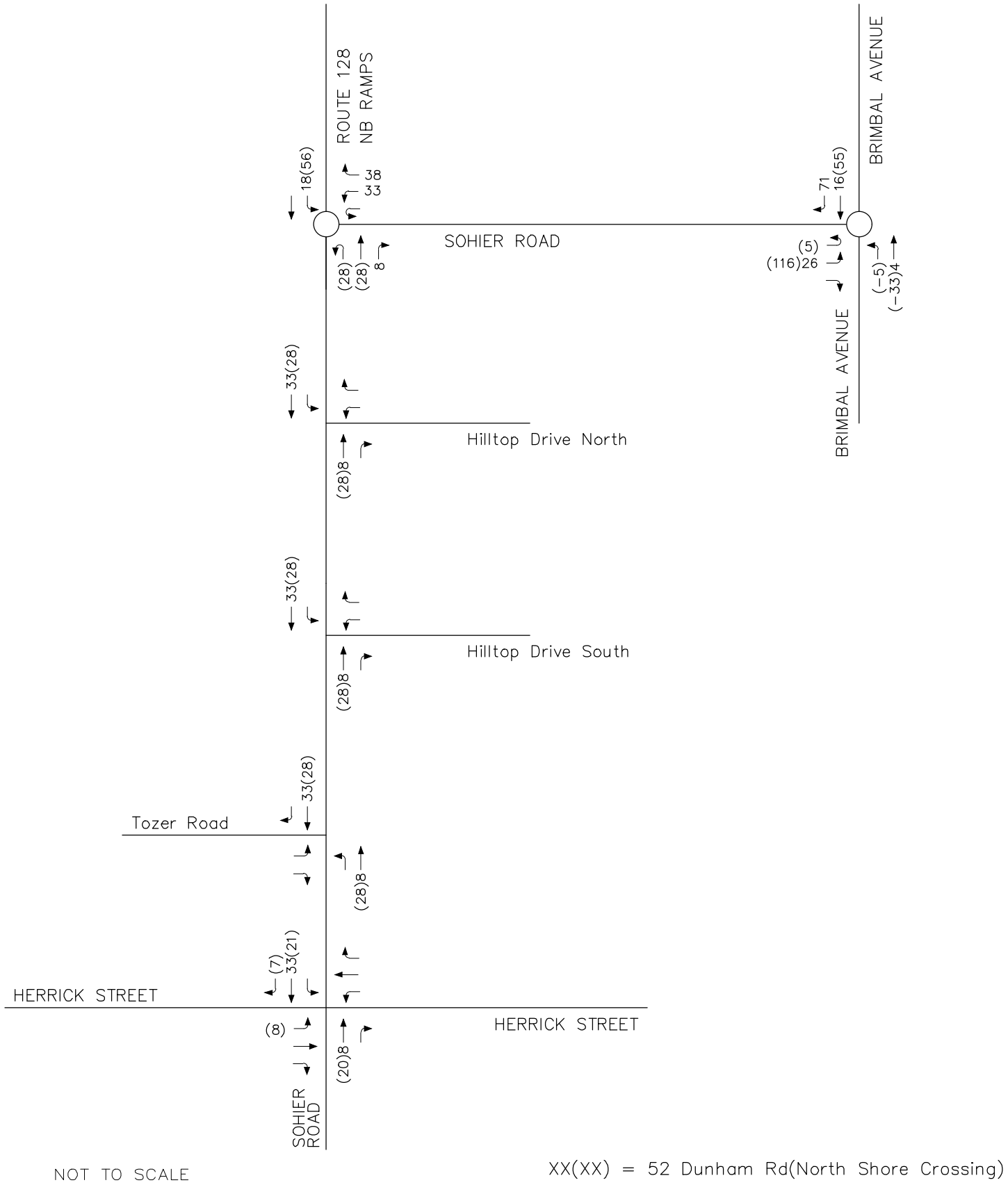
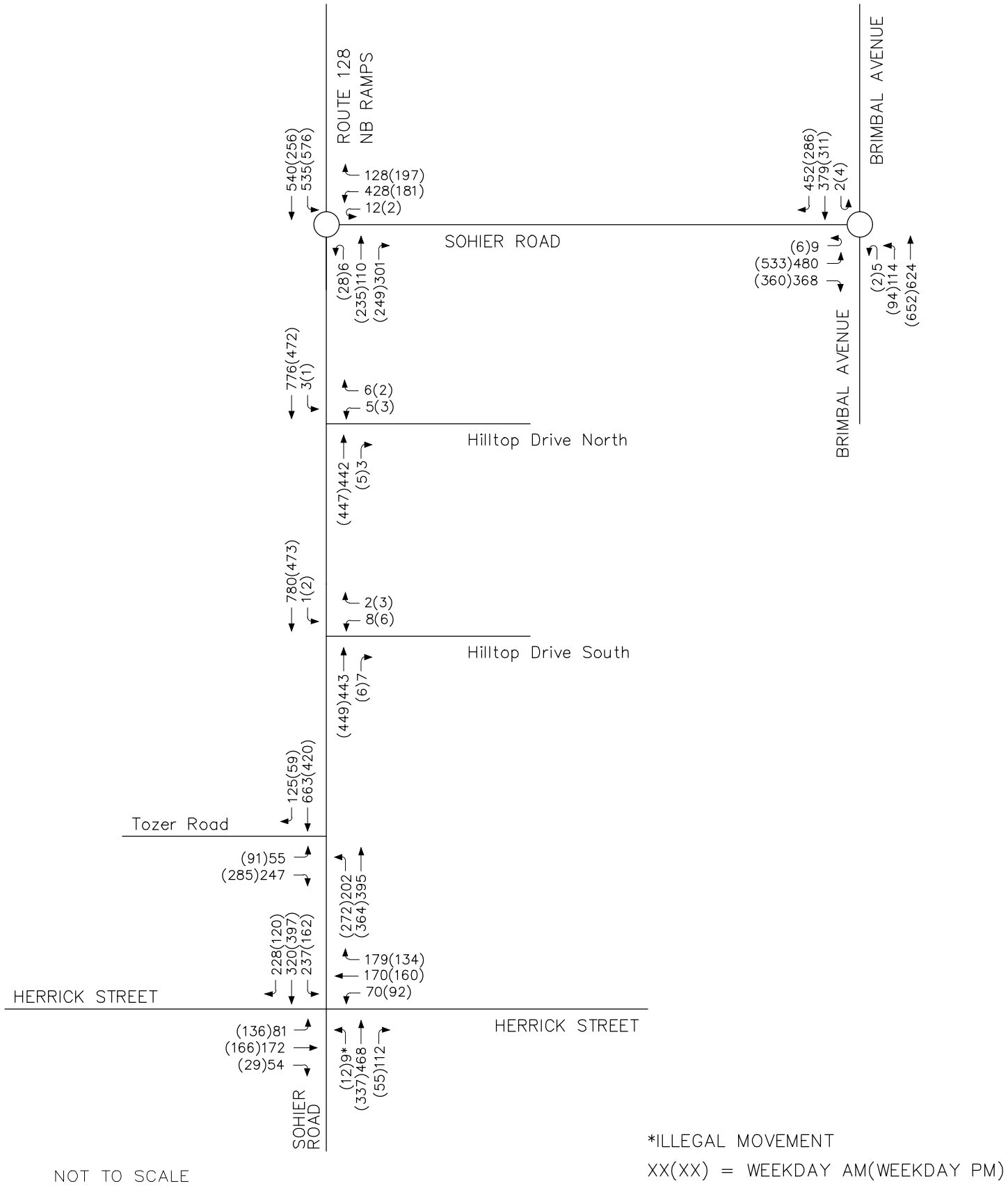


Figure 3B

Other Developments
Weekday PM
Peak Hour Traffic Volumes



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Engineering and Construction Services

Figure 4

2025 No-Build
Peak Hour Traffic Volumes

Trip Generation

As currently planned, the project consists of constructing a total of 75 residential apartment units and 5,000 SF of office space. To estimate the volume of traffic to be generated by the proposed development, trip generation rates published by the Institute of Transportation Engineers (ITE) *Trip Generation Manual*[5] were used for Land Use Code (LUC) 220 – Multifamily Housing (Low-Rise) and LUC 710 – General Office Building. All trip-generation data are provided in detail in the Appendix.

Transit Trips

The MBTA and CATOC provide bus service along Sohier Road and Herrick Street in the vicinity of the site. The availability of public transportation for access to the site is likely to reduce the number of passenger vehicle trips traveling to/from the site. However, to provide a conservative (worse-case) analysis condition, no credit was applied for the use of public transportation services to/from the site.

Walking and Bicycling Trips

The proposed residential development is located within close proximity to multiple commercial developments, a hospital, and multiple educational uses. In addition, a strong sidewalk network on the surrounding area roadways will provide pedestrian connections between the site and these establishments.

MassDOT's MassWorks Improvement Project will provide additional pedestrian and bicycle improvements including bike lanes, and ADA accessibility along Sohier Road and Tozer Road. Therefore, it is reasonable to expect that many of the trips to/from the site will be walking and bicycling trips, reducing the number of passenger vehicle trips to/from the site. To provide a conservative (worse-case) analysis condition, no credit was applied for walking or bicycling trips to/from the site.

Table 5 summarizes the results of the trip generation estimate and all trip generation calculations are provided in the Appendix.

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

Table 5
TRIP-GENERATION SUMMARY

Time Period/Direction	Residential Trips [a]	Office Trips [b]	Total Trips [c]
Weekday Daily	526	58	584
Weekday AM Peak Hour:			
Enter	8	5	13
Exit	28	1	29
Total	36	6	42
Weekday PM Peak Hour:			
Enter	29	1	30
Exit	17	6	23
Total	46	7	53

[a] Based on ITE rates for LUC 220 for 75 units.
[a] Based on ITE rates for LUC 710 for 5,000 SF.
[a] Sum of Residential Trips and Office Trips.

As shown in Table 5, the proposed development is expected to generate 42 *new* vehicle trips (13 entering and 29 exiting) during the weekday AM peak hour and 53 *new* vehicle trips (30 entering and 23 exiting) during the weekday PM peak hour.

Trip Distribution

Having estimated project-generated vehicle trips, the next step is to determine the distribution of project traffic and assign these trips to the local roadway network. The directional distribution of site-generated trips was based on 2009-2013 U.S. Census Journey-to-Work data for people who live within the City of Beverly. Table 6 summarizes the results of the trip distribution estimates. All trip distribution data are provided in the Appendix.

Table 6
TRIP DISTRIBUTION SUMMARY

To/From - Direction	Entering Traffic (%)	Exiting Traffic (%)
Sohier Road – South	25	25
Route 128 NB Ramps	35	10
Tozer Road - West	10	10
Herrick Street – West	10	10
Brimbal Avenue – North	15	40
Brimbal Avenue – South	5	5
Total	**100**	**100**

Build Traffic Volumes

Based on the traffic generation and distribution estimates for this project, the traffic volumes associated with the proposed development were assigned to the roadway network. The site-generated traffic networks are shown on Figure 5A and Figure 5B for the weekday AM and weekday PM peak hours, respectively. The site-generated traffic volumes were then combined with the 2025 No-Build traffic volumes to develop the 2025 Build peak-hour traffic-volume networks. The 2025 Build weekday AM and weekday PM peak hour traffic volumes are illustrated on Figure 6.

Traffic Increases

The proposed development will result in increases in traffic on the study area roadways. As shown on Figure 5A and Figure 5B, traffic-volume increases along study area roadways leading beyond the study area during the peak hours are expected to be in the range of 2 to 14 vehicles. These increases represent, on average, one additional vehicle approximately every four to 30 minutes during the peak hours.

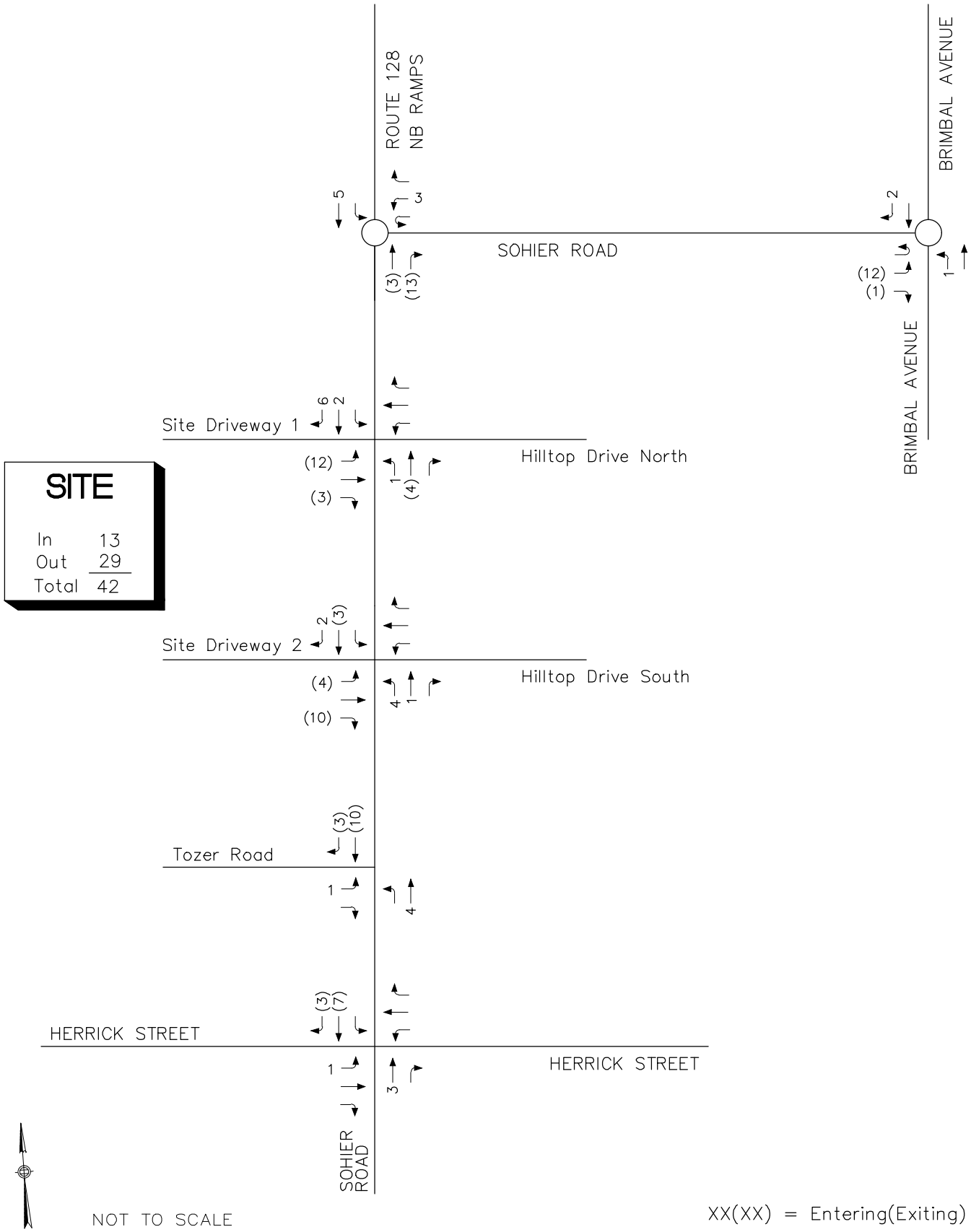


Figure 5A

Site-Generated Trips
Weekday AM
Peak Hour Traffic Volumes

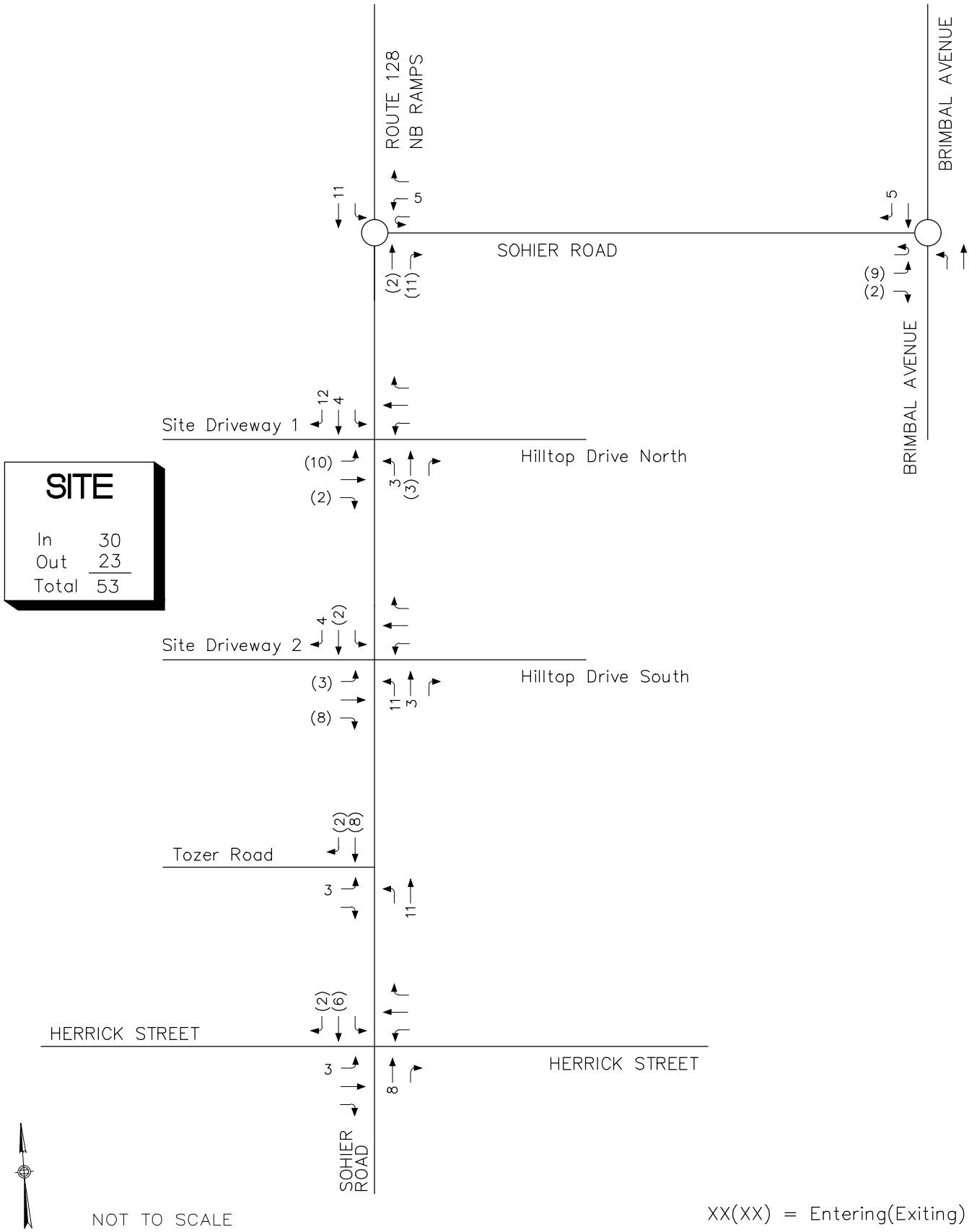
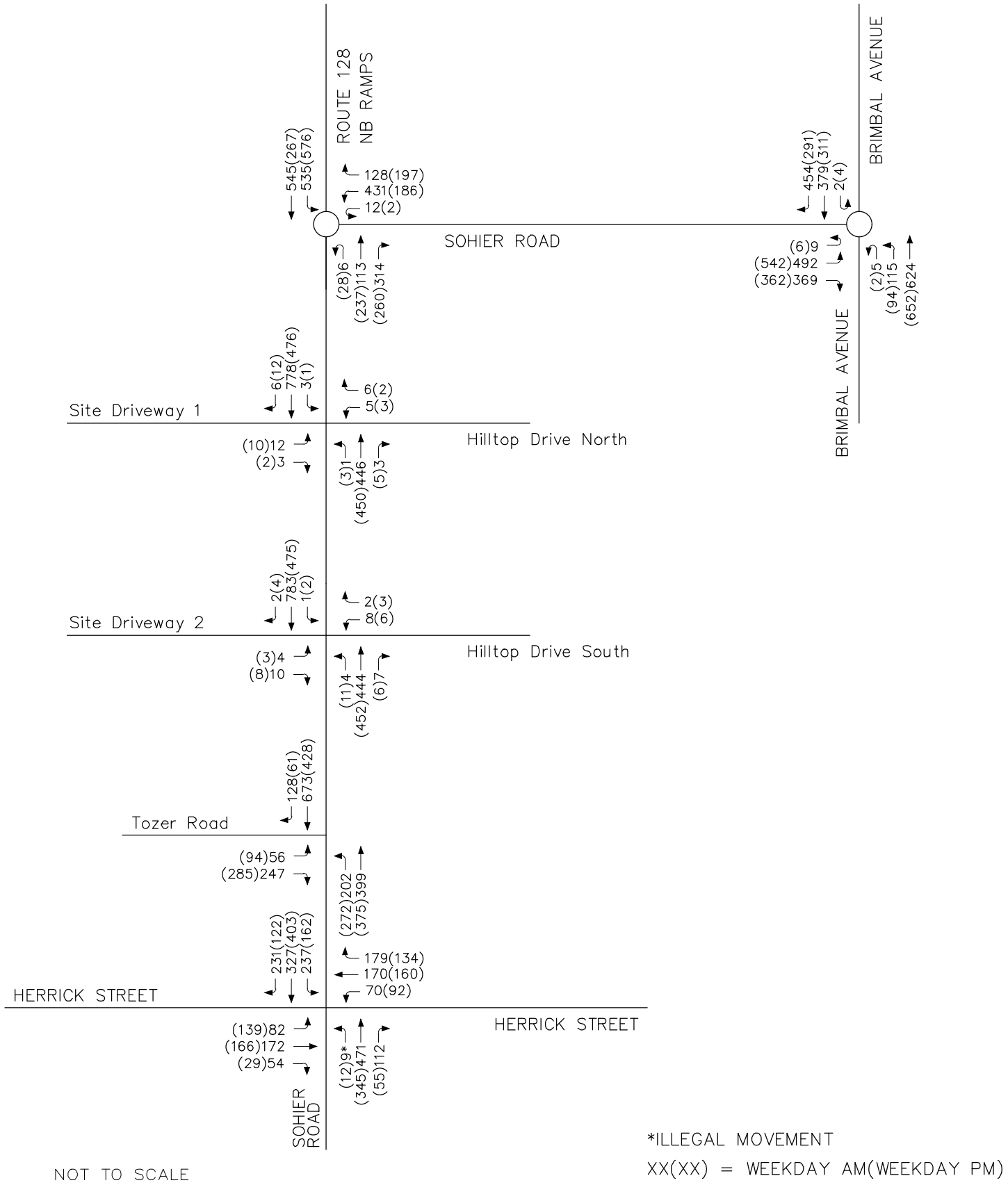


Figure 5B

Site-Generated Trips
Weekday PM
Peak Hour Traffic Volumes



Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 6

2025 Build
Peak Hour Traffic Volumes

CAPACITY AND QUEUE ANALYSIS

Capacity and queue analyses were conducted at all study area locations under 2018 Existing, 2025 No-Build, and 2025 Build traffic-volume conditions. The impact of site-generated traffic can be measured by comparing 2025 No-Build conditions to 2025 Build conditions. The 2025 Build with Improvements conditions reflect the geometric changes proposed at the Sohier Road / Tozer Road intersection as part of the MassWorks project.

Methodology

The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM) and is described in the Appendix of this report.[6] The TIAS utilizes the HCM 2000 methodology for signalized intersections due to the fact that *HCM 2010 analysis* does not analyze exclusive pedestrian phasing provided at the signalized study area intersections. MassDOT has recognized such inefficiencies with the HCM 2010 method and still accepts the HCM 2000 results as the most recently previously approved method. However, HCM 2010[7] is utilized for the unsignalized intersections within the study area to utilize the most recent analysis methodology. In addition, the capacity analysis methodology for the roundabout intersections were conducted using the SIDRA analysis software as the Highway Capacity Manual (HCM) 2010 methodology.

For signalized intersections, the maximum back of queue during a typical (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 vehicle 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). In this case, the queue length is a function of the capacity of the movement and the movement's degree of saturation.

Analysis Results

The results of the level-of-service (LOS) and queue analyses are shown in Table 7 and are discussed below. All analyses worksheets are provided in the Appendix.

[6] *Highway Capacity Manual 2000*; Transportation Research Board; Washington, D.C.; 2000.
[7] *Highway Capacity Manual 2010*; Transportation Research Board; Washington, D.C.; 2012.

Sohier Road / Brimbal Avenue

As shown in Table 7, the Brimbal Avenue northbound approach is anticipated to operate at LOS F during the weekday AM and PM peak hours, and the Brimball Avenue southbound approach is anticipated to operate at LOS during the weekday AM peak hour under 2025 No-Build and Build conditions. However, the additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than seven seconds per vehicle or increase queues by more than three vehicles. It is important to note that the North Shore Music Theater was hosting a showing of Mama Mia! on the evening that the TMCs were collected. Therefore, the results of the weekday PM peak hour analysis are likely to be conservative (worse than on non-event days).

Sohier Road / Route 128 Northbound Ramps – Exit 19

Although the Route 128 NB Ramps southbound approach is expected to operate at LOS F during the weekday AM peak hour under 2025 No-Build and Build conditions, all other movements at this intersection are anticipated to operate at acceptable levels of service (LOS D or better) under all analysis conditions. The additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than four seconds per vehicle or increase queues by more than one vehicle.

Sohier Road / Hilltop Drive North / Site Driveway North

All movements at this intersection are anticipated to operate at LOS D or better under all analysis conditions with queues not exceeding one vehicle. In addition, the volume-to-capacity (V/C) ratios will be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

Sohier Road / Hilltop Drive South / Site Driveway South

All movements at this intersection are anticipated to operate at LOS D or better under all analysis conditions with queues not exceeding one vehicle. In addition, the volume-to-capacity (V/C) ratios will be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

Sohier Road / Tozer Road

Traffic exiting Tozer Road currently experiences long delays and queues during the weekday AM and PM peak hours. The City of Beverly recently applied for a MassWorks Grant to reconstruct this intersection and provide additional turning lanes on Sohier Road. With these improvements and the additional traffic generated by the proposed residential development, delay exiting Tozer Road will be reduced by 18 to 32 percent, and queues will be reduced by 50 to 100 feet (2 to 4 vehicles) below 2025 No-Build conditions.

Sohier Road / Herrick Street

There are several movements at the Sohier Road / Herrick Street intersection that are anticipated to operate at LOS E or F during the weekday AM peak hour under 2025 No-Build and Build conditions. However, all movements at the intersection are anticipated to operate at LOS D or better during the weekday PM peak hour under all analysis conditions. The additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than four seconds per vehicle or increase queues by more than one vehicle.

Table 7
INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/Peak Hour/Lane Group	2018 Existing				2025 No-Build				2025 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Sohier Road / Brimbal Avenue												
Weekday AM:												
Sohier Road EB approach	0.59	14.7	B	--/90	0.86	26.0	D	--/249	0.88	27.5	D	--/274
Brimbal Avenue NB approach	0.98	45.6	E	--/510	1.27	132.5	F	--/>999	1.29	139.2	F	--/>999
Brimbal Avenue SB approach	0.95	38.9	E	--/611	1.08	72.7	F	--/>999	1.08	74.0	F	--/>999
Overall Intersection	**0.98**	**33.2**	**D**	**--/611**	**1.27**	**74.5**	**F**	**--/>999**	**1.29**	**77.3**	**F**	**--/>999**
Weekday PM:												
Sohier Road EB approach	0.44	9.3	A	--/55	0.72	15.7	C	--/158	0.73	16.1	C	--/165
Brimbal Avenue NB approach	0.89	30.8	D	--/316	1.10	78.9	F	--/853	1.11	82.3	F	--/888
Brimbal Avenue SB approach	0.45	8.9	A	--/63	0.64	13.1	B	--/121	0.65	13.3	B	--/123
Overall Intersection	**0.89**	**17.6**	**C**	**--/316**	**1.10**	**36.0**	**E**	**--/853**	**1.11**	**37.2**	**E**	**--/888**
Sohier Road / Route 128 NB Ramps												
Weekday AM:												
Sohier Road WB approach	0.53	9.4	A	--/81	0.59	10.7	B	--/97	0.60	10.9	B	--/99
Sohier Road NB approach	0.52	13.0	B	--/68	0.68	18.7	C	--/108	0.70	19.9	C	--/119
Route 128 NB Ramps SB approach	0.97	43.3	E	--/447	1.11	93.5	F	--/927	1.12	96.8	F	--/942
Overall Intersection	**0.97**	**27.5**	**D**	**--/447**	**1.11**	**55.5**	**F**	**--/927**	**1.12**	**57.3**	**F**	**--/942**
Weekday PM:												
Sohier Road WB approach	0.18	5.8	A	--/<25	0.25	6.9	A	--/25	0.25	6.9	A	--/25
Sohier Road NB approach	0.36	9.8	A	--/38	0.47	13.5	B	--/58	0.48	13.7	B	--/58
Route 128 NB Ramps SB approach	0.52	9.0	A	--/78	0.69	13.3	B	--/154	0.69	13.5	B	--/157
Overall Intersection	**0.52**	**8.6**	**A**	**--/78**	**0.69**	**12.0**	**B**	**--/154**	**0.69**	**12.1**	**B**	**--/157**

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] 50th/95th percentile queue length in feet per lane (assuming 25 feet per vehicle).

Table 7 (Continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY

	2018 Existing				2025 No-Build				2025 Build			
Intersection/Peak Hour/Lane Group	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Sohier Road / Hilltop Drive North / Site Driveway North												
Weekday AM:												
Site Driveway North EB approach	-	-	-	-	-	-	-	-	0.12	33.8	D	--/<25
Hilltop Drive North WB approach	0.05	19.0	C	--/<25	0.06	22.2	C	--/<25	0.06	23.3	C	--/<25
Sohier Road NB approach	-	-	-	-	-	-	-	-	0.00	9.6	A	--/<25
Sohier Road SB approach	0.00	8.3	A	--/<25	0.00	8.5	A	--/<25	0.00	8.4	A	--/<25
Weekday PM:												
Site Driveway North EB approach	-	-	-	-	-	-	-	-	0.06	21.2	C	--/<25
Hilltop Drive North WB approach	0.01	14.0	B	--/<25	0.02	16.0	C	--/<25	0.02	17.9	C	--/<25
Sohier Road NB approach	-	-	-	-	-	-	-	-	0.00	8.5	A	--/<25
Sohier Road SB approach	0.00	8.2	A	--/<25	0.00	8.4	A	--/<25	0.00	8.3	A	--/<25
Sohier Road / Hilltop Drive North / Site Driveway South												
Weekday AM:												
Site Driveway South EB approach	-	-	-	-	-	-	-	-	0.07	22.2	C	--/<25
Hilltop Drive South WB approach	0.07	26.3	D	--/<25	0.08	32.1	D	--/<25	0.08	34.7	D	--/<25
Sohier Road NB approach	-	-	-	-	-	-	-	-	0.01	9.7	A	--/<25
Sohier Road SB approach	0.00	8.4	A	--/<25	0.00	8.6	A	--/<25	0.00	8.4	A	--/<25
Weekday PM:												
Site Driveway South EB approach	-	-	-	-	-	-	-	-	0.03	14.9	B	--/<25
Hilltop Drive South WB approach	0.03	14.6	B	--/<25	0.03	17.0	C	--/<25	0.04	19.6	C	--/<25
Sohier Road NB approach	-	-	-	-	-	-	-	-	0.01	8.5	A	--/<25
Sohier Road SB approach	0.00	8.2	A	--/<25	0.00	8.4	A	--/<25	0.00	8.4	A	--/<25

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] 50th/95th percentile queue length in feet per lane (assuming 25 feet per vehicle).

Table 7 (continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY

	2018 Existing				2025 No-Build				2025 Build				2025 Build with Improvements			
Intersection/Peak Hour/Lane Group	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Sohier Road / Tozer Road																
Weekday AM:																
Tozer Road EB approach	1.42	251.8	F	--/460	1.94	485.9	F	--/650	>2.00	536.4	F	--/678	1.61	332.4	F	--/558
Sohier Avenue NB approach	0.27	11.2	B	--/28	0.31	12.0	B	--/33	0.32	12.1	B	--/35	-	-	-	-
Sohier Avenue NBL	-	-	-	-	-	-	-	-	-	-	-	-	0.28	10.9	B	--/28
Weekday PM:																
Tozer Road EB approach	1.24	166.1	F	--/443	1.79	405.9	F	--/713	1.88	448.8	F	--/748	1.63	332.9	F	--/658
Sohier Avenue NB approach	0.25	9.2	A	--/25	0.29	9.9	A	--/30	0.29	9.9	A	--/30	-	-	-	-
Sohier Avenue NBL	-	-	-	-	-	-	-	-	-	-	-	-	0.28	9.6	A	--/28
Sohier Road / Herrick Street																
Weekday AM:																
Herrick Street EB approach	0.89	50.5	D	175/325	1.02	82.7	F	202/379	1.03	85.5	F	204/384	Same as Build			
Herrick Street WB approach	0.99	70.2	E	222/468	1.09	99.3	F	253/523	1.09	99.3	F	253/523				
Sohier Road NB approach	0.89	44.6	D	254/571	1.02	74.0	E	313/696	1.03	75.3	E	315/701				
Sohier Road SBL	1.06	96.9	F	101/273	1.14	122.5	F	128/301	1.14	122.5	F	128/301				
Sohier Road SB T/R	0.75	22.9	C	222/399	0.82	27.0	C	260/461	0.84	28.0	C	268/484				
Overall Intersection	**1.04**	**51.2**	**D**	**--/--**	**1.12**	**73.3**	**E**	**--/--**	**1.12**	**74.1**	**E**	**--/--**				
Weekday PM:																
Herrick Street EB approach	0.72	26.8	C	122/374	0.88	42.8	D	157/445	0.90	46.6	D	163/452	Same as Build			
Herrick Street WB approach	0.81	31.4	C	158/419	0.92	48.4	D	195/471	0.93	49.6	D	199/471				
Sohier Road NB approach	0.79	38.1	D	149/307	0.83	40.3	D	180/370	0.84	40.6	D	186/398				
Sohier Road SBL	0.53	19.1	B	42/109	0.61	21.2	C	45/118	0.61	21.6	C	45/122				
Sohier Road SB T/R	0.61	20.2	C	137/312	0.71	22.5	C	182/408	0.71	22.7	C	186/418				
Overall Intersection	**0.77**	**27.9**	**C**	**--/--**	**0.86**	**36.2**	**D**	**--/--**	**0.86**	**37.3**	**D**	**--/--**				

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] 50th/95th percentile queue length in feet per lane (assuming 25 feet per vehicle).

PARKING ANALYSIS

City of Beverly Zoning Ordinances

Section 300-59 (E) of the City of Beverly Zoning Bylaws provides off-street parking supply requirements for various land uses. Based on the bylaws, multi-family residential uses within the Restricted Industrial District (IR) require 2.0 parking spaces per residential unit. In addition, one space per 250 SF of office space is also required for any business or professional office.

The project is proposed to consist of 75 residential units and 5,000 SF of office spave. Therefore, a total of 150 parking spaces would be required to satisfy the City's zoning bylaws for the residential units and 20 parking spaces for the office use, for a total of 170 parking spaces required on site. As part of the project, 150 parking spaces will be constructed to accommodate both the residential and office uses.

Based on Section 300-62 (A) of the bylaws, up to a 50% reduction the parking requirement is allowed for sharing of parking spaces between multiple uses provided that a study can show that the proposed uses experience peak parking demands at differing times of the day. The proposed residential units will experience their peak parking demand at night when the majority of residents are home, while the office use will experience its peak parking demand during the day. Therefore, a parking space used by a resident at night could be used by an office employee during the day. Based on ITE parking demand distribution rates contained in the *Parking Generation, 4th Edition*[8], when employees begin arriving at the office building around 8:00 AM, the residential units will be experiencing a parking demand of only 64 percent of the peak demand, leaving 36 percent of the parking spaces or 54 spaces available for use by the office employees. The residential units will experience a parking demand of approximately 30 to 44 percent of the peak demand throughout the rest of the day until 5:00 PM when the office employees begin leaving. Therefore, approximately 54 to 105 parking spaces will be available for use by office employees during regular hours of operation for the office use.

ITE Parking Demand

The ITE publication *Parking Generation, 4th Edition*[9] provides parking demand generation rates for various land uses for each hour of the day. The parking spaces provided on site will be available for use by either office employees or residents, who generate parking demand at different times of the day. The office employees will generate their highest parking demand during the day while

[8] *Parking Generation, 4th Edition*; Institute of Transportation Engineers; 2010.
[9] *Parking Generation, 4th Edition*; Institute of Transportation Engineers; 2010.

residents will generate a higher parking demand at night. Therefore parking spaces that are used by office employees during the day may be used by residents at night. GPI estimated the parking demand based on ITE parking generation rates for LUC 221 (Low/Mid-Rise Apartment) and LUC 701 (Office Building) for each hour and superimposed the parking demands to estimate a total demand for the entire site. Based on ITE data, a peak parking demand of 146 parking spaces is anticipated for a weekday and 104 spaces for a Saturday. Therefore, the available parking supply will be adequate to accommodate the peak parking demand.

CONCLUSIONS AND RECOMMENDATIONS

Existing and future conditions in the study area have been described, analyzed, and evaluated with respect to traffic operations and the impact of the proposed Anchor Point Residential Development. Conclusions of this effort are presented below.

- The site is located on the northwest corner of the Sohier Road / Tozer Road intersection. The site is currently vacant, and the project consists of constructing 75 residential apartment units, a community building and 5,000 square feet (SF) of office space on the second floor of the community building to house Harborlight Community Partners' corporate offices.

- Access and egress to the site will be provided via two full-access/egress driveways on Sohier Road approximately opposite the Hilltop Drive intersections.

- The proposed development is expected to generate 42 *new* vehicle trips (13 entering and 29 exiting) during the weekday AM peak hour and 53 *new* vehicle trips (30 entering and 23 exiting) during the weekday PM peak hour. Traffic-volume increases beyond the study area during the peak hours are expected to be in the range of 2 to 14 vehicles. These increases represent, on average, one additional vehicle approximately every four to 30 minutes during the peak hours.

- Although the available ISD do not meet AASHTO's recommendations for desirable ISD to avoid slowing of traffic on Sohier Road, all of the available SSD and ISD at the proposed site driveways will exceed AASHTO's recommendations for minimum sight distance for safe operation. The sight lines looking north at both site driveways are restricted by the horizontal and vertical curvature of Sohier Road and vegetation along the roadway. However, the sight lines can be improved with the clearing of overgrown vegetation, and removal of select trees. Therefore, there will be adequate sight distance to allow vehicles on Sohier Road to safely stop for a vehicle exiting or turning into the driveways. It is

recommended that any proposed plantings, vegetation, landscaping, and signing along the site frontage be kept low to the ground (no more than 3.0 feet above street level) or set back sufficiently from Sohier Road so as not to inhibit the available sight lines.

- Although the intersection of Sohier Road / Tozer Road experienced an average of only 3.4 collisions per year over the five-year study period, and a crash rate (0.56 c/mev) less than the statewide and District (0.57 c/mev) crash rate, the majority of the collisions (7 of 17) were angle collisions and over 70 percent (5 of 7) occurred during wet/icy roadways, indicating that poor drainage combined with steep slopes through the intersection may be contributing to the occurrence of collisions. In addition, approximately 35 percent (6 of 17) of collisions occurred during peak commute hours which suggests congestion may also be a contributing factor to collisions at this location. The City of Beverly has applied for a MassWorks Grant to construct geometric improvements at this intersection, which include realigning Tozer Road to a more T-type intersection and improving the grades turning to/from Tozer Road, as well as installing a southbound channelized right-turn lane and northbound left-turn lane on Sohier Road, which will improve the operations and safety of the intersection. The remaining intersections experienced fewer than three collisions per year and a crash rate below the statewide and District-wide averages, indicating a safety issue does not exist.

- The Brimbal Avenue northbound approach to the Sohier Road / Brimball Avenue roundabout is anticipated to operate at LOS F during the weekday AM and PM peak hours, and the Brimball Avenue southbound approach is anticipated to operate at LOS during the weekday AM peak hour under 2025 No-Build and Build conditions. However, the additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than seven seconds per vehicle or increase queues by more than three vehicles. It is important to note that the North Shore Music Theater was hosting a showing of Mama Mia! on the evening that the TMCs were collected. Therefore, the results of the weekday PM peak hour analysis are likely to be conservative (worse than on non-event days).

- Although the Route 128 NB Ramps southbound approach to the Sohier Road / Route 128 NB Ramps roundabout is expected to operate at LOS F during the weekday AM peak hour under 2025 No-Build and Build conditions, all other movements at this intersection are anticipated to operate at acceptable levels of service (LOS D or better) under all analysis conditions. The additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than four seconds per vehicle or increase queues by more than one vehicle.

- All movements at the site driveway intersections with Sohier Road are anticipated to operate at LOS D or better under all analysis conditions with queues not exceeding one

vehicle. In addition, the volume-to-capacity (V/C) ratios will be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

- Traffic exiting Tozer Road onto Sohier Road currently experiences long delays and queues during the weekday AM and PM peak hours. The City of Beverly recently applied for a MassWorks Grant to reconstruct this intersection and provide additional turning lanes on Sohier Road. With these improvements and the additional traffic generated by the proposed residential development, delay exiting Tozer Road will be reduced by 18 to 32 percent, and queues will be reduced by 50 to 100 feet (2 to 4 vehicles) below 2025 No-Build conditions.

- There are several movements at the Sohier Road / Herrick Street intersection that are anticipated to operate at LOS E or F during the weekday AM peak hour under 2025 No-Build and Build conditions. However, all movements at the intersection are anticipated to operate at LOS D or better during the weekday PM peak hour under all analysis conditions. The additional traffic generated by the proposed residential development is not expected to increase delay on any given movement by more than four seconds per vehicle or increase queues by more than one vehicle.

- Based on City of Beverly Zoning Bylaws, a total of 170 parking spaces are required to accommodate the proposed residential and office uses. However, the bylaws allow for sharing of parking spaces between uses that generate their peak parking demands at different times of the day. Based on ITE parking generation rates, the peak parking demand for the site is expected to be 146 parking spaces. Therefore, the proposed 150 parking spaces will be adequate to accommodate the peak parking demand generated by the project.

- The City of Beverly has applied for MassWorks Grant funding for construction of sidewalks along the westerly side of Sohier Road from Tozer Road to Reservoir Road, and along the northerly side of Tozer Road from Sohier Road 1,370 feet west to connect to the existing sidewalk. The Proponent has agreed to construct the portions of sidewalk along Tozer Road and Sohier Road along the site frontage, depending upon the City's ability to secure the grant.

Based on the findings above, the proposed development can be safely and efficiently accommodated along the existing roadway network. No project-specific mitigation is warranted based on the incremental impacts of the development.

APPENDIX

PUBLIC TRANSPORTATION DATA
TRAFFIC-COUNT DATA
TRAFFIC-VOLUME ADJUSTMENT DATA
MASSDOT CRASH RATE WORKSHEET
BACKGROUND DEVELOPMENT DATA
TRIP-GENERATION CALCULATIONS
CAPACITY ANALYSIS METHODOLOGY
CAPACITY AND QUEUE ANALYSIS WORKSHEETS
PARKING ANALYSIS WORKSHEETS

PUBLIC TRANSPORTATION DATA

NEWBURYPORT/ROCKPORT LINE effective May 21, 2018

Massachusetts Bay Transportation Authority

KEOLIS

Monday to Friday

Inbound to Boston

Zone	Station	Train #	100	150	152	102	154	104	156	106	158	160	192	108	162	110	164	112	166
			AM																
	Bikes Allowed																		
8	Rockport	♿	4:55	-	-	5:48	-	6:30	-	7:10	-	-	-	8:15	-	9:20	-	11:00	-
7	Gloucester	♿	5:02	-	-	5:55	-	6:37	-	7:17	-	-	-	8:22	-	9:27	-	11:07	-
7	West Gloucester	♿	5:08	-	-	6:01	-	6:43	-	7:23	-	-	-	8:28	-	f 9:33	-	f 11:13	-
6	Manchester	♿	5:15	-	-	6:08	-	6:50	-	7:30	-	-	-	8:35	-	9:40	-	11:20	-
5	Beverly Farms	♿	5:22	-	-	6:15	-	6:57	-	7:37	-	-	-	8:42	-	f 9:47	-	f 11:27	-
5	Prides Crossing		-	-	-	f 6:17	-	f 6:59	-	f 7:39	-	-	-	-	-	-	-	-	-
4	Montserrat	♿	5:28	-	-	6:22	-	7:04	-	7:44	-	-	-	8:48	-	f 9:53	-	f 11:33	-
8	Newburyport	♿	-	5:20	5:50	-	6:25	-	7:00	-	7:30	7:55	-	-	9:15	-	10:00	-	11:40
7	Rowley	♿	-	5:25	5:55	-	6:30	-	7:05	-	7:35	8:00	-	-	f 9:20	-	f 10:05	-	f 11:45
6	Ipswich	♿	-	5:31	6:02	-	6:37	-	7:12	-	7:42	8:07	-	-	9:26	-	10:11	-	11:51
5	Hamilton/Wenham	♿	-	5:37	6:08	-	6:43	-	7:18	-	7:48	8:13	-	-	f 9:32	-	f 10:17	-	f 11:57
5	North Beverly	♿	-	5:41	6:13	-	6:48	-	7:23	-	7:53	8:18	-	-	f 9:36	-	f 10:21	-	f 12:01
4	Beverly	♿	5:33	5:47	6:18	6:27	6:53	7:09	7:28	7:49	7:58	8:24	8:33	8:54	9:42	9:58	10:27	11:38	12:07
3	Salem	♿	5:37	5:51	6:22	6:31	6:57	7:13	7:33	7:53	8:02	8:28	8:37	8:58	9:46	10:02	10:31	11:42	12:11
3	Swampscott	♿	5:45	5:59	-	6:39	7:05	-	7:41	8:01	8:10	-	8:45	9:06	9:54	10:10	10:39	11:50	12:19
2	Lynn	♿	5:49	6:03	-	6:43	7:09	-	7:45	-	8:14	-	8:49	9:10	9:58	10:14	10:43	11:54	12:23
2	River Works		f 5:52	f 6:06	-	f 6:46	f 7:12	-	f 7:48	-	f 8:17	-	f 8:52	-	-	-	-	-	-
1A	Chelsea/Bellingham Sq		5:59	6:13	-	6:53	7:19	-	7:55	-	8:24	-	8:59	9:19	f 10:07	f 10:23	f 10:52	f 12:03	f 12:32
1A	North Station	♿	6:11	6:25	6:49	7:05	7:31	7:40	8:08	8:22	8:36	8:55	9:11	9:31	10:18	10:34	11:03	12:14	12:43

Zone	Station	Train #	114	168	116	170	118	172	194	120	174	122	176	124	178	126	180	128	182
			PM																
	Bikes Allowed																		
8	Rockport	♿	12:30	-	1:50	-	3:30	-	-	5:08	-	5:45	-	7:15	-	8:45	-	10:30	-
7	Gloucester	♿	12:37	-	1:57	-	3:37	-	-	5:15	-	5:52	-	7:22	-	8:52	-	10:37	-
7	West Gloucester	♿	f 12:43	-	f 2:03	-	f 3:43	-	-	f 5:21	-	f 5:58	-	f 7:28	-	f 8:58	-	f 10:43	-
6	Manchester	♿	12:50	-	2:10	-	3:50	-	-	5:28	-	6:05	-	7:35	-	9:05	-	10:50	-
5	Beverly Farms	♿	f 12:57	-	f 2:17	-	f 3:57	-	-	f 5:35	-	f 6:12	-	f 7:42	-	f 9:12	-	f 10:57	-
5	Prides Crossing		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Montserrat	♿	f 1:03	-	f 2:23	-	f 4:03	-	-	f 5:41	-	f 6:18	-	f 7:48	-	f 9:18	-	f 11:03	-
8	Newburyport	♿	-	1:10	-	2:55	-	4:42	-	-	5:48	-	7:08	-	8:10	-	9:25	-	11:03
7	Rowley	♿	-	f 1:15	-	f 3:00	-	f 4:47	-	-	f 5:53	-	f 7:13	-	f 8:15	-	f 9:30	-	f 11:08
6	Ipswich	♿	-	1:21	-	3:06	-	4:53	-	-	5:59	-	7:19	-	8:21	-	9:36	-	11:14
5	Hamilton/Wenham	♿	-	f 1:27	-	f 3:12	-	f 4:59	-	-	f 6:12	-	f 7:25	-	f 8:32	-	f 9:42	-	f 11:20
5	North Beverly	♿	-	f 1:31	-	f 3:16	-	f 5:03	-	-	-	-	f 7:29	-	f 8:36	-	f 9:46	-	f 11:24
4	Beverly	♿	1:08	1:37	2:28	3:22	4:08	5:10	5:35	5:46	6:20	6:25	7:35	7:53	8:42	9:23	9:52	11:08	11:30
3	Salem	♿	1:12	1:41	2:32	3:26	4:12	5:15	5:39	5:51	6:24	6:29	7:39	7:57	8:46	9:27	9:56	11:12	11:34
3	Swampscott	♿	1:20	1:49	2:40	3:34	4:20	5:23	-	6:00	-	6:37	7:47	8:05	8:54	9:35	10:04	11:20	-
2	Lynn	♿	1:24	1:53	2:44	3:38	4:24	5:27	-	6:04	-	6:42	7:51	8:09	8:58	9:39	10:08	11:24	-
2	River Works		-	-	f 2:47	f 3:41	f 4:27	f 5:30	-	f 6:07	-	f 6:46	-	-	-	f 9:42	-	f 11:27	-
1A	Chelsea/Bellingham Sq		f 1:33	f 2:02	f 2:54	f 3:48	f 4:34	f 5:37	-	f 6:14	-	f 6:53	f 8:00	f 8:18	f 9:07	f 9:49	f 10:17	f 11:34	-
1A	North Station	♿	1:44	2:13	3:05	3:59	4:45	5:50	6:05	6:25	6:50	7:04	8:11	8:29	9:18	10:00	10:28	11:45	12:00

Trains in purple box indicate peak period trains.

Monday to Friday

Outbound from Boston

Zone	Station	Train #	153	101	191	155	103	157	105	159	107	161	109	163	111	165
			AM										PM			
	Bikes Allowed															
1A	North Station	♿	6:26	6:39	7:08	7:37	7:50	8:10	8:35	9:40	10:35	11:20	12:00	1:20	1:50	3:15
1A	Chelsea/Bellingham Sq		-	f 6:50	f 7:19	f 7:49	f 8:02	f 8:22	f 8:47	f 9:52	f 10:47	f 11:32	f 12:12	f 1:32	f 2:02	3:27
2	River Works		-	f 6:57	f 7:26	-	f 8:09	f 8:29	-	-	-	-	-	-	f 2:09	f 3:35
2	Lynn	♿	-	-	7:28	7:57	8:11	8:31	8:55	10:00	10:55	11:40	12:20	1:40	2:11	3:37
3	Swampscott	♿	-	-	7:33	8:02	8:16	8:36	9:00	10:05	11:00	11:45	12:25	1:45	2:16	3:42
3	Salem	♿	6:52	7:07	7:40	8:09	8:23	8:43	9:07	10:12	11:07	11:52	12:32	1:52	2:23	3:49
4	Beverly	♿	6:56	7:11	7:44	8:13	8:27	8:47	9:11	10:16	11:11	11:56	12:36	1:56	2:27	3:54
5	North Beverly	♿	f 7:00	-	-	f 8:17	-	f 8:51	-	f 10:20	-	f 12:00	-	f 2:00	-	3:59
5	Hamilton/Wenham	♿	f 7:04	-	-	f 8:21	-	f 8:55	-	f 10:24	-	f 12:04	-	f 2:04	-	4:03
6	Ipswich	♿	7:15	-	-	8:27	-	9:03	-	10:30	-	12:10	-	2:10	-	4:09
7	Rowley	♿	-	-	-	f 8:32	-	f 9:08	-	f 10:35	-	f 12:15	-	f 2:15	-	4:15
8	Newburyport	♿	7:29	-	-	8:40	-	9:16	-	10:43	-	12:23	-	2:23	-	4:24
4	Montserrat	♿	-	f 7:15	-	-	f 8:31	-	f 9:15	-	f 11:15	-	f 12:40	-	f 2:31	-
5	Prides Crossing		-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Beverly Farms	♿	-	f 7:21	-	-	f 8:37	-	f 9:21	-	f 11:21	-	f 12:46	-	f 2:37	-
6	Manchester	♿	-	7:26	-	-	8:42	-	9:26	-	11:26	-	12:51	-	2:42	-
7	West Gloucester	♿	-	f 7:32	-	-	f 8:48	-	f 9:32	-	f 11:32	-	f 12:57	-	f 2:48	-
7	Gloucester	♿	-	7:39	-	-	8:55	-	9:39	-	11:39	-	1:04	-	2:55	-
8	Rockport	♿	-	7:47	-	-	9:03	-	9:47	-	11:47	-	1:12	-	3:03	-

Zone	Station	Train #	113	115	167	193	117	169	119	171	173	121	175	123	177	125	179	127	181	129	183
			PM											AM							
	Bikes Allowed																				
1A	North Station	♿	3:35	4:15	4:30	4:40	5:00	5:15	5:30	5:40	6:05	6:25	6:45	7:15	7:35	8:45	9:10	10:20	10:50	12:10	12:15
1A	Chelsea/Bellingham Sq		3:47	4:27	-	4:52	-	5:27	-	5:52	6:17	6:37	6:57	f 7:27	f 7:47	f 8:57	f 9:22	f 10:32	f 11:02	f 12:22	f 12:27
2	River Works		f 3:55	f 4:35	-	-	-	-	-	f 6:00	-	f 6:45	f 7:05	f 7:34	-	-	-	f 10:39	-	-	-
2	Lynn	♿	3:57	4:37	-	5:00	-	5:35	-	6:02	6:25	6:47	7:07	7:36	7:55	9:05	9:30	10:41	11:10	12:30	12:35
3	Swampscott	♿	4:02	4:42	-	5:05	-	5:40	-	6:07	6:30	6:52	7:12	7:41	8:00	9:10	9:35	10:46	11:15	12:35	12:40
3	Salem	♿	4:09	4:49	4:56	5:12	5:26	5:47	5:56	6:14	6:37	6:59	7:19	7:48	8:07	9:17	9:42	10:53	11:22	12:42	12:47
4	Beverly	♿	4:13	4:53	5:00	5:16	5:30	5:51	6:00	6:18	6:41	7:03	7:24	7:52	8:11	9:21	9:46	10:57	11:26	12:46	12:51
5	North Beverly	♿	-	-	5:06	-	-	5:56	-	6:23	6:46	-	7:30	-	8:16	-	f 9:50	-	f 11:30	-	f 12:55
5	Hamilton/Wenham	♿	-	-	5:10	-	-	6:00	-	6:27	6:50	-	7:34	-	8:21	-	f 9:54	-	f 11:34	-	f 12:59
6	Ipswich	♿	-	-	5:16	-	-	6:06	-	6:33	6:56	-	7:40	-	8:27	-	10:00	-	11:40	-	1:05
7	Rowley	♿	-	-	5:22	-	-	6:12	-	6:39	7:02	-	7:46	-	f 8:32	-	f 10:05	-	f 11:45	-	f 1:10
8	Newburyport	♿	-	-	5:31	-	-	6:20	-	6:48	7:10	-	7:54	-	8:40	-	10:13	-	11:53	-	1:18
4	Montserrat	♿	4:17	4:57	-	-	5:34	-	6:04	-	-	7:07	-	f 7:56	-	f 9:25	-	f 11:01	-	f 12:50	-
5	Prides Crossing		f 4:21	-	-	-	f 5:38	-	f 6:08	-	-	f 7:11	-	f 8:00	-	-	-	-	-	-	-
5	Beverly Farms	♿	4:25	5:03	-	-	5:42	-	6:12	-	-	7:15	-	f 8:04	-	f 9:31	-	f 11:07	-	f 12:56	-
6	Manchester	♿	4:30	5:08	-	-	5:47	-	6:18	-	-	7:20	-	8:09	-	9:36	-	11:12	-	1:01	-
7	West Gloucester	♿	4:36	5:15	-	-	5:53	-	6:24	-	-	7:26	-	f 8:15	-	f 9:42	-	f 11:18	-	f 1:07	-
7	Gloucester	♿	4:44	5:22	-	-	6:01	-	6:32	-	-	7:34	-	8:22	-	9:49	-	11:25	-	1:14	-
8	Rockport	♿	4:53	5:32	-	-	6:10	-	6:42	-	-	7:43	-	8:30	-	9:57	-	11:33	-	1:22	-

Trains in purple box indicate peak period trains.

Saturday & Sunday

Inbound to Boston

Zone	Station	Saturday Train # / Sunday Train #	1100 / 2100	1150 / 2150	1102 / 2102	1152 / 2152	1104 / 2104	1154 / 2154	1106 / 2106	1156 / 2156	1108 / 2108	1158 / 2158	1110 / 2110	1160 / 2160	1112 / 2112
			AM				PM								
	Bikes Allowed														
8	Rockport	♿	7:00	-	10:00	-	12:00	-	2:00	-	5:10	-	7:30	-	10:00
7	Gloucester	♿	7:07	-	10:07	-	12:07	-	2:07	-	5:17	-	7:37	-	10:07
7	West Gloucester	♿	f 7:13	-	f 10:13	-	f 12:13	-	f 2:13	-	f 5:23	-	f 7:43	-	f 10:13
6	Manchester	♿	7:20	-	10:20	-	12:20	-	2:20	-	5:30	-	7:50	-	10:20
5	Beverly Farms	♿	f 7:25	-	f 10:25	-	f 12:25	-	f 2:25	-	f 5:35	-	f 7:55	-	f 10:25
4	Montserrat	♿	f 7:31	-	f 10:31	-	f 12:31	-	f 2:31	-	f 5:41	-	f 8:01	-	f 10:31
8	Newburyport	♿	-	8:52	-	10:52	-	12:52	-	2:52	-	5:52	-	9:00	-
7	Rowley	♿	-	8:58	-	10:58	-	12:58	-	2:58	-	5:58	-	9:06	-
6	Ipswich	♿	-	9:05	-	11:05	-	1:05	-	3:05	-	6:05	-	9:13	-
5	Hamilton/Wenham	♿	-	9:12	-	11:12	-	1:12	-	3:12	-	6:12	-	9:20	-
5	North Beverly	♿	-	f 9:15	-	f 11:15	-	f 1:15	-	f 3:15	-	f 6:15	-	f 9:23	-
4	Beverly	♿	7:36	9:20	10:36	11:20	12:36	1:20	2:36	3:20	5:46	6:20	8:06	9:28	10:36
3	Salem	♿	7:40	9:24	10:40	11:24	12:40	1:24	2:40	3:24	5:50	6:24	8:10	9:32	10:40
3	Swampscott	♿	7:46	9:30	10:46	11:30	12:46	1:30	2:46	3:30	5:56	6:30	8:16	9:38	10:46
2	Lynn	♿	7:50	9:34	10:50	11:34	12:50	1:34	2:50	3:34	6:00	6:34	8:20	9:42	10:50
1A	Chelsea/Bellingham Sq		f 7:59	f 9:44	f 10:59	f 11:44	f 12:59	f 1:44	f 2:59	f 3:44	f 6:09	f 6:44	f 8:29	f 9:52	f 10:59
1A	North Station	♿	8:11	9:56	11:11	11:56	1:11	1:56	3:11	3:56	6:21	6:56	8:41	10:04	11:11

Saturday & Sunday

Outbound from Boston

Zone	Station	Saturday Train # / Sunday Train #	1101 / 2101	1151 / 2151	1103 / 2103	1153 / 2153	1105 / 2105	1155 / 2155	1107 / 2107	1157 / 2157	1109 / 2109	1159 / 2159	1111 / 2111	1161 / 2161	1113 / 2113
			AM				PM								
	Bikes Allowed														
1A	North Station	♿	8:30	9:30	10:20	11:30	12:20	1:30	2:20	4:30	5:30	7:15	8:30	10:20	11:30
1A	Chelsea/Bellingham Sq		f 8:41	f 9:41	f 10:31	f 11:41	f 12:31	f 1:41	f 2:31	f 4:41	f 5:41	f 7:26	f 8:41	f 10:31	f 11:41
2	Lynn	♿	8:51	9:51	10:41	11:51	12:41	1:51	2:41	4:51	5:51	7:36	8:51	10:41	11:51
3	Swampscott	♿	8:54	9:54	10:44	11:54	12:44	1:54	2:44	4:54	5:54	7:39	8:54	10:44	11:54
3	Salem	♿	9:01	10:01	10:51	12:01	12:51	2:01	2:51	5:01	6:01	7:46	9:01	10:51	12:01
4	Beverly	♿	9:05	10:05	10:55	12:05	12:55	2:05	2:55	5:05	6:05	7:50	9:05	10:55	12:05
5	North Beverly	♿	-	f 10:09	-	f 12:09	-	f 2:09	-	f 5:09	-	f 7:54	-	f 10:59	-
5	Hamilton/Wenham	♿	-	10:13	-	12:13	-	2:13	-	5:13	-	7:58	-	11:03	-
6	Ipswich	♿	-	10:20	-	12:20	-	2:20	-	5:20	-	8:05	-	11:10	-
7	Rowley	♿	-	10:27	-	12:27	-	2:27	-	5:27	-	8:12	-	11:17	-
8	Newburyport	♿	-	10:34	-	12:34	-	2:34	-	5:34	-	8:19	-	11:24	-
4	Montserrat	♿	f 9:09	-	f 10:59	-	f 12:59	-	f 2:59	-	f 6:09	-	f 9:09	-	f 12:09
5	Beverly Farms	♿	f 9:14	-	f 11:04	-	f 1:04	-	f 3:04	-	f 6:14	-	f 9:14	-	f 12:14
6	Manchester	♿	9:20	-	11:10	-	1:10	-	3:10	-	6:20	-	9:20	-	12:20
7	West Gloucester	♿	f 9:27	-	f 11:17	-	f 1:17	-	f 3:17	-	f 6:27	-	f 9:27	-	f 12:27
7	Gloucester	♿	9:34	-	11:24	-	1:24	-	3:24	-	6:34	-	9:34	-	12:34
8	Rockport	♿	9:42	-	11:32	-	1:32	-	3:32	-	6:42	-	9:42	-	12:42

Keep in Mind:

This schedule will be effective from May 21, 2018 and will replace the schedule of November 20, 2017.

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

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

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

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

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

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

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

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

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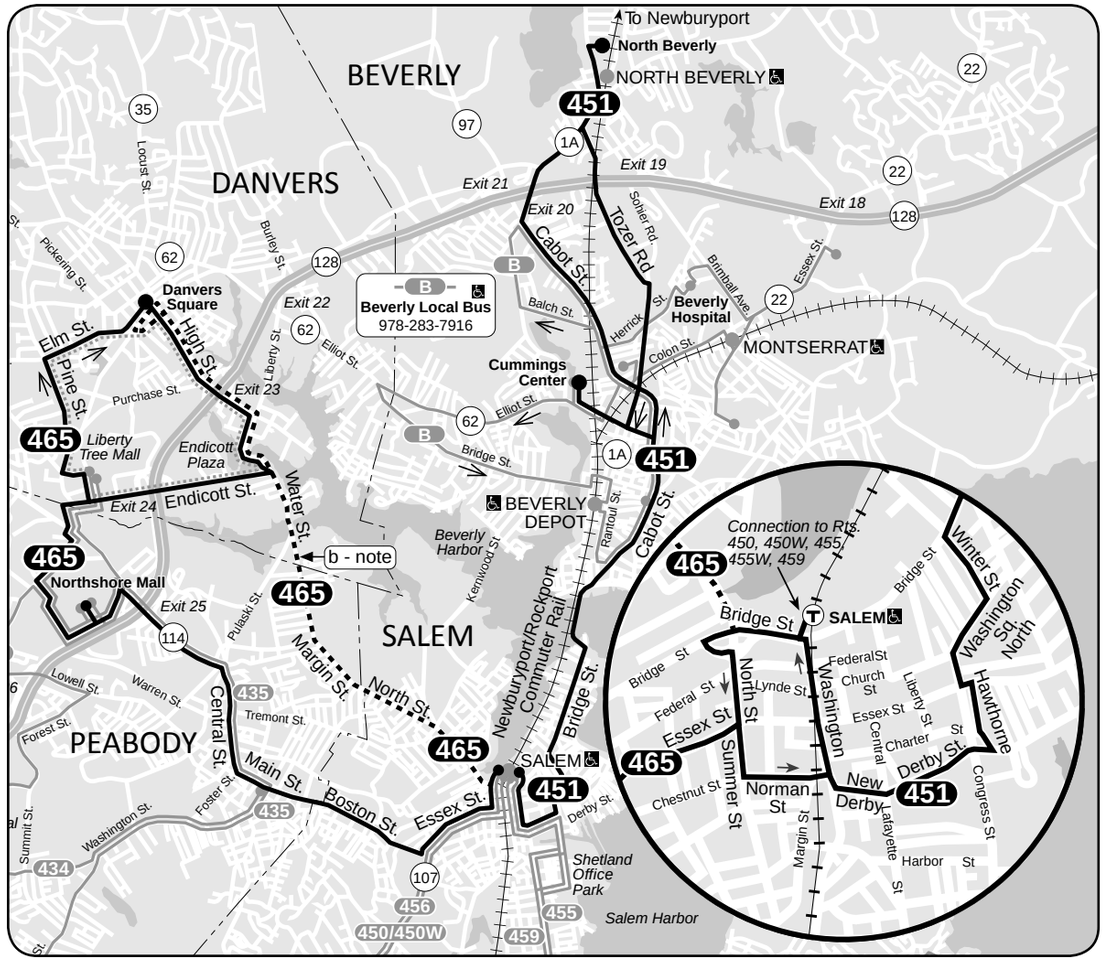
Route 451 North Beverly - Salem Depot
Route 465 Danvers Square - Salem Depot



451•465

Summer June 24, 2018 - September 1, 2018

451 North Beverly-Salem Depot
465 Danvers Square-Salem Depot

Serving
- Beverly Plaza
- North Shore Community College
- Beverly Square
- Cummings Center
- Liberty Tree Mall
- North Shore Mall
- Newburyport/Rockport Commuter Rail

Massachusetts Bay Transportation Authority
massDOT Massachusetts Department of Transportation

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451 Weekday

Inbound			Outbound		
Leave North Beverly	Arrive Cummings Center	Arrive Salem Depot	Leave Salem Depot	Arrive Cummings Center	Arrive North Beverly
6:50A	6:59A	7:19A	a 6:00A	6:24A	6:42A
8:00	8:12	8:35	a 7:10	7:36	7:54
9:00	9:11	9:32	a 8:20	8:41	8:59
a 3:20P	**3:31P**	**3:53P**	**2:30P**	**2:55P**	**3:16P**
a 4:30	**4:40**	**5:03**	**3:40**	**4:03**	**4:25**
a 5:20	**5:31**	**5:55**	**4:25**	**4:46**	**5:12**
a 6:15	**6:25**	**6:43**	**5:25**	**5:47**	**6:05**
a 7:10	**7:18**	**7:39**	**6:30**	**6:48**	**7:05**

a - Via Tozer Road.

No Route 451 Service on Saturday or Sunday.

465 Weekday

Inbound					Outbound				
Leave Danvers Square	Arrive Liberty Tree	Arrive N. Shore Mall	Arrive Peabody Square	Arrive Salem Depot	Leave Salem Depot	Arrive Peabody Square	Arrive N. Shore Mall	Arrive Liberty Tree	Arrive Danvers Square
b 6:50A	.....	.....	.....	7:04A	7:25A	7:39A	7:46A	7:55A	8:03A
b 8:10	.....	.....	.....	8:28	8:40	9:01	9:09	9:20	9:26
9:35	9:46A	9:57A	10:03A	10:18	9:40	9:56	10:04	10:15	10:21
10:35	10:46	10:57	11:03	11:18	10:30	10:44	10:51	11:01	11:10
11:25	11:36	11:47	11:53	**12:08P**	11:30	11:48	11:56	**12:09P**	**12:16P**
12:25P	**12:36P**	**12:47P**	**12:53P**	**1:12P**	**12:30P**	**12:48P**	**12:56P**	**1:09P**	**1:16P**
1:25	**1:36**	**1:49**	**1:53**	**2:12**	**1:30**	**1:48**	**1:56**	**2:09**	**2:16**
2:25	**2:37**	**2:52**	**3:01**	**3:19**	**2:30**	**2:45**	**2:57**	**3:06**	**3:18**
3:25	**3:37**	**3:50**	**3:58**	**4:15**	**3:30**	**3:45**	**3:56**	**4:06**	**4:16**
4:25	**4:37**	**4:50**	**4:58**	**5:15**	**4:35**	**4:50**	**5:01**	**5:11**	**5:21**
5:35	**5:47**	**6:00**	**6:06**	**6:19**	**bm 6:00**	**.....**	**.....**	**.....**	**6:16**
6:25	**6:39**	**6:51**	**6:57**	**7:07**	**bm 6:50**	**.....**	**.....**	**.....**	**7:04**
7:15	**7:29**	**7:42**	**7:46**	**7:56**					

b - Via Water, Margin and North Streets
m - Passengers may remain on bus at Danvers Sq. for service to malls.

465 Saturday

Inbound					Outbound				
Leave Danvers Square	Arrive Liberty Tree	Arrive N. Shore Mall	Arrive Peabody Square	Arrive Salem Depot	Leave Salem Depot	Arrive Peabody Square	Arrive N. Shore Mall	Arrive Liberty Tree	Arrive Danvers Square
9:00A	9:08A	9:18A	9:23A	9:34A	8:05A	8:12A	8:18A	8:28A	8:36A
11:00	11:10	11:22	11:27	11:43	10:05	10:13	10:21	10:32	10:40
1:00P	**1:13P**	**1:25P**	**1:31P**	**1:50P**	**12:05P**	**12:14P**	**12:23P**	**12:35P**	**12:44P**
3:00	**3:13**	**3:26**	**3:32**	**3:49**	**2:05**	**2:14**	**2:23**	**2:35**	**2:44**
5:00	**5:12**	**5:24**	**5:29**	**5:46**	**4:05**	**4:13**	**4:21**	**4:32**	**4:42**
7:00	**7:10**	**7:22**	**7:27**	**7:39**	**6:05**	**6:12**	**6:20**	**6:31**	**6:39**

No Route 465 service on Sunday

All buses are accessible to persons with disabilities

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

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

Note: For weekday service to Danvers Square after 7:00 PM please refer to Route 435 schedule card.

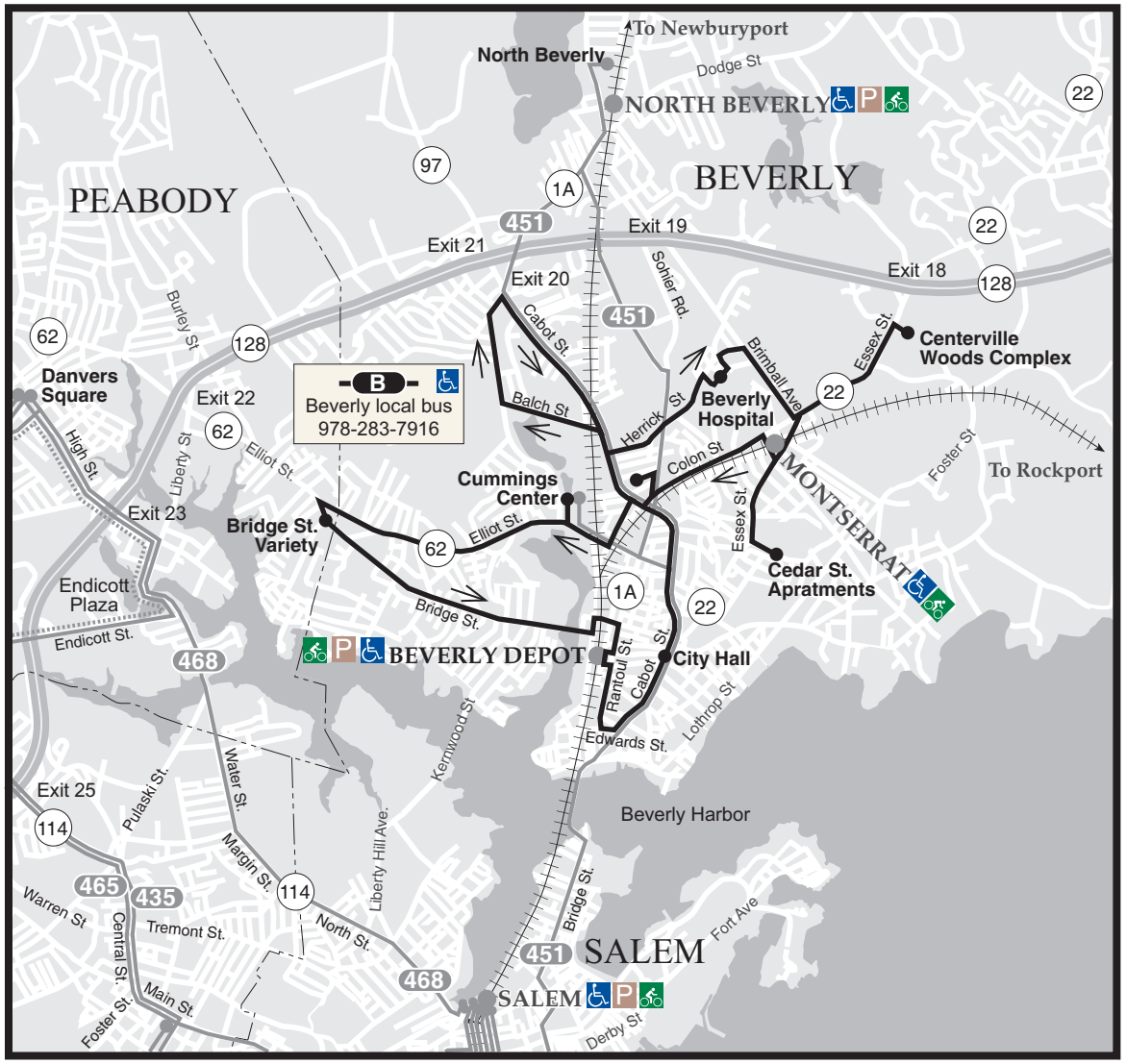
Summer 2018 Holidays
July 4: see Sunday September 3: see Sunday

Route 451
North Beverly-Salem Depot

Route 465
Danvers Square-Salem Depot

BEVERLY SHUTTLE BUS

Bus will stop at any safe location along the route. Wave at the driver if you wish to board.



FALL 2013

BEVERLY SHUTTLE BUS

This service is funded by the City of Beverly and the Massachusetts Bay Transportation Authority and is operated by Cape Ann Transportation Operating Company (CATOC) under contract to the City of Beverly.

OPERATED BY CATOC

CATOC
For schedule information: (978) 283-7916
For comments: (978) 921-6000 x 2343
www.canntran.com

MBTA General Info 617-222-3200

Monday-Friday First Run

Bridge St. Variety Store	6:45
Bridge St. and Kernwood Ave.	6:47
Beverly Depot (East Side) (meets 6:58 train)	6:55
Pleasant St. and Cabot St.	7:07
Beverly City Hall	7:10
Elliott St. and Cabot	7:13
Beverly Depot (East Side meets 7:20 train)	7:18
Bridge St. and County Way	7:28
County Way and Elliot St.	7:29
Elliot St. and Beckford St.	7:32
Herrick St. and Sohier Rd.	7:35
Gloucester Crossing	7:36
Rantoul St. and Elliot St.	7:40
Elliot St. and Bridge St.	7:45

Monday-Friday Daily Schedule

Bridge Street Variety Store	7:45	8:45	9:45	10:45	11:45	12:45	2:45	3:45	4:45
Beverly Depot	7:52	8:52	9:52	10:52	11:52	12:52	2:52	3:52	4:52
City Hall	8:00	9:00	10:00	11:00	12:00	1:00	3:00	4:00	5:00
Garden City Apartments	8:07	9:07	10:07	11:07	12:07		3:07	4:07	
Balch Street Apartments	8:12	9:12	10:12	11:12	12:12	2:12	3:12	4:12	
Beverly Hospital (Dr. on request)	8:20	9:20	10:20	11:20	12:20	2:20	3:20	4:20	
Turtle Creek Apartments	8:24	9:24	10:24	11:24	12:24	2:24	3:24	4:24	
Centerville Woods Apartments	8:25	9:25	10:25	11:25	12:25	2:25	3:25	4:25	
YMCA	8:26	9:26	10:26	11:26	12:26	2:26	3:26	4:26	
Gloucester Crossing	8:35	9:35	10:35	11:35	12:35	2:35	3:35	4:35	
Cummings Center	8:39	9:39	10:39	11:39	12:39	2:39	3:39	4:39	
Stop & Shop	8:41	9:41	10:41	11:41	12:41	2:41	3:41	4:41	
Bridge Street Variety Store	8:45	9:45	10:45	11:45	12:45	2:45	3:45	4:45	

Saturday Schedule

City Hall	7:00	8:30	10:00	12:00	1:00	2:10	3:20
Cummings Center	7:04	8:34	10:04	12:04	1:04	2:14	3:24
Stop & Shop	7:06	8:36	10:06	12:06	1:06	2:16	3:26
Apple Village (end of Manor Rd.)	7:18	8:48	10:18				
North Beverly Plaza (Shaw's)	7:24	8:54	10:24	12:17	1:24	2:34	3:44
Balch Street Apartments	7:30	9:00	10:30	12:23	1:30	2:40	3:50
Herrick St. Apartments	7:32	9:02	10:32	12:25	1:32	2:42	3:52
Beverly Hospital (Drs. Office on request)	7:34	9:04	10:34	12:27	1:34	2:44	3:54
Turtle Creek Apartments	7:41	9:11	10:41	12:34	1:41	2:51	4:01
Centerville Woods Apartments	7:44	9:14	10:44	12:37	1:44	2:54	4:04
Hale Street & Hart Street	7:55	9:25	10:55				
Hale Street & Corning Street	8:03	9:33	11:03				
Cedar Street Apartments	8:10	9:40	11:10	12:40	1:47	2:57	4:07
Garden City Apartments	8:17	9:47	11:17	12:47	1:54	3:04	4:14
Gloucester Crossing (Rite - Aid)	8:20	9:50	11:20	12:50	1:57	3:07	4:17
527 Rantoul Street & Elliot Street (CVS)	8:22	9:52	11:22	12:52	2:00	3:10	4:20
Rantoul Street & Federal Street (Gloria Foods)	8:24	9:54	11:24	12:54	2:02	3:12	4:22
Beverly Depot	8:26	9:56	11:26	12:56	2:05	3:15	4:25
Cabot Street & Edwards Street (Wards)	8:28	9:58	11:28	12:58	2:07	3:17	4:27
City Hall	8:30	10:00	11:30	1:00	2:10	3:20	4:30

Fall Schedule Effective 8/31/2013

MBTA Commuter Rail makes regular stops at Beverly Depot between 5:39AM (Inbound) and 12:42AM (Outbound). Consult MBTA website @ www.mbta.com for detailed information.

City of Beverly Shuttle

HANDICAPPED ACCESSIBLE

Fares:

Regular $.50
Seniors (60 and over) $.25
Persons with Disabilities $.25
Monthly Pass $8.00 (Sold at City Hall)

Flag Stops – bus will pick up passengers at any safe location along the route
.

Due to limited seating – a maximum of two (2) parcels or bags are allowed on bus.

Passengers are limited to two (2) consecutive round trips daily.

No Service:

New Year's Day	Memorial Day
July 4th	Labor Day
Columbus Day	Veteran's Day
Thanksgiving Day	Christmas Day

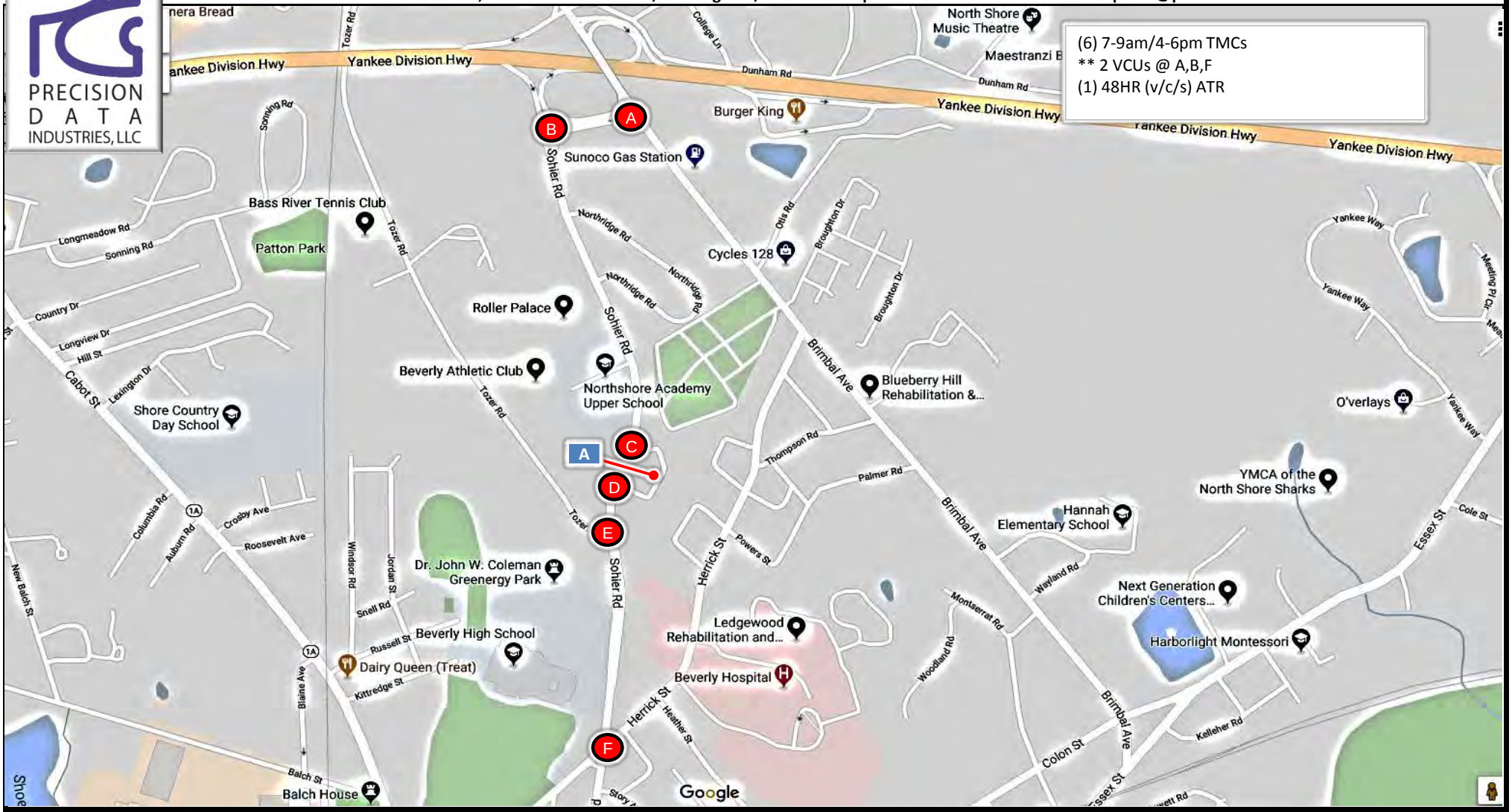
NO SUNDAY SERVICE

SERVICE SUBJECT TO CHANGE.
IN THE EVENT OF WEATHER EMERGENCY
PLEASE CALL THE CARRIER.

TRAFFIC-COUNT DATA

Location Map: 186383 Beverly, 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:
GPI	R. Brown	TBA	Wed 9/6 thru Thurs 9/7/2018	186383	Beverly, MA

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

109-111 Sohier Road
between Hilltop Drive (north and south)
City, State: Beverly, MA
Client: GPI / R. Brown
NB

186383 A Class
Site Code: TBA

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
08/29/1														
8	0	14	2	0	0	0	0	0	0	0	0	0	0	16
01:00	0	10	3	0	1	0	0	0	0	0	0	0	0	14
02:00	0	2	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	7	0	1	2	0	0	0	0	0	0	0	0	10
04:00	0	13	4	0	0	1	0	0	1	0	0	0	0	19
05:00	0	42	13	0	1	0	0	0	0	0	0	0	0	56
06:00	3	105	24	0	5	1	0	0	0	0	0	0	0	138
07:00	8	251	52	7	12	1	0	2	0	0	0	0	0	333
08:00	15	250	67	4	16	2	0	0	1	0	0	0	0	355
09:00	7	147	43	2	7	0	0	0	0	0	0	0	0	206
10:00	3	166	31	4	18	3	0	0	0	0	0	0	0	225
11:00	4	162	50	2	14	1	0	0	1	0	0	0	0	234
12 PM	6	202	47	2	11	0	0	0	0	0	0	0	0	268
13:00	3	195	36	3	14	0	0	0	2	0	0	0	0	253
14:00	10	256	57	5	13	4	0	0	0	0	0	0	0	345
15:00	5	298	56	3	7	0	0	1	0	0	0	0	0	370
16:00	6	247	57	0	14	1	0	0	0	0	0	0	0	325
17:00	9	315	41	1	11	0	0	1	0	0	0	0	0	378
18:00	0	183	24	0	9	0	0	0	0	0	0	0	0	216
19:00	3	173	29	0	8	0	0	1	0	0	0	0	0	214
20:00	0	99	26	0	0	0	0	0	0	0	0	0	0	125
21:00	0	69	10	0	0	0	0	0	0	0	0	0	0	79
22:00	1	46	6	0	2	0	0	0	0	0	0	0	0	55
23:00	1	24	7	0	4	0	0	0	0	0	0	0	0	36
Total	84	3276	685	35	169	14	0	5	5	0	0	0	0	4273
Percent	2.0%	76.7%	16.0%	0.8%	4.0%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	07:00	08:00	07:00	10:00	10:00		07:00	04:00					08:00
Vol.	15	251	67	7	18	3		2	1					355
PM Peak	14:00	17:00	14:00	14:00	13:00	14:00		15:00	13:00					17:00
Vol.	10	315	57	5	14	4		1	2					378

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between Hilltop Drive (north and south)
City, State: Beverly, MA
Client: GPI / R. Brown
NB

186383 A Class
Site Code: TBA

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
08/30/1														
8	0	21	1	0	0	0	0	0	0	0	0	0	0	22
01:00	1	10	2	0	0	1	0	0	0	0	0	0	0	14
02:00	0	6	0	1	0	0	0	0	0	0	0	0	0	7
03:00	0	2	0	0	1	0	0	0	1	0	0	0	0	4
04:00	0	14	4	1	1	0	0	0	0	0	0	0	0	20
05:00	1	37	17	0	1	0	0	0	0	0	0	0	0	56
06:00	2	96	23	0	4	0	0	0	0	0	0	0	0	125
07:00	9	236	59	6	8	1	0	1	1	0	0	0	0	321
08:00	7	207	59	1	16	0	0	1	0	0	0	0	0	291
09:00	6	154	47	2	11	3	0	0	0	0	0	0	0	223
10:00	4	180	41	4	8	3	0	0	1	0	0	0	0	241
11:00	4	184	44	1	13	1	0	0	0	0	0	0	0	247
12 PM	4	203	53	4	8	3	0	2	1	0	0	0	0	278
13:00	5	187	39	4	16	1	0	1	1	0	0	0	0	254
14:00	13	217	55	6	17	1	0	0	0	0	0	0	0	309
15:00	4	269	50	4	12	0	0	0	0	0	0	0	0	339
16:00	6	277	48	1	8	3	0	1	0	0	0	0	0	344
17:00	8	299	44	0	13	1	0	1	1	0	0	0	0	367
18:00	3	209	39	0	7	0	0	0	0	0	0	0	0	258
19:00	4	161	25	0	1	1	0	0	0	0	0	0	0	192
20:00	1	85	25	0	3	0	0	0	0	0	0	0	0	114
21:00	1	75	12	0	2	0	0	0	0	0	0	0	0	90
22:00	1	57	6	0	3	1	0	0	0	0	0	0	0	68
23:00	1	43	9	0	0	0	0	0	0	0	0	0	0	53
Total	85	3229	702	35	153	20	0	7	6	0	0	0	0	4237
Percent	2.0%	76.2%	16.6%	0.8%	3.6%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	07:00	07:00	08:00	09:00		07:00	03:00					07:00
Vol.	9	236	59	6	16	3		1	1					321
PM Peak	14:00	17:00	14:00	14:00	14:00	12:00		12:00	12:00					17:00
Vol.	13	299	55	6	17	3		2	1					367

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08/29/1														
8	0	15	2	0	1	0	0	0	0	0	0	0	0	18
01:00	0	7	3	0	0	0	0	0	0	0	0	0	0	10
02:00	1	7	2	0	0	1	0	0	0	0	0	0	0	11
03:00	0	5	0	1	0	0	0	0	0	0	0	0	0	6
04:00	0	15	3	0	1	1	0	0	2	0	0	0	0	22
05:00	1	48	11	1	2	2	0	0	0	0	0	0	0	65
06:00	2	215	19	1	6	1	0	0	0	0	0	0	0	244
07:00	5	445	75	4	13	2	0	1	1	0	0	0	0	546
08:00	8	461	88	5	10	3	0	0	0	0	0	0	0	575
09:00	7	271	48	2	17	0	0	0	0	0	0	0	0	345
10:00	3	194	29	4	5	0	0	1	1	0	0	0	0	237
11:00	2	271	69	6	11	0	0	1	1	0	0	0	0	361
12 PM	2	256	61	0	9	0	0	0	0	0	0	0	0	328
13:00	4	275	50	2	8	0	0	1	1	0	0	0	0	341
14:00	8	368	72	7	17	0	0	0	0	0	0	0	0	472
15:00	4	356	63	4	13	0	0	1	1	0	0	0	0	442
16:00	5	297	47	1	8	0	0	1	0	0	0	0	0	359
17:00	4	319	39	0	8	2	0	0	0	0	0	0	0	372
18:00	2	223	33	0	6	1	0	0	1	0	0	0	0	266
19:00	2	199	27	0	4	0	0	0	0	0	0	0	0	232
20:00	1	122	13	0	2	0	0	0	0	0	0	0	0	138
21:00	0	82	4	0	0	0	0	0	0	0	0	0	0	86
22:00	0	75	9	0	3	0	0	0	0	0	0	0	0	87
23:00	1	31	2	0	1	0	0	0	0	0	0	0	0	35
Total	62	4557	769	38	145	13	0	6	8	0	0	0	0	5598
Percent	1.1%	81.4%	13.7%	0.7%	2.6%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	11:00	09:00	08:00		07:00	04:00					08:00
Vol.	8	461	88	6	17	3		1	2					575
PM Peak	14:00	14:00	14:00	14:00	14:00	17:00		13:00	13:00					14:00
Vol.	8	368	72	7	17	2		1	1					472

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186383 A Class
Site Code: TBA

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08/30/1														
8	0	14	1	0	1	0	0	0	0	0	0	0	0	16
01:00	0	13	0	0	0	0	0	0	0	0	0	0	0	13
02:00	1	7	0	0	1	1	0	0	1	0	0	0	0	11
03:00	0	6	1	1	0	0	0	0	0	0	0	0	0	8
04:00	0	10	0	0	1	0	0	0	0	0	0	0	0	11
05:00	1	40	12	1	2	2	0	0	0	0	0	0	0	58
06:00	2	214	15	1	4	1	0	0	0	0	0	0	0	237
07:00	6	427	68	3	6	2	0	1	0	0	0	0	0	513
08:00	12	393	75	4	14	1	0	1	1	0	0	0	0	501
09:00	1	267	43	1	17	1	0	1	2	0	0	0	0	333
10:00	9	238	41	4	12	0	1	0	0	0	0	0	0	305
11:00	3	241	60	4	7	2	0	1	1	0	0	0	0	319
12 PM	4	263	51	2	12	1	0	0	0	0	0	0	0	333
13:00	6	249	42	2	8	3	0	0	1	0	0	0	0	311
14:00	8	364	86	6	18	1	0	1	0	0	0	0	0	484
15:00	9	356	63	4	7	1	0	0	0	0	0	0	0	440
16:00	5	305	52	2	9	0	0	1	0	0	0	0	0	374
17:00	10	307	30	2	3	0	0	0	0	0	0	0	0	352
18:00	1	236	28	0	5	1	0	0	1	0	0	0	0	272
19:00	3	201	23	1	2	0	0	0	0	0	0	0	0	230
20:00	1	110	18	0	2	0	0	0	0	0	0	0	0	131
21:00	0	78	8	0	1	0	0	0	0	0	0	0	0	87
22:00	0	81	7	0	0	0	0	0	0	0	0	0	0	88
23:00	0	39	6	0	1	0	0	0	0	0	0	0	0	46
Total	82	4459	730	38	133	17	1	6	7	0	0	0	0	5473
Percent	1.5%	81.5%	13.3%	0.7%	2.4%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	07:00	08:00	08:00	09:00	05:00	10:00	07:00	09:00					07:00
Vol.	12	427	75	4	17	2	1	1	2					513
PM Peak	17:00	14:00	14:00	14:00	14:00	13:00		14:00	13:00					14:00
Vol.	10	364	86	6	18	3		1	1					484

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109-111 Sohier Road
between Hilltop Drive (north and south)
City, State: Beverly, MA
Client: GPI / R. Brown
NB

186383 A Speed
Site Code: TBA

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 % ile	Ave Speed
08/29/ 18	0	3	1	1	8	3	0	0	0	0	0	0	0	16	35	29
01:00	0	0	0	5	2	5	1	**1**	0	0	0	0	0	14	38	34
02:00	0	0	0	0	2	1	0	0	0	0	0	0	0	3	36	34
03:00	0	0	0	2	6	0	2	0	0	0	0	0	0	10	40	33
04:00	0	0	1	2	11	3	2	0	0	0	0	0	0	19	37	33
05:00	0	0	1	11	24	13	6	1	0	0	0	0	0	56	38	33
06:00	2	1	5	25	63	38	2	1	**1**	0	0	0	0	138	36	32
07:00	17	4	**24**	**101**	146	34	4	1	0	0	0	0	**2**	333	33	29
08:00	**32**	1	14	81	**166**	51	8	1	0	0	0	**1**	0	**355**	34	29
09:00	5	2	6	36	88	**57**	**12**	0	0	0	0	0	0	206	37	32
10:00	4	0	8	51	103	53	6	0	0	0	0	0	0	225	36	32
11:00	6	**6**	7	43	110	54	8	0	0	0	0	0	0	234	36	31
12 PM	5	0	9	44	132	67	11	0	0	0	0	0	0	268	36	32
13:00	4	2	9	48	121	58	9	**2**	0	0	0	0	0	253	36	32
14:00	18	2	**23**	**79**	162	56	4	0	0	0	0	0	**1**	345	34	30
15:00	8	2	12	73	**197**	72	5	0	0	0	0	0	1	370	35	31
16:00	9	2	9	54	145	**92**	**12**	2	0	0	0	0	0	325	37	32
17:00	12	1	18	67	182	88	9	0	0	0	0	0	1	**378**	36	31
18:00	**37**	**34**	14	17	67	40	7	0	0	0	0	0	0	216	35	26
19:00	2	3	6	54	95	49	5	0	0	0	0	0	0	214	36	31
20:00	0	0	4	35	61	24	0	1	0	0	0	0	0	125	35	31
21:00	0	1	6	22	34	15	1	0	0	0	0	0	0	79	35	31
22:00	0	1	3	9	26	12	3	1	0	0	0	0	0	55	37	32
23:00	0	0	0	4	20	9	2	1	0	0	0	0	0	36	37	34
Total	161	65	180	864	1971	894	119	12	1	0	0	1	5	4273		
%	3.8%	1.5%	4.2%	20.2%	46.1%	20.9%	2.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%			
AM Peak	08:00	11:00	07:00	07:00	08:00	09:00	09:00	01:00	06:00			08:00	07:00	08:00		
Vol.	32	6	24	101	166	57	12	1	1			1	2	355		
PM Peak	18:00	18:00	14:00	14:00	15:00	16:00	16:00	13:00					14:00	17:00		
Vol.	37	34	23	79	197	92	12	2					1	378		

Stats

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	2865
Percent in Pace :	67.0%
Number of Vehicles > 30 MPH :	2609
Percent of Vehicles > 30 MPH :	61.1%

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109-111 Sohier Road
between Hilltop Drive (north and south)
City, State: Beverly, MA
Client: GPI / R. Brown
NB

186383 A Speed
Site Code: TBA

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 % ile	Ave Speed
08/30/ 18	0	1	1	4	9	6	0	1	0	0	0	0	0	22	37	32
01:00	0	0	1	2	7	2	2	0	0	0	0	0	0	14	38	33
02:00	0	0	0	2	3	2	0	0	0	0	0	0	0	7	36	32
03:00	0	0	0	1	2	1	0	0	0	0	0	0	0	4	36	32
04:00	0	0	0	4	11	3	2	0	0	0	0	0	0	20	37	33
05:00	0	0	2	10	23	13	6	**2**	0	0	0	0	0	56	38	34
06:00	6	0	4	20	57	32	6	0	0	0	0	0	0	125	37	31
07:00	18	1	**17**	**74**	**150**	51	**7**	1	0	0	0	0	**2**	**321**	35	30
08:00	**25**	0	10	66	134	49	6	1	0	0	0	0	0	291	35	30
09:00	12	**3**	7	52	107	38	4	0	0	0	0	0	0	223	35	30
10:00	7	0	10	45	97	**75**	7	0	0	0	0	0	0	241	37	32
11:00	8	2	5	40	126	61	5	0	0	0	0	0	0	247	36	32
12 PM	7	1	**15**	37	131	75	**11**	0	**1**	0	0	0	0	278	37	32
13:00	8	1	11	49	114	64	4	**2**	0	**1**	0	0	0	254	36	31
14:00	13	3	13	81	130	62	7	0	0	0	0	0	0	309	35	30
15:00	13	0	9	80	154	76	5	0	0	0	0	0	**2**	339	36	31
16:00	**15**	2	10	56	**164**	**83**	11	1	1	0	0	0	1	344	36	31
17:00	14	**6**	12	**85**	160	80	10	0	0	0	0	0	0	**367**	36	31
18:00	7	0	6	67	120	48	9	1	0	0	0	0	0	258	36	31
19:00	6	2	6	41	96	37	4	0	0	0	0	0	0	192	35	31
20:00	1	2	4	26	54	22	3	2	0	0	0	0	0	114	36	32
21:00	0	0	7	15	44	21	3	0	0	0	0	0	0	90	36	32
22:00	2	1	0	18	31	12	2	1	1	0	0	0	0	68	36	31
23:00	1	2	4	7	22	13	3	1	0	0	0	0	0	53	37	32
Total	163	27	154	882	1946	926	117	13	3	1	0	0	5	4237		
%	3.8%	0.6%	3.6%	20.8%	45.9%	21.9%	2.8%	0.3%	0.1%	0.0%	0.0%	0.0%	0.1%			
AM Peak	08:00	09:00	07:00	07:00	07:00	10:00	07:00	05:00					07:00	07:00		
Vol.	25	3	17	74	150	75	7	2					2	321		
PM Peak	16:00	17:00	12:00	17:00	16:00	16:00	12:00	13:00	12:00	13:00			15:00	17:00		
Vol.	15	6	15	85	164	83	11	2	1	1			2	367		

Stats

15th Percentile :	25 MPH
50th Percentile :	31 MPH
85th Percentile :	36 MPH
95th Percentile :	38 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	2872
Percent in Pace :	67.8%
Number of Vehicles > 30 MPH :	2622
Percent of Vehicles > 30 MPH :	61.9%

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SB

186383 A Speed
Site Code: TBA

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 % ile	Ave Speed
08/29/ 18	0	0	0	5	8	1	3	1	0	0	0	0	0	18	41	33
01:00	0	0	1	4	1	2	2	0	0	0	0	0	0	10	40	32
02:00	0	0	2	0	2	5	2	0	0	0	0	0	0	11	39	34
03:00	0	0	0	0	3	3	0	0	0	0	0	0	0	6	37	35
04:00	0	0	0	4	12	3	1	2	0	0	0	0	0	22	38	34
05:00	0	2	1	5	27	19	11	0	0	0	0	0	0	65	39	34
06:00	2	0	1	16	88	105	29	**3**	0	0	0	0	0	244	38	35
07:00	11	**7**	14	**98**	**287**	115	13	1	0	0	0	0	0	546	36	31
08:00	**13**	0	**15**	84	267	**178**	17	1	0	0	0	0	0	**575**	37	32
09:00	8	4	13	21	133	132	**32**	2	0	0	0	0	0	345	38	34
10:00	3	0	2	19	94	98	20	1	0	0	0	0	0	237	38	34
11:00	1	1	9	39	152	129	28	2	0	0	0	0	0	361	38	34
12 PM	11	2	8	36	160	101	10	0	0	0	0	0	0	328	37	32
13:00	6	6	14	31	146	119	16	**3**	0	0	0	0	0	341	37	33
14:00	10	0	17	**79**	**230**	124	11	1	0	0	0	0	0	**472**	36	32
15:00	11	1	15	69	209	124	11	2	0	0	0	0	0	442	36	32
16:00	3	4	3	43	163	127	15	1	0	0	0	0	0	359	37	33
17:00	6	3	7	36	163	**135**	**20**	2	0	0	0	0	0	372	37	33
18:00	**12**	**17**	**39**	40	70	74	14	0	0	0	0	0	0	266	37	30
19:00	4	2	5	23	97	81	18	2	0	0	0	0	0	232	38	33
20:00	2	3	5	31	56	40	1	0	0	0	0	0	0	138	36	31
21:00	1	0	2	15	35	28	4	1	0	0	0	0	0	86	37	33
22:00	0	0	2	11	29	32	12	1	0	0	0	0	0	87	38	35
23:00	0	1	2	2	14	11	5	0	0	0	0	0	0	35	38	34
Total	104	53	177	711	2446	1786	295	26	0	0	0	0	0	5598		
%	1.9%	0.9%	3.2%	12.7%	43.7%	31.9%	5.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	07:00	08:00	07:00	07:00	08:00	09:00	06:00						08:00		
Vol.	13	7	15	98	287	178	32	3						575		
PM Peak	18:00	18:00	18:00	14:00	14:00	17:00	17:00	13:00						14:00		
Vol.	12	17	39	79	230	135	20	3						472		

Stats

15th Percentile :	27 MPH
50th Percentile :	32 MPH
85th Percentile :	37 MPH
95th Percentile :	39 MPH
Mean Speed(Average) :	33 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	4232
Percent in Pace :	75.6%
Number of Vehicles > 30 MPH :	4064
Percent of Vehicles > 30 MPH :	72.6%

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186383 A Speed
Site Code: TBA

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 % ile	Ave Speed
08/30/ 18	0	0	1	3	3	7	2	0	0	0	0	0	0	16	38	34
01:00	0	0	1	4	3	3	2	0	0	0	0	0	0	13	39	32
02:00	0	2	0	1	3	4	0	1	0	0	0	0	0	11	38	32
03:00	0	0	0	1	3	3	0	0	**1**	0	0	0	0	8	38	36
04:00	0	0	0	0	4	3	4	0	0	0	0	0	0	11	41	37
05:00	0	2	0	6	23	18	7	**2**	0	0	0	0	0	58	39	34
06:00	2	3	6	17	68	108	30	2	1	0	0	0	0	237	38	35
07:00	51	15	10	**85**	**219**	118	15	0	0	0	0	0	0	**513**	36	30
08:00	**68**	**27**	**19**	43	185	**145**	12	2	0	0	0	0	0	501	36	29
09:00	3	2	7	33	157	109	20	2	0	0	0	0	0	333	37	33
10:00	6	2	3	21	112	126	**33**	2	0	0	0	0	0	305	38	34
11:00	7	1	6	27	136	120	21	1	0	0	0	0	0	319	37	33
12 PM	7	2	6	32	147	123	15	0	**1**	0	0	0	0	333	37	33
13:00	5	2	**9**	40	147	97	9	2	0	0	0	0	0	311	37	33
14:00	7	0	5	**74**	**265**	118	13	2	0	0	0	0	0	**484**	36	32
15:00	**18**	0	9	50	199	140	21	2	0	**1**	0	0	0	440	37	32
16:00	9	0	5	32	146	**149**	**33**	0	0	0	0	0	0	374	38	34
17:00	16	1	4	26	142	131	28	**3**	0	1	0	0	0	352	38	33
18:00	4	0	5	25	121	102	14	1	0	0	0	0	0	272	37	33
19:00	1	1	7	28	99	83	8	1	1	1	0	0	0	230	37	33
20:00	1	**3**	3	19	61	36	6	2	0	0	0	0	0	131	37	33
21:00	0	3	1	14	37	27	4	1	0	0	0	0	0	87	37	33
22:00	0	0	3	21	37	18	7	2	0	0	0	0	0	88	37	33
23:00	0	1	0	5	17	20	3	0	0	0	0	0	0	46	38	34
Total	205	67	110	607	2334	1808	307	28	4	3	0	0	0	5473		
%	3.7%	1.2%	2.0%	11.1%	42.6%	33.0%	5.6%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	08:00	07:00	07:00	08:00	10:00	05:00	03:00					07:00		
Vol.	68	27	19	85	219	145	33	2	1					513		
PM Peak	15:00	20:00	13:00	14:00	14:00	16:00	16:00	17:00	12:00	15:00				14:00		
Vol.	18	3	9	74	265	149	33	3	1	1				484		

Stats

15th Percentile :	27 MPH
50th Percentile :	32 MPH
85th Percentile :	37 MPH
95th Percentile :	40 MPH
Mean Speed(Average) :	32 MPH
10 MPH Pace Speed :	30-39 MPH
Number in Pace :	4142
Percent in Pace :	75.7%
Number of Vehicles > 30 MPH :	4017
Percent of Vehicles > 30 MPH :	73.4%

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186383 A Volume
Site Code: TBA

Start	NB				SB				Combined				8/29/2018
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Wed
12:00	3		79		5		83		8		162		
12:15	5		63		3		62		8		125		
12:30	5		63		4		74		9		137		
12:45	3	16	63	268	6	18	109	328	9	34	172	596	
01:00	4		56		1		74		5		130		
01:15	3		69		2		81		5		150		
01:30	3		55		4		84		7		139		
01:45	4	14	73	253	3	10	102	341	7	24	175	594	
02:00	1		66		3		93		4		159		
02:15	0		60		3		121		3		181		
02:30	1		99		2		133		3		232		
02:45	1	3	120	345	3	11	125	472	4	14	245	817	
03:00	1		102		1		140		2		242		
03:15	1		108		1		105		2		213		
03:30	2		87		3		106		5		193		
03:45	6	10	73	370	1	6	91	442	7	16	164	812	
04:00	2		78		5		86		7		164		
04:15	4		92		5		101		9		193		
04:30	7		76		4		77		11		153		
04:45	6	19	79	325	8	22	95	359	14	41	174	684	
05:00	13		96		5		107		18		203		
05:15	16		110		10		82		26		192		
05:30	14		82		16		94		30		176		
05:45	13	56	90	378	34	65	89	372	47	121	179	750	
06:00	29		54		24		65		53		119		
06:15	26		60		48		71		74		131		
06:30	41		63		60		73		101		136		
06:45	42	138	39	216	112	244	57	266	154	382	96	482	
07:00	66		63		80		71		146		134		
07:15	77		64		110		57		187		121		
07:30	103		44		149		55		252		99		
07:45	87	333	43	214	207	546	49	232	294	879	92	446	
08:00	111		29		156		44		267		73		
08:15	79		32		145		25		224		57		
08:30	94		32		133		32		227		64		
08:45	71	355	32	125	141	575	37	138	212	930	69	263	
09:00	44		18		85		24		129		42		
09:15	54		17		76		24		130		41		
09:30	52		27		100		13		152		40		
09:45	56	206	17	79	84	345	25	86	140	551	42	165	
10:00	64		19		61		23		125		42		
10:15	44		16		45		22		89		38		
10:30	58		10		63		21		121		31		
10:45	59	225	10	55	68	237	21	87	127	462	31	142	
11:00	55		10		71		7		126		17		
11:15	72		10		88		15		160		25		
11:30	54		13		109		9		163		22		
11:45	53	234	3	36	93	361	4	35	146	595	7	71	
Total	1609		2664		2440		3158		4049		5822		
Percent	39.7%		45.8%		60.3%		54.2%						
Day Total		4273				5598				9871			
Peak	07:30	-	02:30	-	07:30	-	02:15	-	07:30	-	02:30	-	-	-
Vol.	380	-	429	-	657	-	519	-	1037	-	932	-	-	-
P.H.F.	0.856		0.894		0.793		0.927		0.882		0.951			

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

109-111 Sohier Road
between Hilltop Drive (north and south)
City, State: Beverly, MA
Client: GPI / R. Brown

186383 A Volume
Site Code: TBA

Start	NB				SB				Combined				8/30/2018
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Thu
12:00	5		57		6		84		11		141		
12:15	7		83		2		100		9		183		
12:30	8		79		3		69		11		148		
12:45	2	22	59	278	5	16	80	333	7	38	139	611	
01:00	5		58		7		76		12		134		
01:15	3		76		1		77		4		153		
01:30	3		59		3		86		6		145		
01:45	3	14	61	254	2	13	72	311	5	27	133	565	
02:00	1		57		3		101		4		158		
02:15	4		62		4		118		8		180		
02:30	1		83		1		140		2		223		
02:45	1	7	107	309	3	11	125	484	4	18	232	793	
03:00	1		99		0		135		1		234		
03:15	1		75		2		93		3		168		
03:30	1		86		2		112		3		198		
03:45	1	4	79	339	4	8	100	440	5	12	179	779	
04:00	2		81		0		85		2		166		
04:15	4		80		1		90		5		170		
04:30	2		87		3		99		5		186		
04:45	12	20	96	344	7	11	100	374	19	31	196	718	
05:00	8		112		8		104		16		216		
05:15	15		89		14		74		29		163		
05:30	18		81		11		82		29		163		
05:45	15	56	85	367	25	58	92	352	40	114	177	719	
06:00	19		73		35		73		54		146		
06:15	23		64		37		72		60		136		
06:30	50		57		60		64		110		121		
06:45	33	125	64	258	105	237	63	272	138	362	127	530	
07:00	58		65		81		69		139		134		
07:15	79		52		96		68		175		120		
07:30	102		40		118		41		220		81		
07:45	82	321	35	192	218	513	52	230	300	834	87	422	
08:00	40		36		120		44		160		80		
08:15	84		25		131		35		215		60		
08:30	95		30		127		37		222		67		
08:45	72	291	23	114	123	501	15	131	195	792	38	245	
09:00	61		26		88		27		149		53		
09:15	54		25		83		16		137		41		
09:30	68		20		84		18		152		38		
09:45	40	223	19	90	78	333	26	87	118	556	45	177	
10:00	46		15		86		18		132		33		
10:15	63		18		69		25		132		43		
10:30	62		23		65		28		127		51		
10:45	70	241	12	68	85	305	17	88	155	546	29	156	
11:00	67		11		82		11		149		22		
11:15	59		15		66		17		125		32		
11:30	48		16		86		8		134		24		
11:45	73	247	11	53	85	319	10	46	158	566	21	99	
Total	1571		2666		2325		3148		3896		5814		
Percent	40.3%		45.9%		59.7%		54.1%						
Day Total		4237				5473				9710			
Peak	07:00	-	04:30	-	07:45	-	02:15	-	07:45	-	02:15	-	-	-
Vol.	321	-	384	-	596	-	518	-	897	-	869	-	-	-
P.H.F.	0.787		0.857		0.683		0.925		0.748		0.928			

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	34	49	0	83	108	6	0	114	50	45	0	95	292
7:15 AM	67	56	0	123	140	11	1	152	81	55	0	136	411
7:30 AM	86	76	0	162	147	21	3	171	79	97	5	181	514
7:45 AM	144	93	0	237	160	48	1	209	92	101	1	194	640
Total	331	274	0	605	555	86	5	646	302	298	6	606	1857
8:00 AM	107	81	0	188	152	18	1	171	93	67	0	160	519
8:15 AM	74	79	2	155	120	20	0	140	79	71	1	151	446
8:30 AM	55	83	0	138	117	14	0	131	71	79	1	151	420
8:45 AM	49	55	1	105	116	13	0	129	69	83	0	152	386
Total	285	298	3	586	505	65	1	571	312	300	2	614	1771
Grand Total	616	572	3	1191	1060	151	6	1217	614	598	8	1220	3628
Approach %	51.7	48.0	0.3		87.1	12.4	0.5		50.3	49.0	0.7		
Total %	17.0	15.8	0.1	32.8	29.2	4.2	0.2	33.5	16.9	16.5	0.2	33.6	
Exiting Leg Total				1661				1192				775	3628
Cars	595	561	2	1158	1034	144	5	1183	592	577	7	1176	3517
% Cars	96.6	98.1	66.7	97.2	97.5	95.4	83.3	97.2	96.4	96.5	87.5	96.4	96.9
Exiting Leg Total				1613				1158				746	3517
Heavy Vehicles	21	11	1	33	26	7	1	34	22	21	1	44	111
% Heavy Vehicles	3.4	1.9	33.3	2.8	2.5	4.6	16.7	2.8	3.6	3.5	12.5	3.6	3.1
Exiting Leg Total				48				34				29	111

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	86	76	0	162	147	21	3	171	79	97	5	181	514
7:45 AM	144	93	0	237	160	48	1	209	92	101	1	194	640
8:00 AM	107	81	0	188	152	18	1	171	93	67	0	160	519
8:15 AM	74	79	2	155	120	20	0	140	79	71	1	151	446
Total Volume	411	329	2	742	579	107	5	691	343	336	7	686	2119
% Approach Total	55.4	44.3	0.3		83.8	15.5	0.7		50.0	49.0	1.0		
PHF	0.714	0.884	0.250	0.783	0.905	0.557	0.417	0.827	0.922	0.832	0.350	0.884	0.828
Cars	397	319	2	718	566	103	4	673	332	318	6	656	2047
Cars %	96.6	97.0	100.0	96.8	97.8	96.3	80.0	97.4	96.8	94.6	85.7	95.6	96.6
Heavy Vehicles	14	10	0	24	13	4	1	18	11	18	1	30	72
Heavy Vehicles %	3.4	3.0	0.0	3.2	2.2	3.7	20.0	2.6	3.2	5.4	14.3	4.4	3.4
Cars Enter Leg	397	319	2	718	566	103	4	673	332	318	6	656	2047
Heavy Enter Leg	14	10	0	24	13	4	1	18	11	18	1	30	72
Total Entering Leg	411	329	2	742	579	107	5	691	343	336	7	686	2119
Cars Exiting Leg				886				655				506	2047
Heavy Exiting Leg				31				22				19	72
Total Exiting Leg				917				677				525	2119

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	34	49	0	83	106	6	0	112	50	44	0	94	289
7:15 AM	64	56	0	120	136	11	1	148	78	55	0	133	401
7:30 AM	83	75	0	158	145	19	3	167	77	92	4	173	498
7:45 AM	140	88	0	228	157	48	1	206	90	100	1	191	625
Total	321	268	0	589	544	84	5	633	295	291	5	591	1813
8:00 AM	104	80	0	184	149	17	0	166	90	60	0	150	500
8:15 AM	70	76	2	148	115	19	0	134	75	66	1	142	424
8:30 AM	53	82	0	135	113	13	0	126	67	78	1	146	407
8:45 AM	47	55	0	102	113	11	0	124	65	82	0	147	373
Total	274	293	2	569	490	60	0	550	297	286	2	585	1704
Grand Total	595	561	2	1158	1034	144	5	1183	592	577	7	1176	3517
Approach %	51.4	48.4	0.2		87.4	12.2	0.4		50.3	49.1	0.6		
Total %	16.9	16.0	0.1	32.9	29.4	4.1	0.1	33.6	16.8	16.4	0.2	33.4	
Exiting Leg Total				1613				1158				746	3517

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	83	75	0	158	145	19	3	167	77	92	4	173	498
7:45 AM	140	88	0	228	157	48	1	206	90	100	1	191	625
8:00 AM	104	80	0	184	149	17	0	166	90	60	0	150	500
8:15 AM	70	76	2	148	115	19	0	134	75	66	1	142	424
Total Volume	397	319	2	718	566	103	4	673	332	318	6	656	2047
% Approach Total	55.3	44.4	0.3		84.1	15.3	0.6		50.6	48.5	0.9		
PHF	0.709	0.906	0.250	0.787	0.901	0.536	0.333	0.817	0.922	0.795	0.375	0.859	0.819
Entering Leg	397	319	2	718	566	103	4	673	332	318	6	656	2047
Exiting Leg				886				655				506	2047
Total				1604				1328				1162	4094

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	2	0	0	2	0	1	0	1	3
7:15 AM	3	0	0	3	4	0	0	4	3	0	0	3	10
7:30 AM	3	1	0	4	2	2	0	4	2	5	1	8	16
7:45 AM	4	5	0	9	3	0	0	3	2	1	0	3	15
Total	10	6	0	16	11	2	0	13	7	7	1	15	44
8:00 AM	3	1	0	4	3	1	1	5	3	7	0	10	19
8:15 AM	4	3	0	7	5	1	0	6	4	5	0	9	22
8:30 AM	2	1	0	3	4	1	0	5	4	1	0	5	13
8:45 AM	2	0	1	3	3	2	0	5	4	1	0	5	13
Total	11	5	1	17	15	5	1	21	15	14	0	29	67
Grand Total	21	11	1	33	26	7	1	34	22	21	1	44	111
Approach %	63.6	33.3	3.0		76.5	20.6	2.9		50.0	47.7	2.3		
Total %	18.9	9.9	0.9	29.7	23.4	6.3	0.9	30.6	19.8	18.9	0.9	39.6	
Exiting Leg Total				48				34				29	111
Buses	14	3	0	17	9	1	0	10	2	9	0	11	38
% Buses	66.7	27.3	0.0	51.5	34.6	14.3	0.0	29.4	9.1	42.9	0.0	25.0	34.2
Exiting Leg Total				18				5				15	38
Single-Unit Trucks	4	7	0	11	15	6	1	22	18	8	0	26	59
% Single-Unit	19.0	63.6	0.0	33.3	57.7	85.7	100.0	64.7	81.8	38.1	0.0	59.1	53.2
Exiting Leg Total				23				26				10	59
Articulated Trucks	3	1	1	5	2	0	0	2	2	4	1	7	14
% Articulated	14.3	9.1	100.0	15.2	7.7	0.0	0.0	5.9	9.1	19.0	100.0	15.9	12.6
Exiting Leg Total				7				3				4	14

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	3	1	0	4	2	2	0	4	2	5	1	8	16
7:45 AM	4	5	0	9	3	0	0	3	2	1	0	3	15
8:00 AM	3	1	0	4	3	1	1	5	3	7	0	10	19
8:15 AM	4	3	0	7	5	1	0	6	4	5	0	9	22
Total Volume	14	10	0	24	13	4	1	18	11	18	1	30	72
% Approach Total	58.3	41.7	0.0		72.2	22.2	5.6		36.7	60.0	3.3		
PHF	0.875	0.500	0.000	0.667	0.650	0.500	0.250	0.750	0.688	0.643	0.250	0.750	0.818
Buses	11	3	0	14	4	1	0	5	2	8	0	10	29
Buses %	78.6	30.0	0.0	58.3	30.8	25.0	0.0	27.8	18.2	44.4	0.0	33.3	40.3
Single-Unit Trucks	2	6	0	8	7	3	1	11	8	6	0	14	33
Single-Unit %	14.3	60.0	0.0	33.3	53.8	75.0	100.0	61.1	72.7	33.3	0.0	46.7	45.8
Articulated Trucks	1	1	0	2	2	0	0	2	1	4	1	6	10
Articulated %	7.1	10.0	0.0	8.3	15.4	0.0	0.0	11.1	9.1	22.2	100.0	20.0	13.9
Buses	11	3	0	14	4	1	0	5	2	8	0	10	29
Single-Unit Trucks	2	6	0	8	7	3	1	11	8	6	0	14	33
Articulated Trucks	1	1	0	2	2	0	0	2	1	4	1	6	10
Total Entering Leg	14	10	0	24	13	4	1	18	11	18	1	30	72
Buses				12				5				12	29
Single-Unit Trucks				13				15				5	33
Articulated Trucks				6				2				2	10
Total Exiting Leg				31				22				19	72

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						1						0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg						0						1						0	1
Total						1						1						0	2

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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Pedestrians

	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
Approach %	0	0	0	0	0		0	0	0	100	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	
Exiting Leg Total						0						2						0	2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
Exiting Leg						0						2						0	2
Total						0						4						0	4

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	44	49	0	93	151	25	0	176	63	96	1	160	429
4:15 PM	43	66	0	109	127	25	0	152	65	77	0	142	403
4:30 PM	53	60	2	115	168	30	0	198	81	98	0	179	492
4:45 PM	45	64	0	109	144	23	0	167	81	87	1	169	445
Total	185	239	2	426	590	103	0	693	290	358	2	650	1769
5:00 PM	44	48	1	93	182	24	1	207	89	92	0	181	481
5:15 PM	59	52	1	112	141	15	1	157	85	88	0	173	442
5:30 PM	52	69	0	121	129	24	0	153	95	87	0	182	456
5:45 PM	48	45	0	93	131	16	0	147	78	88	0	166	406
Total	203	214	2	419	583	79	2	664	347	355	0	702	1785
Grand Total	388	453	4	845	1173	182	2	1357	637	713	2	1352	3554
Approach %	45.9	53.6	0.5		86.4	13.4	0.1		47.1	52.7	0.1		
Total %	10.9	12.7	0.1	23.8	33.0	5.1	0.1	38.2	17.9	20.1	0.1	38.0	
Exiting Leg Total				1890				1092				572	3554
Cars	381	445	4	830	1162	178	2	1342	635	706	2	1343	3515
% Cars	98.2	98.2	100.0	98.2	99.1	97.8	100.0	98.9	99.7	99.0	100.0	99.3	98.9
Exiting Leg Total				1872				1082				561	3515
Heavy Vehicles	7	8	0	15	11	4	0	15	2	7	0	9	39
% Heavy Vehicles	1.8	1.8	0.0	1.8	0.9	2.2	0.0	1.1	0.3	1.0	0.0	0.7	1.1
Exiting Leg Total				18				10				11	39

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:30 PM	53	60	2	115	168	30	0	198	81	98	0	179	492
4:45 PM	45	64	0	109	144	23	0	167	81	87	1	169	445
5:00 PM	44	48	1	93	182	24	1	207	89	92	0	181	481
5:15 PM	59	52	1	112	141	15	1	157	85	88	0	173	442
Total Volume	201	224	4	429	635	92	2	729	336	365	1	702	1860
% Approach Total	46.9	52.2	0.9		87.1	12.6	0.3		47.9	52.0	0.1		
PHF	0.852	0.875	0.500	0.933	0.872	0.767	0.500	0.880	0.944	0.931	0.250	0.970	0.945
Cars	197	218	4	419	626	90	2	718	334	362	1	697	1834
Cars %	98.0	97.3	100.0	97.7	98.6	97.8	100.0	98.5	99.4	99.2	100.0	99.3	98.6
Heavy Vehicles	4	6	0	10	9	2	0	11	2	3	0	5	26
Heavy Vehicles %	2.0	2.7	0.0	2.3	1.4	2.2	0.0	1.5	0.6	0.8	0.0	0.7	1.4
Cars Enter Leg	197	218	4	419	626	90	2	718	334	362	1	697	1834
Heavy Enter Leg	4	6	0	10	9	2	0	11	2	3	0	5	26
Total Entering Leg	201	224	4	429	635	92	2	729	336	365	1	702	1860
Cars Exiting Leg				992				554				288	1834
Heavy Exiting Leg				12				8				6	26
Total Exiting Leg				1004				562				294	1860

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	42	49	0	91	151	24	0	175	63	96	1	160	426
4:15 PM	43	65	0	108	125	24	0	149	65	76	0	141	398
4:30 PM	50	57	2	109	164	30	0	194	80	97	0	177	480
4:45 PM	44	62	0	106	140	21	0	161	80	87	1	168	435
Total	179	233	2	414	580	99	0	679	288	356	2	646	1739
5:00 PM	44	47	1	92	181	24	1	206	89	90	0	179	477
5:15 PM	59	52	1	112	141	15	1	157	85	88	0	173	442
5:30 PM	51	68	0	119	129	24	0	153	95	86	0	181	453
5:45 PM	48	45	0	93	131	16	0	147	78	86	0	164	404
Total	202	212	2	416	582	79	2	663	347	350	0	697	1776
Grand Total	381	445	4	830	1162	178	2	1342	635	706	2	1343	3515
Approach %	45.9	53.6	0.5		86.6	13.3	0.1		47.3	52.6	0.1		
Total %	10.8	12.7	0.1	23.6	33.1	5.1	0.1	38.2	18.1	20.1	0.1	38.2	
Exiting Leg Total				1872				1082				561	3515

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:30 PM	50	57	2	109	164	30	0	194	80	97	0	177	480
4:45 PM	44	62	0	106	140	21	0	161	80	87	1	168	435
5:00 PM	44	47	1	92	181	24	1	206	89	90	0	179	477
5:15 PM	59	52	1	112	141	15	1	157	85	88	0	173	442
Total Volume	197	218	4	419	626	90	2	718	334	362	1	697	1834
% Approach Total	47.0	52.0	1.0		87.2	12.5	0.3		47.9	51.9	0.1		
PHF	0.835	0.879	0.500	0.935	0.865	0.750	0.500	0.871	0.938	0.933	0.250	0.973	0.955
Entering Leg	197	218	4	419	626	90	2	718	334	362	1	697	1834
Exiting Leg				992				554				288	1834
Total				1411				1272				985	3668

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	2	0	0	2	0	1	0	1	0	0	0	0	3
4:15 PM	0	1	0	1	2	1	0	3	0	1	0	1	5
4:30 PM	3	3	0	6	4	0	0	4	1	1	0	2	12
4:45 PM	1	2	0	3	4	2	0	6	1	0	0	1	10
Total	6	6	0	12	10	4	0	14	2	2	0	4	30
5:00 PM	0	1	0	1	1	0	0	1	0	2	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	1	0	2	0	0	0	0	0	1	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	1	2	0	3	1	0	0	1	0	5	0	5	9
Grand Total	7	8	0	15	11	4	0	15	2	7	0	9	39
Approach %	46.7	53.3	0.0		73.3	26.7	0.0		22.2	77.8	0.0		
Total %	17.9	20.5	0.0	38.5	28.2	10.3	0.0	38.5	5.1	17.9	0.0	23.1	
Exiting Leg Total				18				10				11	39
Buses	2	0	0	2	2	1	0	3	2	1	0	3	8
% Buses	28.6	0.0	0.0	13.3	18.2	25.0	0.0	20.0	100.0	14.3	0.0	33.3	20.5
Exiting Leg Total				3				2				3	8
Single-Unit Trucks	5	6	0	11	8	2	0	10	0	4	0	4	25
% Single-Unit	71.4	75.0	0.0	73.3	72.7	50.0	0.0	66.7	0.0	57.1	0.0	44.4	64.1
Exiting Leg Total				12				6				7	25
Articulated Trucks	0	2	0	2	1	1	0	2	0	2	0	2	6
% Articulated	0.0	25.0	0.0	13.3	9.1	25.0	0.0	13.3	0.0	28.6	0.0	22.2	15.4
Exiting Leg Total				3				2				1	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Brimble Avenue from North				Brimble Avenue from South				Sohier Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:15 PM	0	1	0	1	2	1	0	3	0	1	0	1	5
4:30 PM	3	3	0	6	4	0	0	4	1	1	0	2	12
4:45 PM	1	2	0	3	4	2	0	6	1	0	0	1	10
5:00 PM	0	1	0	1	1	0	0	1	0	2	0	2	4
Total Volume	4	7	0	11	11	3	0	14	2	4	0	6	31
% Approach Total	36.4	63.6	0.0		78.6	21.4	0.0		33.3	66.7	0.0		
PHF	0.333	0.583	0.000	0.458	0.688	0.375	0.000	0.583	0.500	0.500	0.000	0.750	0.646
Buses	2	0	0	2	2	1	0	3	2	1	0	3	8
Buses %	50.0	0.0	0.0	18.2	18.2	33.3	0.0	21.4	100.0	25.0	0.0	50.0	25.8
Single-Unit Trucks	2	5	0	7	8	2	0	10	0	1	0	1	18
Single-Unit %	50.0	71.4	0.0	63.6	72.7	66.7	0.0	71.4	0.0	25.0	0.0	16.7	58.1
Articulated Trucks	0	2	0	2	1	0	0	1	0	2	0	2	5
Articulated %	0.0	28.6	0.0	18.2	9.1	0.0	0.0	7.1	0.0	50.0	0.0	33.3	16.1
Buses	2	0	0	2	2	1	0	3	2	1	0	3	8
Single-Unit Trucks	2	5	0	7	8	2	0	10	0	1	0	1	18
Articulated Trucks	0	2	0	2	1	0	0	1	0	2	0	2	5
Total Entering Leg	4	7	0	11	11	3	0	14	2	4	0	6	31
Buses				3				2				3	8
Single-Unit Trucks				9				5				4	18
Articulated Trucks				3				2				0	5
Total Exiting Leg				15				9				7	31

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 A**
Location: **N: Brimble Avenue S: Brimble Avenue**
Location: **W: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Pedestrians

	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Brimble Avenue from North						Brimble Avenue from South						Sohier Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Route 128 NB Exit 19 Ramps from North				Sohier Road from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	77	69	0	146	12	26	0	38	31	20	1	52	236
7:15 AM	90	102	0	192	17	61	0	78	30	26	0	56	326
7:30 AM	86	114	0	200	32	78	0	110	62	36	0	98	408
7:45 AM	168	115	0	283	33	155	2	190	75	20	0	95	568
Total	421	400	0	821	94	320	2	416	198	102	1	301	1538
8:00 AM	130	94	0	224	15	103	9	127	56	22	0	78	429
8:15 AM	120	94	0	214	34	59	0	93	60	19	0	79	386
8:30 AM	97	88	0	185	23	50	0	73	61	24	0	85	343
8:45 AM	97	81	0	178	17	43	0	60	70	22	0	92	330
Total	444	357	0	801	89	255	9	353	247	87	0	334	1488
Grand Total	865	757	0	1622	183	575	11	769	445	189	1	635	3026
Approach %	53.3	46.7	0.0		23.8	74.8	1.4		70.1	29.8	0.2		
Total %	28.6	25.0	0.0	53.6	6.0	19.0	0.4	25.4	14.7	6.2	0.0	21.0	
Exiting Leg Total				372				1213				1441	3026
Cars	843	728	0	1571	174	557	11	742	427	174	1	602	2915
% Cars	97.5	96.2	0.0	96.9	95.1	96.9	100.0	96.5	96.0	92.1	100.0	94.8	96.3
Exiting Leg Total				348				1166				1401	2915
Heavy Vehicles	22	29	0	51	9	18	0	27	18	15	0	33	111
% Heavy Vehicles	2.5	3.8	0.0	3.1	4.9	3.1	0.0	3.5	4.0	7.9	0.0	5.2	3.7
Exiting Leg Total				24				47				40	111

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Route 128 NB Exit 19 Ramps from North				Sohier Road from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	86	114	0	200	32	78	0	110	62	36	0	98	408
7:45 AM	168	115	0	283	33	155	2	190	75	20	0	95	568
8:00 AM	130	94	0	224	15	103	9	127	56	22	0	78	429
8:15 AM	120	94	0	214	34	59	0	93	60	19	0	79	386
Total Volume	504	417	0	921	114	395	11	520	253	97	0	350	1791
% Approach Total	54.7	45.3	0.0		21.9	76.0	2.1		72.3	27.7	0.0		
PHF	0.750	0.907	0.000	0.814	0.838	0.637	0.306	0.684	0.843	0.674	0.000	0.893	0.788
Cars	490	399	0	889	110	383	11	504	240	91	0	331	1724
Cars %	97.2	95.7	0.0	96.5	96.5	97.0	100.0	96.9	94.9	93.8	0.0	94.6	96.3
Heavy Vehicles	14	18	0	32	4	12	0	16	13	6	0	19	67
Heavy Vehicles %	2.8	4.3	0.0	3.5	3.5	3.0	0.0	3.1	5.1	6.2	0.0	5.4	3.7
Cars Enter Leg	490	399	0	889	110	383	11	504	240	91	0	331	1724
Heavy Enter Leg	14	18	0	32	4	12	0	16	13	6	0	19	67
Total Entering Leg	504	417	0	921	114	395	11	520	253	97	0	350	1791
Cars Exiting Leg				201				650				873	1724
Heavy Exiting Leg				10				31				26	67
Total Exiting Leg				211				681				899	1791

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	76	68	0	144	12	26	0	38	31	17	1	49	231
7:15 AM	89	99	0	188	16	59	0	75	29	23	0	52	315
7:30 AM	84	109	0	193	28	76	0	104	60	34	0	94	391
7:45 AM	163	112	0	275	33	153	2	188	74	19	0	93	556
Total	412	388	0	800	89	314	2	405	194	93	1	288	1493
8:00 AM	129	88	0	217	15	100	9	124	50	19	0	69	410
8:15 AM	114	90	0	204	34	54	0	88	56	19	0	75	367
8:30 AM	94	85	0	179	21	49	0	70	59	22	0	81	330
8:45 AM	94	77	0	171	15	40	0	55	68	21	0	89	315
Total	431	340	0	771	85	243	9	337	233	81	0	314	1422
Grand Total	843	728	0	1571	174	557	11	742	427	174	1	602	2915
Approach %	53.7	46.3	0.0		23.5	75.1	1.5		70.9	28.9	0.2		
Total %	28.9	25.0	0.0	53.9	6.0	19.1	0.4	25.5	14.6	6.0	0.0	20.7	
Exiting Leg Total				348				1166				1401	2915

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	84	109	0	193	28	76	0	104	60	34	0	94	391
7:45 AM	163	112	0	275	33	153	2	188	74	19	0	93	556
8:00 AM	129	88	0	217	15	100	9	124	50	19	0	69	410
8:15 AM	114	90	0	204	34	54	0	88	56	19	0	75	367
Total Volume	490	399	0	889	110	383	11	504	240	91	0	331	1724
% Approach Total	55.1	44.9	0.0		21.8	76.0	2.2		72.5	27.5	0.0		
PHF	0.752	0.891	0.000	0.808	0.809	0.626	0.306	0.670	0.811	0.669	0.000	0.880	0.775
Entering Leg	490	399	0	889	110	383	11	504	240	91	0	331	1724
Exiting Leg				201				650				873	1724
Total				1090				1154				1204	3448

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	1	1	0	2	0	0	0	0	0	3	0	3	5
7:15 AM	1	3	0	4	1	2	0	3	1	3	0	4	11
7:30 AM	2	5	0	7	4	2	0	6	2	2	0	4	17
7:45 AM	5	3	0	8	0	2	0	2	1	1	0	2	12
Total	9	12	0	21	5	6	0	11	4	9	0	13	45
8:00 AM	1	6	0	7	0	3	0	3	6	3	0	9	19
8:15 AM	6	4	0	10	0	5	0	5	4	0	0	4	19
8:30 AM	3	3	0	6	2	1	0	3	2	2	0	4	13
8:45 AM	3	4	0	7	2	3	0	5	2	1	0	3	15
Total	13	17	0	30	4	12	0	16	14	6	0	20	66
Grand Total	22	29	0	51	9	18	0	27	18	15	0	33	111
Approach %	43.1	56.9	0.0		33.3	66.7	0.0		54.5	45.5	0.0		
Total %	19.8	26.1	0.0	45.9	8.1	16.2	0.0	24.3	16.2	13.5	0.0	29.7	
Exiting Leg Total				24				47				40	111
Buses	4	2	0	6	3	10	0	13	9	7	0	16	35
% Buses	18.2	6.9	0.0	11.8	33.3	55.6	0.0	48.1	50.0	46.7	0.0	48.5	31.5
Exiting Leg Total				10				11				14	35
Single-Unit Trucks	16	22	0	38	4	5	0	9	7	6	0	13	60
% Single-Unit	72.7	75.9	0.0	74.5	44.4	27.8	0.0	33.3	38.9	40.0	0.0	39.4	54.1
Exiting Leg Total				10				29				21	60
Articulated Trucks	2	5	0	7	2	3	0	5	2	2	0	4	16
% Articulated	9.1	17.2	0.0	13.7	22.2	16.7	0.0	18.5	11.1	13.3	0.0	12.1	14.4
Exiting Leg Total				4				7				5	16

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	2	5	0	7	4	2	0	6	2	2	0	4	17
7:45 AM	5	3	0	8	0	2	0	2	1	1	0	2	12
8:00 AM	1	6	0	7	0	3	0	3	6	3	0	9	19
8:15 AM	6	4	0	10	0	5	0	5	4	0	0	4	19
Total Volume	14	18	0	32	4	12	0	16	13	6	0	19	67
% Approach Total	43.8	56.3	0.0		25.0	75.0	0.0		68.4	31.6	0.0		
PHF	0.583	0.750	0.000	0.800	0.250	0.600	0.000	0.667	0.542	0.500	0.000	0.528	0.882
Buses	4	2	0	6	2	8	0	10	7	4	0	11	27
Buses %	28.6	11.1	0.0	18.8	50.0	66.7	0.0	62.5	53.8	66.7	0.0	57.9	40.3
Single-Unit Trucks	9	12	0	21	1	2	0	3	4	2	0	6	30
Single-Unit %	64.3	66.7	0.0	65.6	25.0	16.7	0.0	18.8	30.8	33.3	0.0	31.6	44.8
Articulated Trucks	1	4	0	5	1	2	0	3	2	0	0	2	10
Articulated %	7.1	22.2	0.0	15.6	25.0	16.7	0.0	18.8	15.4	0.0	0.0	10.5	14.9
Buses	4	2	0	6	2	8	0	10	7	4	0	11	27
Single-Unit Trucks	9	12	0	21	1	2	0	3	4	2	0	6	30
Articulated Trucks	1	4	0	5	1	2	0	3	2	0	0	2	10
Total Entering Leg	14	18	0	32	4	12	0	16	13	6	0	19	67
Buses				6				9				12	27
Single-Unit Trucks				3				16				11	30
Articulated Trucks				1				6				3	10
Total Exiting Leg				10				31				26	67

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Pedestrians

	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	48	92	0	140	33	36	1	70	72	36	0	108	318
4:15 PM	59	107	0	166	37	29	1	67	50	40	0	90	323
4:30 PM	62	116	0	178	41	37	0	78	60	44	0	104	360
4:45 PM	58	108	0	166	31	39	0	70	61	47	0	108	344
Total	227	423	0	650	142	141	2	285	243	167	0	410	1345
5:00 PM	75	119	0	194	37	29	1	67	60	60	0	120	381
5:15 PM	44	125	0	169	39	33	1	73	44	42	0	86	328
5:30 PM	52	117	0	169	43	33	0	76	65	39	1	105	350
5:45 PM	61	117	0	178	23	40	0	63	50	28	0	78	319
Total	232	478	0	710	142	135	2	279	219	169	1	389	1378
Grand Total	459	901	0	1360	284	276	4	564	462	336	1	799	2723
Approach %	33.8	66.3	0.0		50.4	48.9	0.7		57.8	42.1	0.1		
Total %	16.9	33.1	0.0	49.9	10.4	10.1	0.1	20.7	17.0	12.3	0.0	29.3	
Exiting Leg Total				620				1367				736	2723
Cars	447	895	0	1342	277	269	4	550	457	331	1	789	2681
% Cars	97.4	99.3	0.0	98.7	97.5	97.5	100.0	97.5	98.9	98.5	100.0	98.7	98.5
Exiting Leg Total				608				1356				717	2681
Heavy Vehicles	12	6	0	18	7	7	0	14	5	5	0	10	42
% Heavy Vehicles	2.6	0.7	0.0	1.3	2.5	2.5	0.0	2.5	1.1	1.5	0.0	1.3	1.5
Exiting Leg Total				12				11				19	42

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:30 PM	62	116	0	178	41	37	0	78	60	44	0	104	360
4:45 PM	58	108	0	166	31	39	0	70	61	47	0	108	344
5:00 PM	75	119	0	194	37	29	1	67	60	60	0	120	381
5:15 PM	44	125	0	169	39	33	1	73	44	42	0	86	328
Total Volume	239	468	0	707	148	138	2	288	225	193	0	418	1413
% Approach Total	33.8	66.2	0.0		51.4	47.9	0.7		53.8	46.2	0.0		
PHF	0.797	0.936	0.000	0.911	0.902	0.885	0.500	0.923	0.922	0.804	0.000	0.871	0.927
Cars	232	466	0	698	143	135	2	280	221	190	0	411	1389
Cars %	97.1	99.6	0.0	98.7	96.6	97.8	100.0	97.2	98.2	98.4	0.0	98.3	98.3
Heavy Vehicles	7	2	0	9	5	3	0	8	4	3	0	7	24
Heavy Vehicles %	2.9	0.4	0.0	1.3	3.4	2.2	0.0	2.8	1.8	1.6	0.0	1.7	1.7
Cars Enter Leg	232	466	0	698	143	135	2	280	221	190	0	411	1389
Heavy Enter Leg	7	2	0	9	5	3	0	8	4	3	0	7	24
Total Entering Leg	239	468	0	707	148	138	2	288	225	193	0	418	1413
Cars Exiting Leg				333				689				367	1389
Heavy Exiting Leg				8				6				10	24
Total Exiting Leg				341				695				377	1413

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	46	91	0	137	32	34	1	67	72	35	0	107	311
4:15 PM	58	106	0	164	36	29	1	66	50	39	0	89	319
4:30 PM	59	114	0	173	40	35	0	75	59	42	0	101	349
4:45 PM	56	108	0	164	28	39	0	67	60	46	0	106	337
Total	219	419	0	638	136	137	2	275	241	162	0	403	1316
5:00 PM	73	119	0	192	37	29	1	67	58	60	0	118	377
5:15 PM	44	125	0	169	38	32	1	71	44	42	0	86	326
5:30 PM	51	117	0	168	43	32	0	75	64	39	1	104	347
5:45 PM	60	115	0	175	23	39	0	62	50	28	0	78	315
Total	228	476	0	704	141	132	2	275	216	169	1	386	1365
Grand Total	447	895	0	1342	277	269	4	550	457	331	1	789	2681
Approach %	33.3	66.7	0.0		50.4	48.9	0.7		57.9	42.0	0.1		
Total %	16.7	33.4	0.0	50.1	10.3	10.0	0.1	20.5	17.0	12.3	0.0	29.4	
Exiting Leg Total				608				1356				717	2681

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:30 PM	59	114	0	173	40	35	0	75	59	42	0	101	349
4:45 PM	56	108	0	164	28	39	0	67	60	46	0	106	337
5:00 PM	73	119	0	192	37	29	1	67	58	60	0	118	377
5:15 PM	44	125	0	169	38	32	1	71	44	42	0	86	326
Total Volume	232	466	0	698	143	135	2	280	221	190	0	411	1389
% Approach Total	33.2	66.8	0.0		51.1	48.2	0.7		53.8	46.2	0.0		
PHF	0.795	0.932	0.000	0.909	0.894	0.865	0.500	0.933	0.921	0.792	0.000	0.871	0.921
Entering Leg	232	466	0	698	143	135	2	280	221	190	0	411	1389
Exiting Leg				333				689				367	1389
Total				1031				969				778	2778

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	1	0	3	1	2	0	3	0	1	0	1	7
4:15 PM	1	1	0	2	1	0	0	1	0	1	0	1	4
4:30 PM	3	2	0	5	1	2	0	3	1	2	0	3	11
4:45 PM	2	0	0	2	3	0	0	3	1	1	0	2	7
Total	8	4	0	12	6	4	0	10	2	5	0	7	29
5:00 PM	2	0	0	2	0	0	0	0	2	0	0	2	4
5:15 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
5:30 PM	1	0	0	1	0	1	0	1	1	0	0	1	3
5:45 PM	1	2	0	3	0	1	0	1	0	0	0	0	4
Total	4	2	0	6	1	3	0	4	3	0	0	3	13
Grand Total	12	6	0	18	7	7	0	14	5	5	0	10	42
Approach %	66.7	33.3	0.0		50.0	50.0	0.0		50.0	50.0	0.0		
Total %	28.6	14.3	0.0	42.9	16.7	16.7	0.0	33.3	11.9	11.9	0.0	23.8	
Exiting Leg Total				12				11				19	42
Buses	0	2	0	2	2	1	0	3	2	0	0	2	7
% Buses	0.0	33.3	0.0	11.1	28.6	14.3	0.0	21.4	40.0	0.0	0.0	20.0	16.7
Exiting Leg Total				2				4				1	7
Single-Unit Trucks	8	3	0	11	3	6	0	9	2	3	0	5	25
% Single-Unit	66.7	50.0	0.0	61.1	42.9	85.7	0.0	64.3	40.0	60.0	0.0	50.0	59.5
Exiting Leg Total				6				5				14	25
Articulated Trucks	4	1	0	5	2	0	0	2	1	2	0	3	10
% Articulated	33.3	16.7	0.0	27.8	28.6	0.0	0.0	14.3	20.0	40.0	0.0	30.0	23.8
Exiting Leg Total				4				2				4	10

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Route 128 NB Exit 19 Ramps				Sohier Road				Sohier Road				
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	2	1	0	3	1	2	0	3	0	1	0	1	7
4:15 PM	1	1	0	2	1	0	0	1	0	1	0	1	4
4:30 PM	3	2	0	5	1	2	0	3	1	2	0	3	11
4:45 PM	2	0	0	2	3	0	0	3	1	1	0	2	7
Total Volume	8	4	0	12	6	4	0	10	2	5	0	7	29
% Approach Total	66.7	33.3	0.0		60.0	40.0	0.0		28.6	71.4	0.0		
PHF	0.667	0.500	0.000	0.600	0.500	0.500	0.000	0.833	0.500	0.625	0.000	0.583	0.659
Buses	0	2	0	2	2	1	0	3	2	0	0	2	7
Buses %	0.0	50.0	0.0	16.7	33.3	25.0	0.0	30.0	100.0	0.0	0.0	28.6	24.1
Single-Unit Trucks	6	1	0	7	3	3	0	6	0	3	0	3	16
Single-Unit %	75.0	25.0	0.0	58.3	50.0	75.0	0.0	60.0	0.0	60.0	0.0	42.9	55.2
Articulated Trucks	2	1	0	3	1	0	0	1	0	2	0	2	6
Articulated %	25.0	25.0	0.0	25.0	16.7	0.0	0.0	10.0	0.0	40.0	0.0	28.6	20.7
Buses	0	2	0	2	2	1	0	3	2	0	0	2	7
Single-Unit Trucks	6	1	0	7	3	3	0	6	0	3	0	3	16
Articulated Trucks	2	1	0	3	1	0	0	1	0	2	0	2	6
Total Entering Leg	8	4	0	12	6	4	0	10	2	5	0	7	29
Buses				2				4				1	7
Single-Unit Trucks				6				1				9	16
Articulated Trucks				3				1				2	6
Total Exiting Leg				11				6				12	29

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 B**
Location: **N: Route 128 NB Exit 19 Ramps S: Sohier Road**
Location: **E: Sohier Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Pedestrians

	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Route 128 NB Exit 19 Ramps						Sohier Road						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	82	0	0	82	1	0	1	0	2	0	60	0	0	60	0	0	0	0	0	144
7:15 AM	0	98	0	0	98	1	0	1	0	2	1	81	0	0	82	0	0	0	0	0	182
7:30 AM	0	124	0	0	124	2	0	1	0	3	0	101	0	0	101	0	0	0	0	0	228
7:45 AM	0	233	0	0	233	2	0	2	0	4	0	96	0	0	96	0	0	0	0	0	333
Total	0	537	0	0	537	6	0	5	0	11	1	338	0	0	339	0	0	0	0	0	887
8:00 AM	0	211	2	0	213	1	0	1	0	2	2	84	0	0	86	0	0	0	0	0	301
8:15 AM	0	148	1	0	149	1	0	1	0	2	1	89	0	0	90	0	0	0	0	0	241
8:30 AM	0	131	0	0	131	0	0	2	0	2	0	96	0	0	96	0	0	0	0	0	229
8:45 AM	0	127	1	0	128	1	0	0	0	1	0	75	0	0	75	0	0	0	0	0	204
Total	0	617	4	0	621	3	0	4	0	7	3	344	0	0	347	0	0	0	0	0	975
Grand Total	0	1154	4	0	1158	9	0	9	0	18	4	682	0	0	686	0	0	0	0	0	1862
Approach %	0.0	99.7	0.3	0.0		50.0	0.0	50.0	0.0		0.6	99.4	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	62.0	0.2	0.0	62.2	0.5	0.0	0.5	0.0	1.0	0.2	36.6	0.0	0.0	36.8	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					691					8					1163					0	1862
Cars	0	1117	4	0	1121	9	0	9	0	18	3	652	0	0	655	0	0	0	0	0	1794
% Cars	0.0	96.8	100.0	0.0	96.8	100.0	0.0	100.0	0.0	100.0	75.0	95.6	0.0	0.0	95.5	0.0	0.0	0.0	0.0	0.0	96.3
Exiting Leg Total					661					7					1126					0	1794
Heavy Vehicles	0	37	0	0	37	0	0	0	0	0	1	30	0	0	31	0	0	0	0	0	68
% Heavy Vehicles	0.0	3.2	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	25.0	4.4	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	3.7
Exiting Leg Total					30					1					37					0	68

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	233	0	0	233	2	0	2	0	4	0	96	0	0	96	0	0	0	0	0	333
8:00 AM	0	211	2	0	213	1	0	1	0	2	2	84	0	0	86	0	0	0	0	0	301
8:15 AM	0	148	1	0	149	1	0	1	0	2	1	89	0	0	90	0	0	0	0	0	241
8:30 AM	0	131	0	0	131	0	0	2	0	2	0	96	0	0	96	0	0	0	0	0	229
Total Volume	0	723	3	0	726	4	0	6	0	10	3	365	0	0	368	0	0	0	0	0	1104
% Approach Total	0.0	99.6	0.4	0.0		40.0	0.0	60.0	0.0		0.8	99.2	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.776	0.375	0.000	0.779	0.500	0.000	0.750	0.000	0.625	0.375	0.951	0.000	0.000	0.958	0.000	0.000	0.000	0.000	0.000	0.829
Cars	0	700	3	0	703	4	0	6	0	10	3	347	0	0	350	0	0	0	0	0	1063
Cars %	0.0	96.8	100.0	0.0	96.8	100.0	0.0	100.0	0.0	100.0	100.0	95.1	0.0	0.0	95.1	0.0	0.0	0.0	0.0	0.0	96.3
Heavy Vehicles	0	23	0	0	23	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	41
Heavy Vehicles %	0.0	3.2	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0	3.7
Cars Enter Leg	0	700	3	0	703	4	0	6	0	10	3	347	0	0	350	0	0	0	0	0	1063
Heavy Enter Leg	0	23	0	0	23	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	41
Total Entering Leg	0	723	3	0	726	4	0	6	0	10	3	365	0	0	368	0	0	0	0	0	1104
Cars Exiting Leg					351					6					706					0	1063
Heavy Exiting Leg					18					0					23					0	41
Total Exiting Leg					369					6					729					0	1104

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	80	0	0	80	1	0	1	0	2	0	57	0	0	57	0	0	0	0	0	139
7:15 AM	0	95	0	0	95	1	0	1	0	2	0	76	0	0	76	0	0	0	0	0	173
7:30 AM	0	121	0	0	121	2	0	1	0	3	0	98	0	0	98	0	0	0	0	0	222
7:45 AM	0	228	0	0	228	2	0	2	0	4	0	95	0	0	95	0	0	0	0	0	327
Total	0	524	0	0	524	6	0	5	0	11	0	326	0	0	326	0	0	0	0	0	861
8:00 AM	0	204	2	0	206	1	0	1	0	2	2	75	0	0	77	0	0	0	0	0	285
8:15 AM	0	141	1	0	142	1	0	1	0	2	1	86	0	0	87	0	0	0	0	0	231
8:30 AM	0	127	0	0	127	0	0	2	0	2	0	91	0	0	91	0	0	0	0	0	220
8:45 AM	0	121	1	0	122	1	0	0	0	1	0	74	0	0	74	0	0	0	0	0	197
Total	0	593	4	0	597	3	0	4	0	7	3	326	0	0	329	0	0	0	0	0	933
Grand Total	0	1117	4	0	1121	9	0	9	0	18	3	652	0	0	655	0	0	0	0	0	1794
Approach %	0.0	99.6	0.4	0.0		50.0	0.0	50.0	0.0		0.5	99.5	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	62.3	0.2	0.0	62.5	0.5	0.0	0.5	0.0	1.0	0.2	36.3	0.0	0.0	36.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					661					7					1126					0	1794

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	0	121	0	0	121	2	0	1	0	3	0	98	0	0	98	0	0	0	0	0	222
7:45 AM	0	228	0	0	228	2	0	2	0	4	0	95	0	0	95	0	0	0	0	0	327
8:00 AM	0	204	2	0	206	1	0	1	0	2	2	75	0	0	77	0	0	0	0	0	285
8:15 AM	0	141	1	0	142	1	0	1	0	2	1	86	0	0	87	0	0	0	0	0	231
Total Volume	0	694	3	0	697	6	0	5	0	11	3	354	0	0	357	0	0	0	0	0	1065
% Approach Total	0.0	99.6	0.4	0.0		54.5	0.0	45.5	0.0		0.8	99.2	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.761	0.375	0.000	0.764	0.750	0.000	0.625	0.000	0.688	0.375	0.903	0.000	0.000	0.911	0.000	0.000	0.000	0.000	0.000	0.814
Entering Leg	0	694	3	0	697	6	0	5	0	11	3	354	0	0	357	0	0	0	0	0	1065
Exiting Leg					360					6					699					0	1065
Total					1057					17					1056					0	2130

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
7:15 AM	0	3	0	0	3	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	9
7:30 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
7:45 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
Total	0	13	0	0	13	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	26
8:00 AM	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	16
8:15 AM	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	10
8:30 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
8:45 AM	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
Total	0	24	0	0	24	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	42
Grand Total	0	37	0	0	37	0	0	0	0	0	1	30	0	0	31	0	0	0	0	0	68
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		3.2	96.8	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	54.4	0.0	0.0	54.4	0.0	0.0	0.0	0.0	0.0	1.5	44.1	0.0	0.0	45.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					30					1					37					0	68
Buses	0	15	0	0	15	0	0	0	0	0	1	14	0	0	15	0	0	0	0	0	30
% Buses	0.0	40.5	0.0	0.0	40.5	0.0	0.0	0.0	0.0	0.0	100.0	46.7	0.0	0.0	48.4	0.0	0.0	0.0	0.0	0.0	44.1
Exiting Leg Total					14					1					15					0	30
Single-Unit Trucks	0	18	0	0	18	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	32
% Single-Unit	0.0	48.6	0.0	0.0	48.6	0.0	0.0	0.0	0.0	0.0	0.0	46.7	0.0	0.0	45.2	0.0	0.0	0.0	0.0	0.0	47.1
Exiting Leg Total					14					0					18					0	32
Articulated Trucks	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
% Articulated	0.0	10.8	0.0	0.0	10.8	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	8.8
Exiting Leg Total					2					0					4					0	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	16
8:15 AM	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	10
8:30 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
8:45 AM	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	7
Total Volume	0	24	0	0	24	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	42
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.857	0.000	0.000	0.857	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.656
Buses	0	12	0	0	12	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	21
Buses %	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	17
Single-Unit %	0.0	37.5	0.0	0.0	37.5	0.0	0.0	0.0	0.0	0.0	0.0	44.4	0.0	0.0	44.4	0.0	0.0	0.0	0.0	0.0	40.5
Articulated Trucks	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Articulated %	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	9.5
Buses	0	12	0	0	12	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	21
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	17
Articulated Trucks	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Total Entering Leg	0	24	0	0	24	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	42
Buses					9					0					12					0	21
Single-Unit Trucks					8					0					9					0	17
Articulated Trucks					1					0					3					0	4
Total Exiting Leg					18					0					24					0	42

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	2	0	0	0	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	2	0	0	0	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	4
Approach %	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	25.0	0.0	25.0	0.0	25.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							1							1							2							0	4

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total Volume	0	2	0	0	0	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	4
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	2	0	0	0	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	4
Exiting Leg							1							1							2							0	4
Total							3							2							3							0	8

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Pedestrians

	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	0	0	0	0	0	0	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Grand Total	0	0	0	0	0	0	0	0	0	0	0	16	1	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
Approach %	0	0	0	0	0	0		0	0	0	0	94.1	5.88		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	94.1	5.88	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							17							0							0	17

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Total Volume	0	0	0	0	0	0	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.458	0.000	0.458	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.458
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Exiting Leg							0							11							0							0	11
Total							0							22							0							0	22

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	86	0	0	86	0	0	0	0	0	0	81	0	0	81	0	0	0	0	0	167
4:15 PM	0	92	2	0	94	3	0	0	0	3	2	79	0	1	82	0	0	0	0	0	179
4:30 PM	0	101	1	0	102	0	0	0	0	0	2	86	0	0	88	0	0	0	0	0	190
4:45 PM	0	107	0	0	107	1	0	1	0	2	1	98	0	0	99	0	0	0	0	0	208
Total	0	386	3	0	389	4	0	1	0	5	5	344	0	1	350	0	0	0	0	0	744
5:00 PM	0	102	0	0	102	1	0	1	0	2	1	113	0	0	114	0	0	0	0	0	218
5:15 PM	0	77	0	0	77	0	0	1	0	1	1	88	0	0	89	0	0	0	0	0	167
5:30 PM	0	87	1	0	88	1	0	0	0	1	0	87	0	0	87	0	0	0	0	0	176
5:45 PM	0	94	2	0	96	0	0	0	0	0	2	87	0	0	89	0	0	0	0	0	185
Total	0	360	3	0	363	2	0	2	0	4	4	375	0	0	379	0	0	0	0	0	746
Grand Total	0	746	6	0	752	6	0	3	0	9	9	719	0	1	729	0	0	0	0	0	1490
Approach %	0.0	99.2	0.8	0.0		66.7	0.0	33.3	0.0		1.2	98.6	0.0	0.1		0.0	0.0	0.0	0.0		
Total %	0.0	50.1	0.4	0.0	50.5	0.4	0.0	0.2	0.0	0.6	0.6	48.3	0.0	0.1	48.9	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					725					15					750					0	1490
Cars	0	730	6	0	736	6	0	3	0	9	9	709	0	1	719	0	0	0	0	0	1464
% Cars	0.0	97.9	100.0	0.0	97.9	100.0	0.0	100.0	0.0	100.0	100.0	98.6	0.0	100.0	98.6	0.0	0.0	0.0	0.0	0.0	98.3
Exiting Leg Total					715					15					734					0	1464
Heavy Vehicles	0	16	0	0	16	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	26
% Heavy Vehicles	0.0	2.1	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	1.7
Exiting Leg Total					10					0					16					0	26

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	92	2	0	94	3	0	0	0	3	2	79	0	1	82	0	0	0	0	0	179
4:30 PM	0	101	1	0	102	0	0	0	0	0	2	86	0	0	88	0	0	0	0	0	190
4:45 PM	0	107	0	0	107	1	0	1	0	2	1	98	0	0	99	0	0	0	0	0	208
5:00 PM	0	102	0	0	102	1	0	1	0	2	1	113	0	0	114	0	0	0	0	0	218
Total Volume	0	402	3	0	405	5	0	2	0	7	6	376	0	1	383	0	0	0	0	0	795
% Approach Total	0.0	99.3	0.7	0.0		71.4	0.0	28.6	0.0		1.6	98.2	0.0	0.3		0.0	0.0	0.0	0.0		
PHF	0.000	0.939	0.375	0.000	0.946	0.417	0.000	0.500	0.000	0.583	0.750	0.832	0.000	0.250	0.840	0.000	0.000	0.000	0.000	0.000	0.912
Cars	0	394	3	0	397	5	0	2	0	7	6	370	0	1	377	0	0	0	0	0	781
Cars %	0.0	98.0	100.0	0.0	98.0	100.0	0.0	100.0	0.0	100.0	100.0	98.4	0.0	100.0	98.4	0.0	0.0	0.0	0.0	0.0	98.2
Heavy Vehicles	0	8	0	0	8	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	14
Heavy Vehicles %	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	1.8
Cars Enter Leg	0	394	3	0	397	5	0	2	0	7	6	370	0	1	377	0	0	0	0	0	781
Heavy Enter Leg	0	8	0	0	8	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	14
Total Entering Leg	0	402	3	0	405	5	0	2	0	7	6	376	0	1	383	0	0	0	0	0	795
Cars Exiting Leg					375					9					397					0	781
Heavy Exiting Leg					6					0					8					0	14
Total Exiting Leg					381					9					405					0	795

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	82	0	0	82	0	0	0	0	0	0	79	0	0	79	0	0	0	0	0	161
4:15 PM	0	91	2	0	93	3	0	0	0	3	2	79	0	1	82	0	0	0	0	0	178
4:30 PM	0	96	1	0	97	0	0	0	0	0	2	83	0	0	85	0	0	0	0	0	182
4:45 PM	0	106	0	0	106	1	0	1	0	2	1	97	0	0	98	0	0	0	0	0	206
Total	0	375	3	0	378	4	0	1	0	5	5	338	0	1	344	0	0	0	0	0	727
5:00 PM	0	101	0	0	101	1	0	1	0	2	1	111	0	0	112	0	0	0	0	0	215
5:15 PM	0	76	0	0	76	0	0	1	0	1	1	86	0	0	87	0	0	0	0	0	164
5:30 PM	0	85	1	0	86	1	0	0	0	1	0	87	0	0	87	0	0	0	0	0	174
5:45 PM	0	93	2	0	95	0	0	0	0	0	2	87	0	0	89	0	0	0	0	0	184
Total	0	355	3	0	358	2	0	2	0	4	4	371	0	0	375	0	0	0	0	0	737
Grand Total	0	730	6	0	736	6	0	3	0	9	9	709	0	1	719	0	0	0	0	0	1464
Approach %	0.0	99.2	0.8	0.0		66.7	0.0	33.3	0.0		1.3	98.6	0.0	0.1		0.0	0.0	0.0	0.0		
Total %	0.0	49.9	0.4	0.0	50.3	0.4	0.0	0.2	0.0	0.6	0.6	48.4	0.0	0.1	49.1	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					715					15					734					0	1464

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road					Hilltop Drive (north)					Sohier Road					Driveway					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	91	2	0	93	3	0	0	0	3	2	79	0	1	82	0	0	0	0	0	178
4:30 PM	0	96	1	0	97	0	0	0	0	0	2	83	0	0	85	0	0	0	0	0	182
4:45 PM	0	106	0	0	106	1	0	1	0	2	1	97	0	0	98	0	0	0	0	0	206
5:00 PM	0	101	0	0	101	1	0	1	0	2	1	111	0	0	112	0	0	0	0	0	215
Total Volume	0	394	3	0	397	5	0	2	0	7	6	370	0	1	377	0	0	0	0	0	781
% Approach Total	0.0	99.2	0.8	0.0		71.4	0.0	28.6	0.0		1.6	98.1	0.0	0.3		0.0	0.0	0.0	0.0		
PHF	0.000	0.929	0.375	0.000	0.936	0.417	0.000	0.500	0.000	0.583	0.750	0.833	0.000	0.250	0.842	0.000	0.000	0.000	0.000	0.000	0.908
Entering Leg	0	394	3	0	397	5	0	2	0	7	6	370	0	1	377	0	0	0	0	0	781
Exiting Leg					375					9					397					0	781
Total					772					16					774					0	1562

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	11	0	0	11	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	17
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
5:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	9
Grand Total	0	16	0	0	16	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	26
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	61.5	0.0	0.0	61.5	0.0	0.0	0.0	0.0	0.0	0.0	38.5	0.0	0.0	38.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					10					0					16					0	26
Buses	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Buses	0.0	6.3	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	11.5
Exiting Leg Total					2					0					1					0	3
Single-Unit Trucks	0	12	0	0	12	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	17
% Single-Unit	0.0	75.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	65.4
Exiting Leg Total					5					0					12					0	17
Articulated Trucks	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
% Articulated	0.0	18.8	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	23.1
Exiting Leg Total					3					0					3					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North					Hilltop Drive (north) from East					Sohier Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	11	0	0	11	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	17
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.550	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.531
Buses	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Buses %	0.0	9.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	17.6
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	12
Single-Unit %	0.0	81.8	0.0	0.0	81.8	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	70.6
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Articulated %	0.0	9.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	11.8
Buses	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	12
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Entering Leg	0	11	0	0	11	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	17
Buses					2					0					1					0	3
Single-Unit Trucks					3					0					9					0	12
Articulated Trucks					1					0					1					0	2
Total Exiting Leg					6					0					11					0	17

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road from North							Hilltop Drive (north) from East							Sohier Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	33.3	66.7	0.0	0.0	33.3	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							2							0							1	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North							Hilltop Drive (north) from East							Sohier Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							0							1							0							0	1
Total							0							2							0							0	2

PDI File #: **186383 C**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (north) W: Driveway**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Pedestrians

	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0	0	0	0	0	0		0	0	0	0	0	100		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							1							0							0	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road							Hilltop Drive (north)							Sohier Road							Driveway							
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg							0							0							0							0	0
Total							0							0							0							0	0

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	83	0	0	83	1	0	0	1	1	59	0	60	144
7:15 AM	99	0	0	99	1	4	0	5	1	80	0	81	185
7:30 AM	124	0	0	124	0	2	0	2	2	101	0	103	229
7:45 AM	230	0	0	230	1	2	0	3	2	98	0	100	333
Total	536	0	0	536	3	8	0	11	6	338	0	344	891
8:00 AM	196	1	0	197	1	2	0	3	2	84	0	86	286
8:15 AM	148	0	0	148	0	2	0	2	1	89	0	90	240
8:30 AM	133	0	0	133	0	0	0	0	3	97	0	100	233
8:45 AM	125	0	0	125	0	1	0	1	0	74	0	74	200
Total	602	1	0	603	1	5	0	6	6	344	0	350	959
Grand Total	1138	1	0	1139	4	13	0	17	12	682	0	694	1850
Approach %	99.9	0.1	0.0		23.5	76.5	0.0		1.7	98.3	0.0		
Total %	61.5	0.1	0.0	61.6	0.2	0.7	0.0	0.9	0.6	36.9	0.0	37.5	
Exiting Leg Total				686				13				1151	1850
Cars	1100	1	0	1101	3	13	0	16	12	651	0	663	1780
% Cars	96.7	100.0	0.0	96.7	75.0	100.0	0.0	94.1	100.0	95.5	0.0	95.5	96.2
Exiting Leg Total				654				13				1113	1780
Heavy Vehicles	38	0	0	38	1	0	0	1	0	31	0	31	70
% Heavy Vehicles	3.3	0.0	0.0	3.3	25.0	0.0	0.0	5.9	0.0	4.5	0.0	4.5	3.8
Exiting Leg Total				32				0				38	70

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:45 AM	230	0	0	230	1	2	0	3	2	98	0	100	333
8:00 AM	196	1	0	197	1	2	0	3	2	84	0	86	286
8:15 AM	148	0	0	148	0	2	0	2	1	89	0	90	240
8:30 AM	133	0	0	133	0	0	0	0	3	97	0	100	233
Total Volume	707	1	0	708	2	6	0	8	8	368	0	376	1092
% Approach Total	99.9	0.1	0.0		25.0	75.0	0.0		2.1	97.9	0.0		
PHF	0.768	0.250	0.000	0.770	0.500	0.750	0.000	0.667	0.667	0.939	0.000	0.940	0.820
Cars	682	1	0	683	2	6	0	8	8	349	0	357	1048
Cars %	96.5	100.0	0.0	96.5	100.0	100.0	0.0	100.0	100.0	94.8	0.0	94.9	96.0
Heavy Vehicles	25	0	0	25	0	0	0	0	0	19	0	19	44
Heavy Vehicles %	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	5.2	0.0	5.1	4.0
Cars Enter Leg	682	1	0	683	2	6	0	8	8	349	0	357	1048
Heavy Enter Leg	25	0	0	25	0	0	0	0	0	19	0	19	44
Total Entering Leg	707	1	0	708	2	6	0	8	8	368	0	376	1092
Cars Exiting Leg				351				9				688	1048
Heavy Exiting Leg				19				0				25	44
Total Exiting Leg				370				9				713	1092

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	81	0	0	81	1	0	0	1	1	56	0	57	139
7:15 AM	96	0	0	96	0	4	0	4	1	75	0	76	176
7:30 AM	121	0	0	121	0	2	0	2	2	98	0	100	223
7:45 AM	225	0	0	225	1	2	0	3	2	94	0	96	324
Total	523	0	0	523	2	8	0	10	6	323	0	329	862
8:00 AM	189	1	0	190	1	2	0	3	2	77	0	79	272
8:15 AM	139	0	0	139	0	2	0	2	1	86	0	87	228
8:30 AM	129	0	0	129	0	0	0	0	3	92	0	95	224
8:45 AM	120	0	0	120	0	1	0	1	0	73	0	73	194
Total	577	1	0	578	1	5	0	6	6	328	0	334	918
Grand Total	1100	1	0	1101	3	13	0	16	12	651	0	663	1780
Approach %	99.9	0.1	0.0		18.8	81.3	0.0		1.8	98.2	0.0		
Total %	61.8	0.1	0.0	61.9	0.2	0.7	0.0	0.9	0.7	36.6	0.0	37.2	
Exiting Leg Total				654				13				1113	1780

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:45 AM	225	0	0	225	1	2	0	3	2	94	0	96	324
8:00 AM	189	1	0	190	1	2	0	3	2	77	0	79	272
8:15 AM	139	0	0	139	0	2	0	2	1	86	0	87	228
8:30 AM	129	0	0	129	0	0	0	0	3	92	0	95	224
Total Volume	682	1	0	683	2	6	0	8	8	349	0	357	1048
% Approach Total	99.9	0.1	0.0		25.0	75.0	0.0		2.2	97.8	0.0		
PHF	0.758	0.250	0.000	0.759	0.500	0.750	0.000	0.667	0.667	0.928	0.000	0.930	0.809
Entering Leg	682	1	0	683	2	6	0	8	8	349	0	357	1048
Exiting Leg				351				9				688	1048
Total				1034				17				1045	2096

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	2	0	0	2	0	0	0	0	0	3	0	3	5
7:15 AM	3	0	0	3	1	0	0	1	0	5	0	5	9
7:30 AM	3	0	0	3	0	0	0	0	0	3	0	3	6
7:45 AM	5	0	0	5	0	0	0	0	0	4	0	4	9
Total	13	0	0	13	1	0	0	1	0	15	0	15	29
8:00 AM	7	0	0	7	0	0	0	0	0	7	0	7	14
8:15 AM	9	0	0	9	0	0	0	0	0	3	0	3	12
8:30 AM	4	0	0	4	0	0	0	0	0	5	0	5	9
8:45 AM	5	0	0	5	0	0	0	0	0	1	0	1	6
Total	25	0	0	25	0	0	0	0	0	16	0	16	41
Grand Total	38	0	0	38	1	0	0	1	0	31	0	31	70
Approach %	100.0	0.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
Total %	54.3	0.0	0.0	54.3	1.4	0.0	0.0	1.4	0.0	44.3	0.0	44.3	
Exiting Leg Total				32				0				38	70
Buses	15	0	0	15	1	0	0	1	0	14	0	14	30
% Buses	39.5	0.0	0.0	39.5	100.0	0.0	0.0	100.0	0.0	45.2	0.0	45.2	42.9
Exiting Leg Total				15				0				15	30
Single-Unit Trucks	18	0	0	18	0	0	0	0	0	13	0	13	31
% Single-Unit	47.4	0.0	0.0	47.4	0.0	0.0	0.0	0.0	0.0	41.9	0.0	41.9	44.3
Exiting Leg Total				13				0				18	31
Articulated Trucks	5	0	0	5	0	0	0	0	0	4	0	4	9
% Articulated	13.2	0.0	0.0	13.2	0.0	0.0	0.0	0.0	0.0	12.9	0.0	12.9	12.9
Exiting Leg Total				4				0				5	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:45 AM	5	0	0	5	0	0	0	0	0	4	0	4	9
8:00 AM	7	0	0	7	0	0	0	0	0	7	0	7	14
8:15 AM	9	0	0	9	0	0	0	0	0	3	0	3	12
8:30 AM	4	0	0	4	0	0	0	0	0	5	0	5	9
Total Volume	25	0	0	25	0	0	0	0	0	19	0	19	44
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.694	0.000	0.000	0.694	0.000	0.000	0.000	0.000	0.000	0.679	0.000	0.679	0.786
Buses	11	0	0	11	0	0	0	0	0	9	0	9	20
Buses %	44.0	0.0	0.0	44.0	0.0	0.0	0.0	0.0	0.0	47.4	0.0	47.4	45.5
Single-Unit Trucks	11	0	0	11	0	0	0	0	0	8	0	8	19
Single-Unit %	44.0	0.0	0.0	44.0	0.0	0.0	0.0	0.0	0.0	42.1	0.0	42.1	43.2
Articulated Trucks	3	0	0	3	0	0	0	0	0	2	0	2	5
Articulated %	12.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	10.5	11.4
Buses	11	0	0	11	0	0	0	0	0	9	0	9	20
Single-Unit Trucks	11	0	0	11	0	0	0	0	0	8	0	8	19
Articulated Trucks	3	0	0	3	0	0	0	0	0	2	0	2	5
Total Entering Leg	25	0	0	25	0	0	0	0	0	19	0	19	44
Buses				9				0				11	20
Single-Unit Trucks				8				0				11	19
Articulated Trucks				2				0				3	5
Total Exiting Leg				19				0				25	44

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	2
Total	1	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	3
Approach %	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	33.3	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	33.3	0.0	33.3	0.0	33.3	0.0	0.0	0.0	33.3	
Exiting Leg Total						1						1						1	3

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	2
Total Volume	1	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	3
% Approach Total	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.375
Entering Leg	1	0	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	3
Exiting Leg						1						1						1	3
Total						2						2						2	6

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Pedestrians

	Sohier Road from North						Hilltop Drive (south) from East						Sohier Road from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	0	0	0	5
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	6
Total	0	0	0	0	0	0	0	0	0	17	3	20	0	0	0	0	0	0	20
8:00 AM	0	0	0	0	0	0	0	0	0	7	1	8	0	0	0	0	0	0	8
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	10	1	11	0	0	0	0	0	0	11
Grand Total	0	0	0	0	0	0	0	0	0	27	4	31	0	0	0	0	0	0	31
Approach %	0	0	0	0	0		0	0	0	87.097	12.903		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	87.097	12.903	100	0	0	0	0	0	0	
Exiting Leg Total						0						31						0	31

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Sohier Road from North						Hilltop Drive (south) from East						Sohier Road from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
7:15 AM	0	0	0	0	0	0	0	0	0	2	3	5	0	0	0	0	0	0	5
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	6
8:00 AM	0	0	0	0	0	0	0	0	0	7	1	8	0	0	0	0	0	0	8
Total Volume	0	0	0	0	0	0	0	0	0	18	4	22	0	0	0	0	0	0	22
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	81.8	18.2		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.333	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.688
Entering Leg	0	0	0	0	0	0	0	0	0	18	4	22	0	0	0	0	0	0	22
Exiting Leg						0						22						0	22
Total						0						44						0	44

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	86	0	0	86	0	0	0	0	0	84	0	84	170
4:15 PM	91	2	0	93	0	1	0	1	1	81	0	82	176
4:30 PM	100	0	0	100	1	0	0	1	1	87	0	88	189
4:45 PM	107	2	0	109	0	3	0	3	1	96	0	97	209
Total	384	4	0	388	1	4	0	5	3	348	0	351	744
5:00 PM	104	0	0	104	1	2	0	3	1	113	1	115	222
5:15 PM	77	0	0	77	1	1	0	2	3	90	0	93	172
5:30 PM	86	0	0	86	1	0	1	2	1	84	0	85	173
5:45 PM	93	1	0	94	1	3	0	4	1	89	0	90	188
Total	360	1	0	361	4	6	1	11	6	376	1	383	755
Grand Total	744	5	0	749	5	10	1	16	9	724	1	734	1499
Approach %	99.3	0.7	0.0		31.3	62.5	6.3		1.2	98.6	0.1		
Total %	49.6	0.3	0.0	50.0	0.3	0.7	0.1	1.1	0.6	48.3	0.1	49.0	
Exiting Leg Total				729				15				755	1499
Cars	728	5	0	733	5	10	1	16	9	714	1	724	1473
% Cars	97.8	100.0	0.0	97.9	100.0	100.0	100.0	100.0	100.0	98.6	100.0	98.6	98.3
Exiting Leg Total				719				15				739	1473
Heavy Vehicles	16	0	0	16	0	0	0	0	0	10	0	10	26
% Heavy Vehicles	2.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	1.7
Exiting Leg Total				10				0				16	26

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:15 PM	91	2	0	93	0	1	0	1	1	81	0	82	176
4:30 PM	100	0	0	100	1	0	0	1	1	87	0	88	189
4:45 PM	107	2	0	109	0	3	0	3	1	96	0	97	209
5:00 PM	104	0	0	104	1	2	0	3	1	113	1	115	222
Total Volume	402	4	0	406	2	6	0	8	4	377	1	382	796
% Approach Total	99.0	1.0	0.0		25.0	75.0	0.0		1.0	98.7	0.3		
PHF	0.939	0.500	0.000	0.931	0.500	0.500	0.000	0.667	1.000	0.834	0.250	0.830	0.896
Cars	394	4	0	398	2	6	0	8	4	371	1	376	782
Cars %	98.0	100.0	0.0	98.0	100.0	100.0	0.0	100.0	100.0	98.4	100.0	98.4	98.2
Heavy Vehicles	8	0	0	8	0	0	0	0	0	6	0	6	14
Heavy Vehicles %	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6	1.8
Cars Enter Leg	394	4	0	398	2	6	0	8	4	371	1	376	782
Heavy Enter Leg	8	0	0	8	0	0	0	0	0	6	0	6	14
Total Entering Leg	402	4	0	406	2	6	0	8	4	377	1	382	796
Cars Exiting Leg				373				8				401	782
Heavy Exiting Leg				6				0				8	14
Total Exiting Leg				379				8				409	796

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	82	0	0	82	0	0	0	0	0	82	0	82	164
4:15 PM	90	2	0	92	0	1	0	1	1	81	0	82	175
4:30 PM	95	0	0	95	1	0	0	1	1	84	0	85	181
4:45 PM	106	2	0	108	0	3	0	3	1	95	0	96	207
Total	373	4	0	377	1	4	0	5	3	342	0	345	727
5:00 PM	103	0	0	103	1	2	0	3	1	111	1	113	219
5:15 PM	76	0	0	76	1	1	0	2	3	88	0	91	169
5:30 PM	84	0	0	84	1	0	1	2	1	84	0	85	171
5:45 PM	92	1	0	93	1	3	0	4	1	89	0	90	187
Total	355	1	0	356	4	6	1	11	6	372	1	379	746
Grand Total	728	5	0	733	5	10	1	16	9	714	1	724	1473
Approach %	99.3	0.7	0.0		31.3	62.5	6.3		1.2	98.6	0.1		
Total %	49.4	0.3	0.0	49.8	0.3	0.7	0.1	1.1	0.6	48.5	0.1	49.2	
Exiting Leg Total				719				15				739	1473

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:15 PM	90	2	0	92	0	1	0	1	1	81	0	82	175
4:30 PM	95	0	0	95	1	0	0	1	1	84	0	85	181
4:45 PM	106	2	0	108	0	3	0	3	1	95	0	96	207
5:00 PM	103	0	0	103	1	2	0	3	1	111	1	113	219
Total Volume	394	4	0	398	2	6	0	8	4	371	1	376	782
% Approach Total	99.0	1.0	0.0		25.0	75.0	0.0		1.1	98.7	0.3		
PHF	0.929	0.500	0.000	0.921	0.500	0.500	0.000	0.667	1.000	0.836	0.250	0.832	0.893
Entering Leg	394	4	0	398	2	6	0	8	4	371	1	376	782
Exiting Leg				373				8				401	782
Total				771				16				777	1564

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	4	0	0	4	0	0	0	0	0	2	0	2	6
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	5	0	0	5	0	0	0	0	0	3	0	3	8
4:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	11	0	0	11	0	0	0	0	0	6	0	6	17
5:00 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
5:15 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
5:30 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
5:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	5	0	0	5	0	0	0	0	0	4	0	4	9
Grand Total	16	0	0	16	0	0	0	0	0	10	0	10	26
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	61.5	0.0	0.0	61.5	0.0	0.0	0.0	0.0	0.0	38.5	0.0	38.5	
Exiting Leg Total				10				0				16	26
Buses	1	0	0	1	0	0	0	0	0	2	0	2	3
% Buses	6.3	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	20.0	0.0	20.0	11.5
Exiting Leg Total				2				0				1	3
Single-Unit Trucks	12	0	0	12	0	0	0	0	0	5	0	5	17
% Single-Unit	75.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	65.4
Exiting Leg Total				5				0				12	17
Articulated Trucks	3	0	0	3	0	0	0	0	0	3	0	3	6
% Articulated	18.8	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	30.0	0.0	30.0	23.1
Exiting Leg Total				3				0				3	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North				Hilltop Drive (south) from East				Sohier Road from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
4:00 PM	4	0	0	4	0	0	0	0	0	2	0	2	6
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	5	0	0	5	0	0	0	0	0	3	0	3	8
4:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	11	0	0	11	0	0	0	0	0	6	0	6	17
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.550	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.531
Buses	1	0	0	1	0	0	0	0	0	2	0	2	3
Buses %	9.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	17.6
Single-Unit Trucks	9	0	0	9	0	0	0	0	0	3	0	3	12
Single-Unit %	81.8	0.0	0.0	81.8	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	70.6
Articulated Trucks	1	0	0	1	0	0	0	0	0	1	0	1	2
Articulated %	9.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.7	11.8
Buses	1	0	0	1	0	0	0	0	0	2	0	2	3
Single-Unit Trucks	9	0	0	9	0	0	0	0	0	3	0	3	12
Articulated Trucks	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Entering Leg	11	0	0	11	0	0	0	0	0	6	0	6	17
Buses				2				0				1	3
Single-Unit Trucks				3				0				9	12
Articulated Trucks				1				0				1	2
Total Exiting Leg				6				0				11	17

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	2
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0	50.0	
Exiting Leg Total						1						1						0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Exiting Leg						0						1						0	1
Total						0						2						0	2

PDI File #: **186383 D**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Hilltop Drive (south)**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Pedestrians

	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
Approach %	0	0	0	0	0		0	0	0	0	100		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	
Exiting Leg Total						0						2						0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Sohier Road						Hilltop Drive (south)						Sohier Road						
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2
Exiting Leg						0						2						0	2
Total						0						4						0	4

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	23	60	0	83	52	28	0	80	20	8	0	28	191
7:15 AM	22	81	0	103	74	38	0	112	29	6	1	36	251
7:30 AM	24	104	0	128	88	38	0	126	54	15	0	69	323
7:45 AM	30	194	0	224	89	46	0	135	65	13	0	78	437
Total	99	439	0	538	303	150	0	453	168	42	1	211	1202
8:00 AM	31	192	0	223	78	54	0	132	61	8	0	69	424
8:15 AM	32	118	0	150	74	50	0	124	50	15	0	65	339
8:30 AM	21	113	0	134	75	41	0	116	47	25	0	72	322
8:45 AM	20	107	0	127	60	46	0	106	44	14	0	58	291
Total	104	530	0	634	287	191	0	478	202	62	0	264	1376
Grand Total	203	969	0	1172	590	341	0	931	370	104	1	475	2578
Approach %	17.3	82.7	0.0		63.4	36.6	0.0		77.9	21.9	0.2		
Total %	7.9	37.6	0.0	45.5	22.9	13.2	0.0	36.1	14.4	4.0	0.0	18.4	
Exiting Leg Total				694				1339				545	2578
Cars	194	941	0	1135	564	333	0	897	360	98	1	459	2491
% Cars	95.6	97.1	0.0	96.8	95.6	97.7	0.0	96.3	97.3	94.2	100.0	96.6	96.6
Exiting Leg Total				662				1301				528	2491
Heavy Vehicles	9	28	0	37	26	8	0	34	10	6	0	16	87
% Heavy Vehicles	4.4	2.9	0.0	3.2	4.4	2.3	0.0	3.7	2.7	5.8	0.0	3.4	3.4
Exiting Leg Total				32				38				17	87

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	24	104	0	128	88	38	0	126	54	15	0	69	323
7:45 AM	30	194	0	224	89	46	0	135	65	13	0	78	437
8:00 AM	31	192	0	223	78	54	0	132	61	8	0	69	424
8:15 AM	32	118	0	150	74	50	0	124	50	15	0	65	339
Total Volume	117	608	0	725	329	188	0	517	230	51	0	281	1523
% Approach Total	16.1	83.9	0.0		63.6	36.4	0.0		81.9	18.1	0.0		
PHF	0.914	0.784	0.000	0.809	0.924	0.870	0.000	0.957	0.885	0.850	0.000	0.901	0.871
Cars	113	590	0	703	315	183	0	498	226	48	0	274	1475
Cars %	96.6	97.0	0.0	97.0	95.7	97.3	0.0	96.3	98.3	94.1	0.0	97.5	96.8
Heavy Vehicles	4	18	0	22	14	5	0	19	4	3	0	7	48
Heavy Vehicles %	3.4	3.0	0.0	3.0	4.3	2.7	0.0	3.7	1.7	5.9	0.0	2.5	3.2
Cars Enter Leg	113	590	0	703	315	183	0	498	226	48	0	274	1475
Heavy Enter Leg	4	18	0	22	14	5	0	19	4	3	0	7	48
Total Entering Leg	117	608	0	725	329	188	0	517	230	51	0	281	1523
Cars Exiting Leg				363				816				296	1475
Heavy Exiting Leg				17				22				9	48
Total Exiting Leg				380				838				305	1523

PDI File #:	**186383 E**
Location:	**N: Sohier Road S: Sohier Road**
Location:	**W: Tozer Road**
City, State:	**Beverly, MA**
Client:	**GPI/ R.Brown**
Site Code:	**TBA**
Count Date:	**Thursday, August 30, 2018**
Start Time:	**7:00 AM**
End Time:	**9:00 AM**
Class:	

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	23	58	0	81	48	28	0	76	19	8	0	27	184
7:15 AM	21	79	0	100	70	38	0	108	29	6	1	36	244
7:30 AM	23	102	0	125	86	36	0	122	54	14	0	68	315
7:45 AM	29	190	0	219	85	45	0	130	64	13	0	77	426
Total	96	429	0	525	289	147	0	436	166	41	1	208	1169
8:00 AM	30	187	0	217	72	52	0	124	60	7	0	67	408
8:15 AM	31	111	0	142	72	50	0	122	48	14	0	62	326
8:30 AM	18	112	0	130	72	39	0	111	44	23	0	67	308
8:45 AM	19	102	0	121	59	45	0	104	42	13	0	55	280
Total	98	512	0	610	275	186	0	461	194	57	0	251	1322
Grand Total	194	941	0	1135	564	333	0	897	360	98	1	459	2491
Approach %	17.1	82.9	0.0		62.9	37.1	0.0		78.4	21.4	0.2		
Total %	7.8	37.8	0.0	45.6	22.6	13.4	0.0	36.0	14.5	3.9	0.0	18.4	
Exiting Leg Total				662				1301				528	2491

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:30 AM	23	102	0	125	86	36	0	122	54	14	0	68	315
7:45 AM	29	190	0	219	85	45	0	130	64	13	0	77	426
8:00 AM	30	187	0	217	72	52	0	124	60	7	0	67	408
8:15 AM	31	111	0	142	72	50	0	122	48	14	0	62	326
Total Volume	113	590	0	703	315	183	0	498	226	48	0	274	1475
% Approach Total	16.1	83.9	0.0		63.3	36.7	0.0		82.5	17.5	0.0		
PHF	0.911	0.776	0.000	0.803	0.916	0.880	0.000	0.958	0.883	0.857	0.000	0.890	0.866
Entering Leg	113	590	0	703	315	183	0	498	226	48	0	274	1475
Exiting Leg				363				816				296	1475
Total				1066				1314				570	2950

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:00 AM	0	2	0	2	4	0	0	4	1	0	0	1	7
7:15 AM	1	2	0	3	4	0	0	4	0	0	0	0	7
7:30 AM	1	2	0	3	2	2	0	4	0	1	0	1	8
7:45 AM	1	4	0	5	4	1	0	5	1	0	0	1	11
Total	3	10	0	13	14	3	0	17	2	1	0	3	33
8:00 AM	1	5	0	6	6	2	0	8	1	1	0	2	16
8:15 AM	1	7	0	8	2	0	0	2	2	1	0	3	13
8:30 AM	3	1	0	4	3	2	0	5	3	2	0	5	14
8:45 AM	1	5	0	6	1	1	0	2	2	1	0	3	11
Total	6	18	0	24	12	5	0	17	8	5	0	13	54
Grand Total	9	28	0	37	26	8	0	34	10	6	0	16	87
Approach %	24.3	75.7	0.0		76.5	23.5	0.0		62.5	37.5	0.0		
Total %	10.3	32.2	0.0	42.5	29.9	9.2	0.0	39.1	11.5	6.9	0.0	18.4	
Exiting Leg Total				32				38				17	87
Buses	3	12	0	15	11	4	0	15	5	3	0	8	38
% Buses	33.3	42.9	0.0	40.5	42.3	50.0	0.0	44.1	50.0	50.0	0.0	50.0	43.7
Exiting Leg Total				14				17				7	38
Single-Unit Trucks	4	15	0	19	12	3	0	15	4	2	0	6	40
% Single-Unit	44.4	53.6	0.0	51.4	46.2	37.5	0.0	44.1	40.0	33.3	0.0	37.5	46.0
Exiting Leg Total				14				19				7	40
Articulated Trucks	2	1	0	3	3	1	0	4	1	1	0	2	9
% Articulated	22.2	3.6	0.0	8.1	11.5	12.5	0.0	11.8	10.0	16.7	0.0	12.5	10.3
Exiting Leg Total				4				2				3	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
7:45 AM	1	4	0	5	4	1	0	5	1	0	0	1	11
8:00 AM	1	5	0	6	6	2	0	8	1	1	0	2	16
8:15 AM	1	7	0	8	2	0	0	2	2	1	0	3	13
8:30 AM	3	1	0	4	3	2	0	5	3	2	0	5	14
Total Volume	6	17	0	23	15	5	0	20	7	4	0	11	54
% Approach Total	26.1	73.9	0.0		75.0	25.0	0.0		63.6	36.4	0.0		
PHF	0.500	0.607	0.000	0.719	0.625	0.625	0.000	0.625	0.583	0.500	0.000	0.550	0.844
Buses	2	9	0	11	7	2	0	9	5	2	0	7	27
Buses %	33.3	52.9	0.0	47.8	46.7	40.0	0.0	45.0	71.4	50.0	0.0	63.6	50.0
Single-Unit Trucks	3	7	0	10	7	2	0	9	2	1	0	3	22
Single-Unit %	50.0	41.2	0.0	43.5	46.7	40.0	0.0	45.0	28.6	25.0	0.0	27.3	40.7
Articulated Trucks	1	1	0	2	1	1	0	2	0	1	0	1	5
Articulated %	16.7	5.9	0.0	8.7	6.7	20.0	0.0	10.0	0.0	25.0	0.0	9.1	9.3
Buses	2	9	0	11	7	2	0	9	5	2	0	7	27
Single-Unit Trucks	3	7	0	10	7	2	0	9	2	1	0	3	22
Articulated Trucks	1	1	0	2	1	1	0	2	0	1	0	1	5
Total Entering Leg	6	17	0	23	15	5	0	20	7	4	0	11	54
Buses				9				14				4	27
Single-Unit Trucks				8				9				5	22
Articulated Trucks				2				1				2	5
Total Exiting Leg				19				24				11	54

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	3
Approach %	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
Total %	0.0	66.7	0.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	33.3	
Exiting Leg Total						0						3						0	3

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	3
% Approach Total	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.375
Entering Leg	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	3
Exiting Leg						0						3						0	3
Total						2						3						1	6

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Pedestrians

	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	16	69	0	85	64	52	0	116	47	21	0	68	269
4:15 PM	9	84	0	93	69	58	0	127	67	13	0	80	300
4:30 PM	22	78	0	100	73	66	0	139	56	15	0	71	310
4:45 PM	15	95	0	110	74	63	0	137	66	23	0	89	336
Total	62	326	0	388	280	239	0	519	236	72	0	308	1215
5:00 PM	14	91	0	105	86	68	0	154	77	27	0	104	363
5:15 PM	7	71	0	78	73	57	0	130	67	20	0	87	295
5:30 PM	12	76	0	88	73	55	0	128	70	13	0	83	299
5:45 PM	10	85	0	95	78	43	0	121	49	14	0	63	279
Total	43	323	0	366	310	223	0	533	263	74	0	337	1236
Grand Total	105	649	0	754	590	462	0	1052	499	146	0	645	2451
Approach %	13.9	86.1	0.0		56.1	43.9	0.0		77.4	22.6	0.0		
Total %	4.3	26.5	0.0	30.8	24.1	18.8	0.0	42.9	20.4	6.0	0.0	26.3	
Exiting Leg Total				736				1148				567	2451
Cars	93	645	0	738	587	455	0	1042	488	140	0	628	2408
% Cars	88.6	99.4	0.0	97.9	99.5	98.5	0.0	99.0	97.8	95.9	0.0	97.4	98.2
Exiting Leg Total				727				1133				548	2408
Heavy Vehicles	12	4	0	16	3	7	0	10	11	6	0	17	43
% Heavy Vehicles	11.4	0.6	0.0	2.1	0.5	1.5	0.0	1.0	2.2	4.1	0.0	2.6	1.8
Exiting Leg Total				9				15				19	43

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:15 PM	9	84	0	93	69	58	0	127	67	13	0	80	300
4:30 PM	22	78	0	100	73	66	0	139	56	15	0	71	310
4:45 PM	15	95	0	110	74	63	0	137	66	23	0	89	336
5:00 PM	14	91	0	105	86	68	0	154	77	27	0	104	363
Total Volume	60	348	0	408	302	255	0	557	266	78	0	344	1309
% Approach Total	14.7	85.3	0.0		54.2	45.8	0.0		77.3	22.7	0.0		
PHF	0.682	0.916	0.000	0.927	0.878	0.938	0.000	0.904	0.864	0.722	0.000	0.827	0.902
Cars	55	345	0	400	300	252	0	552	257	74	0	331	1283
Cars %	91.7	99.1	0.0	98.0	99.3	98.8	0.0	99.1	96.6	94.9	0.0	96.2	98.0
Heavy Vehicles	5	3	0	8	2	3	0	5	9	4	0	13	26
Heavy Vehicles %	8.3	0.9	0.0	2.0	0.7	1.2	0.0	0.9	3.4	5.1	0.0	3.8	2.0
Cars Enter Leg	55	345	0	400	300	252	0	552	257	74	0	331	1283
Heavy Enter Leg	5	3	0	8	2	3	0	5	9	4	0	13	26
Total Entering Leg	60	348	0	408	302	255	0	557	266	78	0	344	1309
Cars Exiting Leg				374				602				307	1283
Heavy Exiting Leg				6				12				8	26
Total Exiting Leg				380				614				315	1309

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

Class: **Cars-Combined (Motorcycles, Cars, Light Goods)**

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	12	69	0	81	64	49	0	113	46	19	0	65	259
4:15 PM	9	83	0	92	69	57	0	126	63	13	0	76	294
4:30 PM	18	77	0	95	72	65	0	137	54	13	0	67	299
4:45 PM	15	94	0	109	73	63	0	136	65	23	0	88	333
Total	54	323	0	377	278	234	0	512	228	68	0	296	1185
5:00 PM	13	91	0	104	86	67	0	153	75	25	0	100	357
5:15 PM	6	71	0	77	72	57	0	129	66	20	0	86	292
5:30 PM	11	75	0	86	73	54	0	127	70	13	0	83	296
5:45 PM	9	85	0	94	78	43	0	121	49	14	0	63	278
Total	39	322	0	361	309	221	0	530	260	72	0	332	1223
Grand Total	93	645	0	738	587	455	0	1042	488	140	0	628	2408
Approach %	12.6	87.4	0.0		56.3	43.7	0.0		77.7	22.3	0.0		
Total %	3.9	26.8	0.0	30.6	24.4	18.9	0.0	43.3	20.3	5.8	0.0	26.1	
Exiting Leg Total				727				1133				548	2408

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:15 PM	9	83	0	92	69	57	0	126	63	13	0	76	294
4:30 PM	18	77	0	95	72	65	0	137	54	13	0	67	299
4:45 PM	15	94	0	109	73	63	0	136	65	23	0	88	333
5:00 PM	13	91	0	104	86	67	0	153	75	25	0	100	357
Total Volume	55	345	0	400	300	252	0	552	257	74	0	331	1283
% Approach Total	13.8	86.3	0.0		54.3	45.7	0.0		77.6	22.4	0.0		
PHF	0.764	0.918	0.000	0.917	0.872	0.940	0.000	0.902	0.857	0.740	0.000	0.828	0.898
Entering Leg	55	345	0	400	300	252	0	552	257	74	0	331	1283
Exiting Leg				374				602				307	1283
Total				774				1154				638	2566

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	4	0	0	4	0	3	0	3	1	2	0	3	10
4:15 PM	0	1	0	1	0	1	0	1	4	0	0	4	6
4:30 PM	4	1	0	5	1	1	0	2	2	2	0	4	11
4:45 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
Total	8	3	0	11	2	5	0	7	8	4	0	12	30
5:00 PM	1	0	0	1	0	1	0	1	2	2	0	4	6
5:15 PM	1	0	0	1	1	0	0	1	1	0	0	1	3
5:30 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
5:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	4	1	0	5	1	2	0	3	3	2	0	5	13
Grand Total	12	4	0	16	3	7	0	10	11	6	0	17	43
Approach %	75.0	25.0	0.0		30.0	70.0	0.0		64.7	35.3	0.0		
Total %	27.9	9.3	0.0	37.2	7.0	16.3	0.0	23.3	25.6	14.0	0.0	39.5	
Exiting Leg Total				9				15				19	43
Buses	0	1	0	1	1	2	0	3	3	1	0	4	8
% Buses	0.0	25.0	0.0	6.3	33.3	28.6	0.0	30.0	27.3	16.7	0.0	23.5	18.6
Exiting Leg Total				2				4				2	8
Single-Unit Trucks	9	3	0	12	2	3	0	5	6	3	0	9	26
% Single-Unit	75.0	75.0	0.0	75.0	66.7	42.9	0.0	50.0	54.5	50.0	0.0	52.9	60.5
Exiting Leg Total				5				9				12	26
Articulated Trucks	3	0	0	3	0	2	0	2	2	2	0	4	9
% Articulated	25.0	0.0	0.0	18.8	0.0	28.6	0.0	20.0	18.2	33.3	0.0	23.5	20.9
Exiting Leg Total				2				2				5	9

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North				Sohier Road from South				Tozer Road from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Total
4:00 PM	4	0	0	4	0	3	0	3	1	2	0	3	10
4:15 PM	0	1	0	1	0	1	0	1	4	0	0	4	6
4:30 PM	4	1	0	5	1	1	0	2	2	2	0	4	11
4:45 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
Total Volume	8	3	0	11	2	5	0	7	8	4	0	12	30
% Approach Total	72.7	27.3	0.0		28.6	71.4	0.0		66.7	33.3	0.0		
PHF	0.500	0.750	0.000	0.550	0.500	0.417	0.000	0.583	0.500	0.500	0.000	0.750	0.682
Buses	0	1	0	1	1	2	0	3	2	1	0	3	7
Buses %	0.0	33.3	0.0	9.1	50.0	40.0	0.0	42.9	25.0	25.0	0.0	25.0	23.3
Single-Unit Trucks	7	2	0	9	1	2	0	3	5	2	0	7	19
Single-Unit %	87.5	66.7	0.0	81.8	50.0	40.0	0.0	42.9	62.5	50.0	0.0	58.3	63.3
Articulated Trucks	1	0	0	1	0	1	0	1	1	1	0	2	4
Articulated %	12.5	0.0	0.0	9.1	0.0	20.0	0.0	14.3	12.5	25.0	0.0	16.7	13.3
Buses	0	1	0	1	1	2	0	3	2	1	0	3	7
Single-Unit Trucks	7	2	0	9	1	2	0	3	5	2	0	7	19
Articulated Trucks	1	0	0	1	0	1	0	1	1	1	0	2	4
Total Entering Leg	8	3	0	11	2	5	0	7	8	4	0	12	30
Buses				2				3				2	7
Single-Unit Trucks				3				7				9	19
Articulated Trucks				1				1				2	4
Total Exiting Leg				6				11				13	30

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **186383 E**
Location: **N: Sohier Road S: Sohier Road**
Location: **W: Tozer Road**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Pedestrians

	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	
Exiting Leg Total						0						0						1	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Sohier Road from North						Sohier Road from South						Tozer Road from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Exiting Leg						0						0						1	1
Total						0						0						2	2

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	15	30	29	0	74	12	15	11	0	38	16	63	0	0	79	2	17	9	0	28	219
7:15 AM	20	36	34	0	90	23	27	16	0	66	22	87	0	0	109	2	34	15	0	51	316
7:30 AM	33	56	42	0	131	35	35	17	0	87	33	95	2	0	130	3	40	19	0	62	410
7:45 AM	58	74	61	0	193	54	39	15	0	108	16	116	2	0	134	5	30	17	0	52	487
Total	126	196	166	0	488	124	116	59	0	299	87	361	4	0	452	12	121	60	0	193	1432
8:00 AM	64	95	71	0	230	51	50	17	0	118	27	107	3	0	137	23	52	19	0	94	579
8:15 AM	55	66	47	0	168	27	35	16	0	78	28	81	2	0	111	19	38	19	0	76	433
8:30 AM	51	56	52	0	159	14	39	8	0	61	25	68	1	0	94	20	50	20	0	90	404
8:45 AM	41	64	47	0	152	15	35	7	0	57	29	74	0	0	103	2	31	12	0	45	357
Total	211	281	217	0	709	107	159	48	0	314	109	330	6	0	445	64	171	70	0	305	1773
Grand Total	337	477	383	0	1197	231	275	107	0	613	196	691	10	0	897	76	292	130	0	498	3205
Approach %	28.2	39.8	32.0	0.0		37.7	44.9	17.5	0.0		21.9	77.0	1.1	0.0		15.3	58.6	26.1	0.0		
Total %	10.5	14.9	12.0	0.0	37.3	7.2	8.6	3.3	0.0	19.1	6.1	21.6	0.3	0.0	28.0	2.4	9.1	4.1	0.0	15.5	
Exiting Leg Total					1052					871					660					622	3205
Cars	333	459	375	0	1167	221	273	106	0	600	192	671	10	0	873	56	287	125	0	468	3108
% Cars	98.8	96.2	97.9	0.0	97.5	95.7	99.3	99.1	0.0	97.9	98.0	97.1	100.0	0.0	97.3	73.7	98.3	96.2	0.0	94.0	97.0
Exiting Leg Total					1017					854					621					616	3108
Heavy Vehicles	4	18	8	0	30	10	2	1	0	13	4	20	0	0	24	20	5	5	0	30	97
% Heavy Vehicles	1.2	3.8	2.1	0.0	2.5	4.3	0.7	0.9	0.0	2.1	2.0	2.9	0.0	0.0	2.7	26.3	1.7	3.8	0.0	6.0	3.0
Exiting Leg Total					35					17					39					6	97

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	33	56	42	0	131	35	35	17	0	87	33	95	2	0	130	3	40	19	0	62	410
7:45 AM	58	74	61	0	193	54	39	15	0	108	16	116	2	0	134	5	30	17	0	52	487
8:00 AM	64	95	71	0	230	51	50	17	0	118	27	107	3	0	137	23	52	19	0	94	579
8:15 AM	55	66	47	0	168	27	35	16	0	78	28	81	2	0	111	19	38	19	0	76	433
Total Volume	210	291	221	0	722	167	159	65	0	391	104	399	9	0	512	50	160	74	0	284	1909
% Approach Total	29.1	40.3	30.6	0.0		42.7	40.7	16.6	0.0		20.3	77.9	1.8	0.0		17.6	56.3	26.1	0.0		
PHF	0.820	0.766	0.778	0.000	0.785	0.773	0.795	0.956	0.000	0.828	0.788	0.860	0.750	0.000	0.934	0.543	0.769	0.974	0.000	0.755	0.824
Cars	209	282	217	0	708	159	158	64	0	381	100	388	9	0	497	43	156	72	0	271	1857
Cars %	99.5	96.9	98.2	0.0	98.1	95.2	99.4	98.5	0.0	97.4	96.2	97.2	100.0	0.0	97.1	86.0	97.5	97.3	0.0	95.4	97.3
Heavy Vehicles	1	9	4	0	14	8	1	1	0	10	4	11	0	0	15	7	4	2	0	13	52
Heavy Vehicles %	0.5	3.1	1.8	0.0	1.9	4.8	0.6	1.5	0.0	2.6	3.8	2.8	0.0	0.0	2.9	14.0	2.5	2.7	0.0	4.6	2.7
Cars Enter Leg	209	282	217	0	708	159	158	64	0	381	100	388	9	0	497	43	156	72	0	271	1857
Heavy Enter Leg	1	9	4	0	14	8	1	1	0	10	4	11	0	0	15	7	4	2	0	13	52
Total Entering Leg	210	291	221	0	722	167	159	65	0	391	104	399	9	0	512	50	160	74	0	284	1909
Cars Exiting Leg					619					473					389					376	1857
Heavy Exiting Leg					21					12					17					2	52
Total Exiting Leg					640					485					406					378	1909

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	15	29	27	0	71	11	15	11	0	37	16	60	0	0	76	2	17	9	0	28	212
7:15 AM	20	34	34	0	88	23	27	16	0	66	22	84	0	0	106	2	34	14	0	50	310
7:30 AM	33	56	41	0	130	34	35	16	0	85	32	92	2	0	126	3	39	19	0	61	402
7:45 AM	58	73	60	0	191	52	38	15	0	105	16	115	2	0	133	5	29	15	0	49	478
Total	126	192	162	0	480	120	115	58	0	293	86	351	4	0	441	12	119	57	0	188	1402
8:00 AM	63	92	71	0	226	49	50	17	0	116	27	101	3	0	131	22	51	19	0	92	565
8:15 AM	55	61	45	0	161	24	35	16	0	75	25	80	2	0	107	13	37	19	0	69	412
8:30 AM	51	54	52	0	157	14	38	8	0	60	25	66	1	0	92	8	49	18	0	75	384
8:45 AM	38	60	45	0	143	14	35	7	0	56	29	73	0	0	102	1	31	12	0	44	345
Total	207	267	213	0	687	101	158	48	0	307	106	320	6	0	432	44	168	68	0	280	1706
Grand Total	333	459	375	0	1167	221	273	106	0	600	192	671	10	0	873	56	287	125	0	468	3108
Approach %	28.5	39.3	32.1	0.0		36.8	45.5	17.7	0.0		22.0	76.9	1.1	0.0		12.0	61.3	26.7	0.0		
Total %	10.7	14.8	12.1	0.0	37.5	7.1	8.8	3.4	0.0	19.3	6.2	21.6	0.3	0.0	28.1	1.8	9.2	4.0	0.0	15.1	
Exiting Leg Total					1017					854					621					616	3108

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:30 AM	33	56	41	0	130	34	35	16	0	85	32	92	2	0	126	3	39	19	0	61	402
7:45 AM	58	73	60	0	191	52	38	15	0	105	16	115	2	0	133	5	29	15	0	49	478
8:00 AM	63	92	71	0	226	49	50	17	0	116	27	101	3	0	131	22	51	19	0	92	565
8:15 AM	55	61	45	0	161	24	35	16	0	75	25	80	2	0	107	13	37	19	0	69	412
Total Volume	209	282	217	0	708	159	158	64	0	381	100	388	9	0	497	43	156	72	0	271	1857
% Approach Total	29.5	39.8	30.6	0.0		41.7	41.5	16.8	0.0		20.1	78.1	1.8	0.0		15.9	57.6	26.6	0.0		
PHF	0.829	0.766	0.764	0.000	0.783	0.764	0.790	0.941	0.000	0.821	0.781	0.843	0.750	0.000	0.934	0.489	0.765	0.947	0.000	0.736	0.822
Entering Leg	209	282	217	0	708	159	158	64	0	381	100	388	9	0	497	43	156	72	0	271	1857
Exiting Leg					619					473					389					376	1857
Total					1327					854					886					647	3714

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**

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

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

	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	1	2	0	3	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	7
7:15 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	6
7:30 AM	0	0	1	0	1	1	0	1	0	2	1	3	0	0	4	0	1	0	0	1	8
7:45 AM	0	1	1	0	2	2	1	0	0	3	0	1	0	0	1	0	1	2	0	3	9
Total	0	4	4	0	8	4	1	1	0	6	1	10	0	0	11	0	2	3	0	5	30
8:00 AM	1	3	0	0	4	2	0	0	0	2	0	6	0	0	6	1	1	0	0	2	14
8:15 AM	0	5	2	0	7	3	0	0	0	3	3	1	0	0	4	6	1	0	0	7	21
8:30 AM	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	12	1	2	0	15	20
8:45 AM	3	4	2	0	9	1	0	0	0	1	0	1	0	0	1	1	0	0	0	1	12
Total	4	14	4	0	22	6	1	0	0	7	3	10	0	0	13	20	3	2	0	25	67
Grand Total	4	18	8	0	30	10	2	1	0	13	4	20	0	0	24	20	5	5	0	30	97
Approach %	13.3	60.0	26.7	0.0		76.9	15.4	7.7	0.0		16.7	83.3	0.0	0.0		66.7	16.7	16.7	0.0		
Total %	4.1	18.6	8.2	0.0	30.9	10.3	2.1	1.0	0.0	13.4	4.1	20.6	0.0	0.0	24.7	20.6	5.2	5.2	0.0	30.9	
Exiting Leg Total					35					17					39					6	97
Buses	1	8	1	0	10	5	0	1	0	6	1	10	0	0	11	20	4	2	0	26	53
% Buses	25.0	44.4	12.5	0.0	33.3	50.0	0.0	100.0	0.0	46.2	25.0	50.0	0.0	0.0	45.8	100.0	80.0	40.0	0.0	86.7	54.6
Exiting Leg Total					17					6					29					1	53
Single-Unit Trucks	3	9	6	0	18	3	2	0	0	5	3	8	0	0	11	0	1	3	0	4	38
% Single-Unit	75.0	50.0	75.0	0.0	60.0	30.0	100.0	0.0	0.0	38.5	75.0	40.0	0.0	0.0	45.8	0.0	20.0	60.0	0.0	13.3	39.2
Exiting Leg Total					14					10					9					5	38
Articulated Trucks	0	1	1	0	2	2	0	0	0	2	0	2	0	0	2	0	0	0	0	0	6
% Articulated	0.0	5.6	12.5	0.0	6.7	20.0	0.0	0.0	0.0	15.4	0.0	10.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	6.2
Exiting Leg Total					4					1					1					0	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	1	3	0	0	4	2	0	0	0	2	0	6	0	0	6	1	1	0	0	2	14
8:15 AM	0	5	2	0	7	3	0	0	0	3	3	1	0	0	4	6	1	0	0	7	21
8:30 AM	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	12	1	2	0	15	20
8:45 AM	3	4	2	0	9	1	0	0	0	1	0	1	0	0	1	1	0	0	0	1	12
Total Volume	4	14	4	0	22	6	1	0	0	7	3	10	0	0	13	20	3	2	0	25	67
% Approach Total	18.2	63.6	18.2	0.0		85.7	14.3	0.0	0.0		23.1	76.9	0.0	0.0		80.0	12.0	8.0	0.0		
PHF	0.333	0.700	0.500	0.000	0.611	0.500	0.250	0.000	0.000	0.583	0.250	0.417	0.000	0.000	0.542	0.417	0.750	0.250	0.000	0.417	0.798
Buses	1	7	1	0	9	4	0	0	0	4	0	6	0	0	6	20	3	0	0	23	42
Buses %	25.0	50.0	25.0	0.0	40.9	66.7	0.0	0.0	0.0	57.1	0.0	60.0	0.0	0.0	46.2	100.0	100.0	0.0	0.0	92.0	62.7
Single-Unit Trucks	3	6	2	0	11	2	1	0	0	3	3	4	0	0	7	0	0	2	0	2	23
Single-Unit %	75.0	42.9	50.0	0.0	50.0	33.3	100.0	0.0	0.0	42.9	100.0	40.0	0.0	0.0	53.8	0.0	0.0	100.0	0.0	8.0	34.3
Articulated Trucks	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Articulated %	0.0	7.1	25.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Buses	1	7	1	0	9	4	0	0	0	4	0	6	0	0	6	20	3	0	0	23	42
Single-Unit Trucks	3	6	2	0	11	2	1	0	0	3	3	4	0	0	7	0	0	2	0	2	23
Articulated Trucks	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Entering Leg	4	14	4	0	22	6	1	0	0	7	3	10	0	0	13	20	3	2	0	25	67
Buses					10					4					27					1	42
Single-Unit Trucks					8					5					6					4	23
Articulated Trucks					0					1					1					0	2
Total Exiting Leg					18					10					34					5	67

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	2	2	0	2	0	0	0	2	4	0	0	0	0	2	0	2	0	0	0	0	1	0	1	9
Total	1	2	0	0	0	2	5	0	3	0	0	0	2	5	0	0	0	0	2	0	2	0	0	0	0	1	0	1	13
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Grand Total	1	2	0	0	0	2	5	0	3	0	0	0	2	5	0	0	0	0	2	0	2	0	1	0	0	1	0	2	14
Approach %	20.0	40.0	0.0	0.0	0.0	40.0		0.0	60.0	0.0	0.0	0.0	40.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	50.0	0.0	0.0	50.0	0.0		
Total %	7.1	14.3	0.0	0.0	0.0	14.3	35.7	0.0	21.4	0.0	0.0	0.0	14.3	35.7	0.0	0.0	0.0	0.0	14.3	0.0	14.3	0.0	7.1	0.0	0.0	7.1	0.0	14.3	
Exiting Leg Total							2							3							4							5	14

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	2	2	0	2	0	0	0	2	4	0	0	0	0	2	0	2	0	0	0	0	1	0	1	9
Total Volume	1	2	0	0	0	2	5	0	3	0	0	0	2	5	0	0	0	0	2	0	2	0	0	0	0	1	0	1	13
% Approach Total	20.0	40.0	0.0	0.0	0.0	40.0		0.0	60.0	0.0	0.0	0.0	40.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.250	0.250	0.000	0.000	0.000	0.250	0.625	0.000	0.375	0.000	0.000	0.000	0.250	0.313	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.361
Entering Leg	1	2	0	0	0	2	5	0	3	0	0	0	2	5	0	0	0	0	2	0	2	0	0	0	0	1	0	1	13
Exiting Leg							2							2							4							5	13
Total							7							7							6							6	26

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

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

Pedestrians

	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	1	0	1	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	6	0	0	0	0	5	0	5	11
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3	1	4	8
Total	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	11	2	13	0	0	0	0	9	1	10	26
8:00 AM	0	0	0	0	0	3	3	0	0	0	0	1	3	4	0	0	0	0	4	0	4	0	0	0	0	2	0	2	13
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	3
Total	0	0	0	0	0	3	3	0	0	0	0	1	3	4	0	0	0	0	5	2	7	0	0	0	0	3	1	4	18
Grand Total	0	0	0	0	0	5	5	0	0	0	0	1	4	5	0	0	0	0	16	4	20	0	0	0	0	12	2	14	44
Approach %	0	0	0	0	0	100		0	0	0	0	20	80		0	0	0	0	80	20		0	0	0	0	85.7	14.3		
Total %	0	0	0	0	0	11.4	11.4	0	0	0	0	2.27	9.09	11.4	0	0	0	0	36.4	9.09	45.5	0	0	0	0	27.3	4.55	31.8	
Exiting Leg Total							5							5							20							14	44

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	6	0	0	0	0	5	0	5	11
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3	1	4	8
8:00 AM	0	0	0	0	0	3	3	0	0	0	0	1	3	4	0	0	0	0	4	0	4	0	0	0	0	2	0	2	13
Total Volume	0	0	0	0	0	5	5	0	0	0	0	1	4	5	0	0	0	0	14	1	15	0	0	0	0	10	1	11	36
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	0.0	93.3	6.7		0.0	0.0	0.0	0.0	90.9	9.1		
PHF	0.000	0.000	0.000	0.000	0.000	0.417	0.417	0.000	0.000	0.000	0.000	0.250	0.333	0.313	0.000	0.000	0.000	0.000	0.700	0.250	0.625	0.000	0.000	0.000	0.000	0.500	0.250	0.550	0.692
Entering Leg	0	0	0	0	0	5	5	0	0	0	0	1	4	5	0	0	0	0	14	1	15	0	0	0	0	10	1	11	36
Exiting Leg							5							5							15							11	36
Total							10							10							30							22	72

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars and Heavy Vehicles (Combined)

	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	17	54	34	0	105	40	43	17	0	100	23	52	0	0	75	6	41	17	0	64	344
4:15 PM	27	69	46	0	142	26	37	17	0	80	13	85	0	0	98	9	36	18	0	63	383
4:30 PM	30	72	35	0	137	33	38	29	0	100	12	71	4	0	87	9	31	31	0	71	395
4:45 PM	20	92	42	0	154	29	30	17	0	76	9	65	3	0	77	7	40	21	0	68	375
Total	94	287	157	0	538	128	148	80	0	356	57	273	7	0	337	31	148	87	0	266	1497
5:00 PM	29	76	44	0	149	42	44	25	0	111	16	75	3	0	94	6	37	32	0	75	429
5:15 PM	26	80	30	0	136	21	37	15	0	73	14	77	2	0	93	5	47	35	0	87	389
5:30 PM	27	85	32	0	144	20	22	14	0	56	17	75	3	0	95	7	40	24	0	71	366
5:45 PM	17	76	33	0	126	25	29	12	0	66	11	80	1	0	92	6	39	14	0	59	343
Total	99	317	139	0	555	108	132	66	0	306	58	307	9	0	374	24	163	105	0	292	1527
Grand Total	193	604	296	0	1093	236	280	146	0	662	115	580	16	0	711	55	311	192	0	558	3024
Approach %	17.7	55.3	27.1	0.0		35.6	42.3	22.1	0.0		16.2	81.6	2.3	0.0		9.9	55.7	34.4	0.0		
Total %	6.4	20.0	9.8	0.0	36.1	7.8	9.3	4.8	0.0	21.9	3.8	19.2	0.5	0.0	23.5	1.8	10.3	6.3	0.0	18.5	
Exiting Leg Total					1008					722					805					489	3024
Cars	192	597	292	0	1081	234	279	142	0	655	110	574	16	0	700	54	309	191	0	554	2990
% Cars	99.5	98.8	98.6	0.0	98.9	99.2	99.6	97.3	0.0	98.9	95.7	99.0	100.0	0.0	98.5	98.2	99.4	99.5	0.0	99.3	98.9
Exiting Leg Total					999					711					793					487	2990
Heavy Vehicles	1	7	4	0	12	2	1	4	0	7	5	6	0	0	11	1	2	1	0	4	34
% Heavy Vehicles	0.5	1.2	1.4	0.0	1.1	0.8	0.4	2.7	0.0	1.1	4.3	1.0	0.0	0.0	1.5	1.8	0.6	0.5	0.0	0.7	1.1
Exiting Leg Total					9					11					12					2	34

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	30	72	35	0	137	33	38	29	0	100	12	71	4	0	87	9	31	31	0	71	395
4:45 PM	20	92	42	0	154	29	30	17	0	76	9	65	3	0	77	7	40	21	0	68	375
5:00 PM	29	76	44	0	149	42	44	25	0	111	16	75	3	0	94	6	37	32	0	75	429
5:15 PM	26	80	30	0	136	21	37	15	0	73	14	77	2	0	93	5	47	35	0	87	389
Total Volume	105	320	151	0	576	125	149	86	0	360	51	288	12	0	351	27	155	119	0	301	1588
% Approach Total	18.2	55.6	26.2	0.0		34.7	41.4	23.9	0.0		14.5	82.1	3.4	0.0		9.0	51.5	39.5	0.0		
PHF	0.875	0.870	0.858	0.000	0.935	0.744	0.847	0.741	0.000	0.811	0.797	0.935	0.750	0.000	0.934	0.750	0.824	0.850	0.000	0.865	0.925
Cars	104	317	149	0	570	124	148	83	0	355	49	286	12	0	347	27	153	118	0	298	1570
Cars %	99.0	99.1	98.7	0.0	99.0	99.2	99.3	96.5	0.0	98.6	96.1	99.3	100.0	0.0	98.9	100.0	98.7	99.2	0.0	99.0	98.9
Heavy Vehicles	1	3	2	0	6	1	1	3	0	5	2	2	0	0	4	0	2	1	0	3	18
Heavy Vehicles %	1.0	0.9	1.3	0.0	1.0	0.8	0.7	3.5	0.0	1.4	3.9	0.7	0.0	0.0	1.1	0.0	1.3	0.8	0.0	1.0	1.1
Cars Enter Leg	104	317	149	0	570	124	148	83	0	355	49	286	12	0	347	27	153	118	0	298	1570
Heavy Enter Leg	1	3	2	0	6	1	1	3	0	5	2	2	0	0	4	0	2	1	0	3	18
Total Entering Leg	105	320	151	0	576	125	149	86	0	360	51	288	12	0	351	27	155	119	0	301	1588
Cars Exiting Leg					528					351					427					264	1570
Heavy Exiting Leg					4					6					6					2	18
Total Exiting Leg					532					357					433					266	1588

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Cars-Combined (Motorcycles, Cars, Light Goods)

	Sohier Road					Herrick Street					Sohier Road					Herrick Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	17	53	34	0	104	39	43	17	0	99	21	50	0	0	71	6	41	17	0	64	338
4:15 PM	27	66	44	0	137	26	37	17	0	80	12	84	0	0	96	8	36	18	0	62	375
4:30 PM	29	71	34	0	134	33	38	29	0	100	12	70	4	0	86	9	29	31	0	69	389
4:45 PM	20	91	41	0	152	29	30	15	0	74	8	64	3	0	75	7	40	21	0	68	369
Total	93	281	153	0	527	127	148	78	0	353	53	268	7	0	328	30	146	87	0	263	1471
5:00 PM	29	76	44	0	149	41	44	24	0	109	15	75	3	0	93	6	37	32	0	75	426
5:15 PM	26	79	30	0	135	21	36	15	0	72	14	77	2	0	93	5	47	34	0	86	386
5:30 PM	27	85	32	0	144	20	22	13	0	55	17	74	3	0	94	7	40	24	0	71	364
5:45 PM	17	76	33	0	126	25	29	12	0	66	11	80	1	0	92	6	39	14	0	59	343
Total	99	316	139	0	554	107	131	64	0	302	57	306	9	0	372	24	163	104	0	291	1519
Grand Total	192	597	292	0	1081	234	279	142	0	655	110	574	16	0	700	54	309	191	0	554	2990
Approach %	17.8	55.2	27.0	0.0		35.7	42.6	21.7	0.0		15.7	82.0	2.3	0.0		9.7	55.8	34.5	0.0		
Total %	6.4	20.0	9.8	0.0	36.2	7.8	9.3	4.7	0.0	21.9	3.7	19.2	0.5	0.0	23.4	1.8	10.3	6.4	0.0	18.5	
Exiting Leg Total					999					711					793					487	2990

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Sohier Road					Herrick Street					Sohier Road					Herrick Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	29	71	34	0	134	33	38	29	0	100	12	70	4	0	86	9	29	31	0	69	389
4:45 PM	20	91	41	0	152	29	30	15	0	74	8	64	3	0	75	7	40	21	0	68	369
5:00 PM	29	76	44	0	149	41	44	24	0	109	15	75	3	0	93	6	37	32	0	75	426
5:15 PM	26	79	30	0	135	21	36	15	0	72	14	77	2	0	93	5	47	34	0	86	386
Total Volume	104	317	149	0	570	124	148	83	0	355	49	286	12	0	347	27	153	118	0	298	1570
% Approach Total	18.2	55.6	26.1	0.0		34.9	41.7	23.4	0.0		14.1	82.4	3.5	0.0		9.1	51.3	39.6	0.0		
PHF	0.897	0.871	0.847	0.000	0.938	0.756	0.841	0.716	0.000	0.814	0.817	0.929	0.750	0.000	0.933	0.750	0.814	0.868	0.000	0.866	0.921
Entering Leg	104	317	149	0	570	124	148	83	0	355	49	286	12	0	347	27	153	118	0	298	1570
Exiting Leg					528					351					427					264	1570
Total					1098					706					774					562	3140

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**

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

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

	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	6
4:15 PM	0	3	2	0	5	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	8
4:30 PM	1	1	1	0	3	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	6
4:45 PM	0	1	1	0	2	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	6
Total	1	6	4	0	11	1	0	2	0	3	4	5	0	0	9	1	2	0	0	3	26
5:00 PM	0	0	0	0	0	1	0	1	0	2	1	0	0	0	1	0	0	0	0	0	3
5:15 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
5:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	1	1	2	0	4	1	1	0	0	2	0	0	1	0	1	8
Grand Total	1	7	4	0	12	2	1	4	0	7	5	6	0	0	11	1	2	1	0	4	34
Approach %	8.3	58.3	33.3	0.0		28.6	14.3	57.1	0.0		45.5	54.5	0.0	0.0		25.0	50.0	25.0	0.0		
Total %	2.9	20.6	11.8	0.0	35.3	5.9	2.9	11.8	0.0	20.6	14.7	17.6	0.0	0.0	32.4	2.9	5.9	2.9	0.0	11.8	
Exiting Leg Total					9					11					12					2	34
Buses	0	2	1	0	3	1	0	0	0	1	1	2	0	0	3	0	1	0	0	1	8
% Buses	0.0	28.6	25.0	0.0	25.0	50.0	0.0	0.0	0.0	14.3	20.0	33.3	0.0	0.0	27.3	0.0	50.0	0.0	0.0	25.0	23.5
Exiting Leg Total					3					3					2					0	8
Single-Unit Trucks	1	4	3	0	8	1	1	4	0	6	4	3	0	0	7	0	1	1	0	2	23
% Single-Unit	100.0	57.1	75.0	0.0	66.7	50.0	100.0	100.0	0.0	85.7	80.0	50.0	0.0	0.0	63.6	0.0	50.0	100.0	0.0	50.0	67.6
Exiting Leg Total					5					8					8					2	23
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
% Articulated	0.0	14.3	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	9.1	100.0	0.0	0.0	0.0	25.0	8.8
Exiting Leg Total					1					0					2					0	3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North					Herrick Street from East					Sohier Road from South					Herrick Street from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	1	0	0	0	1	2	2	0	0	4	0	0	0	0	0	6
4:15 PM	0	3	2	0	5	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	8
4:30 PM	1	1	1	0	3	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	6
4:45 PM	0	1	1	0	2	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	6
Total Volume	1	6	4	0	11	1	0	2	0	3	4	5	0	0	9	1	2	0	0	3	26
% Approach Total	9.1	54.5	36.4	0.0		33.3	0.0	66.7	0.0		44.4	55.6	0.0	0.0		33.3	66.7	0.0	0.0		
PHF	0.250	0.500	0.500	0.000	0.550	0.250	0.000	0.250	0.000	0.375	0.500	0.625	0.000	0.000	0.563	0.250	0.250	0.000	0.000	0.375	0.813
Buses	0	1	1	0	2	1	0	0	0	1	1	2	0	0	3	0	1	0	0	1	7
Buses %	0.0	16.7	25.0	0.0	18.2	100.0	0.0	0.0	0.0	33.3	25.0	40.0	0.0	0.0	33.3	0.0	50.0	0.0	0.0	33.3	26.9
Single-Unit Trucks	1	4	3	0	8	0	0	2	0	2	3	2	0	0	5	0	1	0	0	1	16
Single-Unit %	100.0	66.7	75.0	0.0	72.7	0.0	0.0	100.0	0.0	66.7	75.0	40.0	0.0	0.0	55.6	0.0	50.0	0.0	0.0	33.3	61.5
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
Articulated %	0.0	16.7	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	11.1	100.0	0.0	0.0	0.0	33.3	11.5
Buses	0	1	1	0	2	1	0	0	0	1	1	2	0	0	3	0	1	0	0	1	7
Single-Unit Trucks	1	4	3	0	8	0	0	2	0	2	3	2	0	0	5	0	1	0	0	1	16
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3
Total Entering Leg	1	6	4	0	11	1	0	2	0	3	4	5	0	0	9	1	2	0	0	3	26
Buses					3					3					1					0	7
Single-Unit Trucks					2					7					6					1	16
Articulated Trucks					1					0					2					0	3
Total Exiting Leg					6					10					9					1	26

PDI File #: **186383 F**
Location: **N: Sohier Road S: Sohier Road**
Location: **E: Herrick Street W: Herrick Street**
City, State: **Beverly, MA**
Client: **GPI/ R.Brown**
Site Code: **TBA**
Count Date: **Thursday, August 30, 2018**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

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

Bicycles (on Roadway and Crosswalks)

	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	2	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	3
Total	0	1	0	0	0	0	1	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	2	6
Grand Total	0	1	0	0	2	0	3	0	2	1	0	0	0	3	1	0	0	0	0	0	1	0	1	0	0	1	0	2	9
Approach %	0.0	33.3	0.0	0.0	66.7	0.0		0.0	66.7	33.3	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	50.0	0.0	0.0	50.0	0.0		
Total %	0.0	11.1	0.0	0.0	22.2	0.0	33.3	0.0	22.2	11.1	0.0	0.0	0.0	33.3	11.1	0.0	0.0	0.0	0.0	0.0	11.1	0.0	11.1	0.0	0.0	11.1	0.0	22.2	
Exiting Leg Total							2							2							2							3	9

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	3
Total Volume	0	1	0	0	0	0	1	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	2	6
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	50.0	0.0	0.0	50.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.500
Entering Leg	0	1	0	0	0	0	1	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	2	6
Exiting Leg							0							1							2							3	6
Total							1							4							2							5	12

PDI File #: **186383 F**
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Class:

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

Pedestrians

	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	4
Total	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	7
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	7
Approach %	0	0	0	0	50	50		0	0	0	0	100	0		0	0	0	0	0	100		0	0	0	0	0	0		
Total %	0	0	0	0	14.3	14.3	28.6	0	0	0	0	14.3	0	14.3	0	0	0	0	0	57.1	57.1	0	0	0	0	0	0	0	
Exiting Leg Total							2							1							4							0	7

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Sohier Road from North							Herrick Street from East							Sohier Road from South							Herrick Street from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	4
Total Volume	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	7
% Approach Total	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.438
Entering Leg	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	4	4	0	0	0	0	0	0	0	7
Exiting Leg							2							1							4							0	7
Total							4							2							8							0	14

TRAFFIC-VOLUME ADJUSTMENT DATA

MassDOT Traffic Volumes

STATION 5557 - DANVERS - RTE.I-95 - SOUTH OF RTE. 62

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2015	67,037	67,516	73,771	77,597	83,525	87,126	93,091	85,505	80,560		78,181	76,418	79,121
2016	71,808	73,077	76,958	79,548	85,855	90,958	94,902	97,164	88,540	87,624	81,121	77,354	83,742
Seasonal Adj. [c]	**14.8%**	**13.7%**	**7.4%**	**3.5%**	**-4.0%**	**-9.4%**	**-15.5%**	**-12.0%**	**-3.8%**	**-4.6%**	**2.2%**	**5.5%**	**0.0%**

STATION 5558 - DANVERS - RTE.I-95 - NORTH OF RTE. 62

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2015				73,996	79,539	83,175	89,676	91,034	83,925	81,468	74,298	72,838	81,105
2016	67,839	69,493	73,012	76,097	81,527	87,611	91,400	83,616	84,667	83,202	78,461	72,594	79,960
Seasonal Adj. [c]	**15.2%**	**13.1%**	**8.7%**	**6.8%**	**0.0%**	**-6.1%**	**-12.4%**	**-8.4%**	**-4.7%**	**-2.3%**	**5.1%**	**9.7%**	**0.0%**

STATION 5048 - TOPSFIELD - RTE.I-95 - NORTH OF RTE.1

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2014	81,124	79,089	80,968	88,368	97,414	102,028	103,663	106,415	98,388	96,747	83,815	100,002	93,168
2016	73,835	67,576	79,467	81,351	87,888	93,067	97,107	99,421	88,637	86,505	81,682	78,194	84,561
Seasonal Adj. [c]	**12.8%**	**17.6%**	**9.6%**	**4.5%**	**-4.2%**	**-9.8%**	**-13.1%**	**-15.9%**	**-5.2%**	**-3.1%**	**6.7%**	**0.1%**	**0.0%**

STATION 35 - BEVERLY - RTE.128 - NORTH OF BRIMBLE AVENUE

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AADT[b]
2015	41,103	41,143	43,402	46,446	50,910	51,501	54,455	54,687	52,058	48,570	44,669	44,523	47,789
Seasonal Adj. [c]	**14.0%**	**13.9%**	**9.2%**	**2.8%**	**-6.5%**	**-7.8%**	**-13.9%**	**-14.4%**	**-8.9%**	**-1.6%**	**6.5%**	**6.8%**	**0.0%**
Average	**14.2%**	**14.6%**	**8.7%**	**4.4%**	**-3.7%**	**-8.2%**	**-13.7%**	**-12.7%**	**-5.7%**	**-2.9%**	**5.1%**	**5.5%**	**0.0%**

[a] Based upon historical data. Source: MassDOT 2009 Traffic Volumes.
[b] Average Annual Daily Traffic.
[c] Seasonal adjustment to yearly average.

Traffic Growth Factor Worksheet

Temporary Count Stations

(Source: MassDOT Transportation Data Management System)

STA.	CITY/TOWN	ROUTE/STREET	LOCATION	2010	2011	2012	2013	2014	2015	2016	2017	Average % Growth
5100	Beverly	Kernwood Street	at Beverly	6,300	6,432	6,543	6,023					1.2%
5072	Beverly	Essex Street	at Wenham Town Line	4,400	4,399	4,199	4,083			4,792		1.5%
5076	Beverly	Hale Street	East of Haskell Street	4,742	4,218	3,991	4,004	4,375			4,796	0.4%
35	Beverly	Yankee Division Highway	North of Ramp Route 128 SB to Brimbal Ave	47,108	44,768			47,763	47,788	47,451		0.2%

Average Growth: 0.8%

Say **1.0%**

MASSDOT CRASH RATE WORKSHEET

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : BEVERLY COUNT DATE : Aug-18

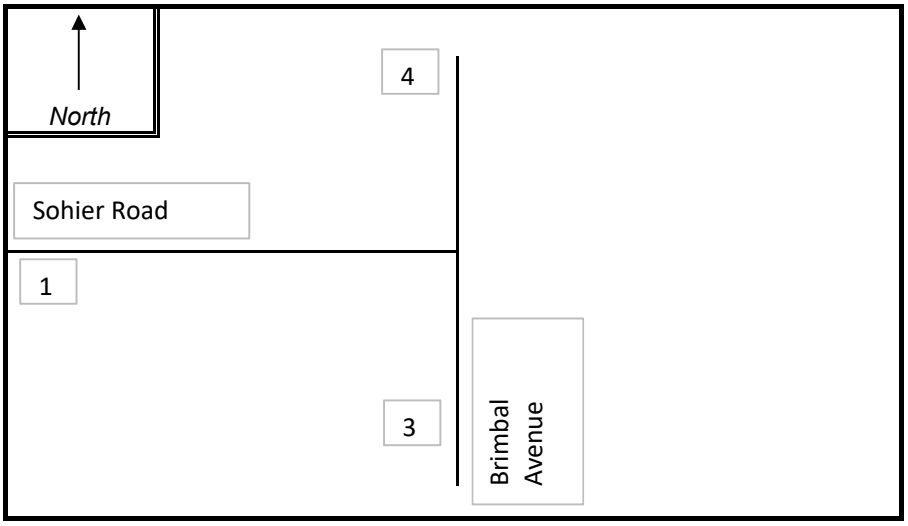
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : SOHIER ROAD

MINOR STREET(S) : BRIMBAL AVENUE

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	East	West	North	South		
PEAK HOURLY VOLUMES (AM/PM) :	702		729	429		**1,860**

" K " FACTOR : **0.078** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **23,846**

TOTAL # OF CRASHES : 22 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **4.40**

CRASH RATE CALCULATION : 0.51 RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Thursday PM volumes used

Project Title & Date: MAX_2018123 Beverly, MA - Sohier Road Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : BEVERLY COUNT DATE : Aug-18

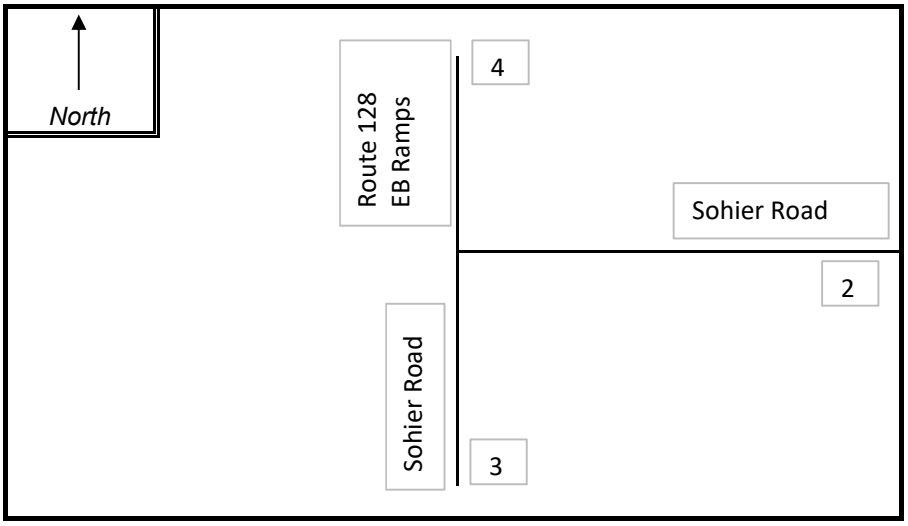
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : SOHIER ROAD

MINOR STREET(S) : ROUTE 128 EASTBOUND RAMPS

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	East	West	North	South		
PEAK HOURLY VOLUMES (AM/PM) :		288	418	707		1,413

" K " FACTOR : **0.078** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,115**

TOTAL # OF CRASHES : 11 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **2.20**

CRASH RATE CALCULATION : 0.33

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

Comments : Thursday PM volumes used

Project Title & Date: MAX_2018123 Beverly, MA - Sohier Road Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : BEVERLY COUNT DATE : Aug-18

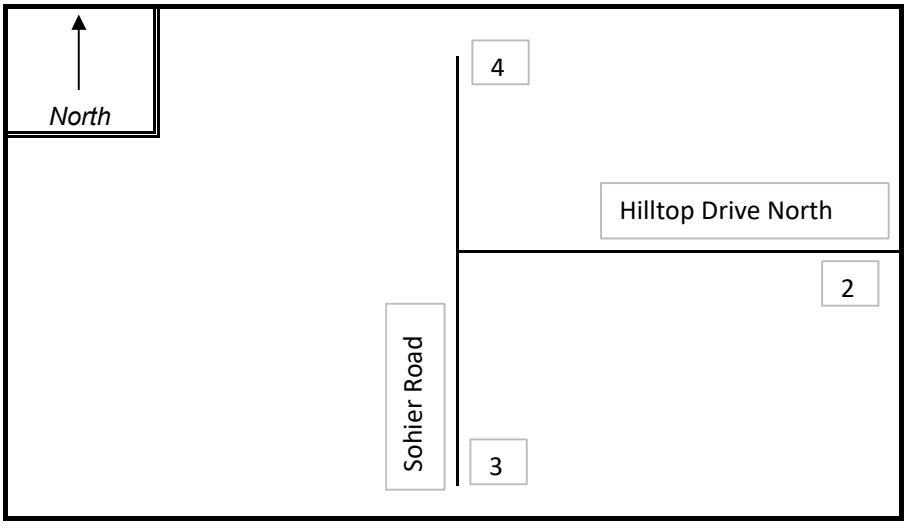
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : SOHIER ROAD

MINOR STREET(S) : HILLTOP DRIVE NORTH

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	East	West	North	South		
PEAK HOURLY VOLUMES (AM/PM) :		5	388	384		777

" K " FACTOR : **0.078** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,962**

TOTAL # OF CRASHES : 2 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : 0.11

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

Comments : Thursday PM volumes used

Project Title & Date: MAX_2018123 Beverly, MA - Sohier Road Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : BEVERLY COUNT DATE : Aug-18

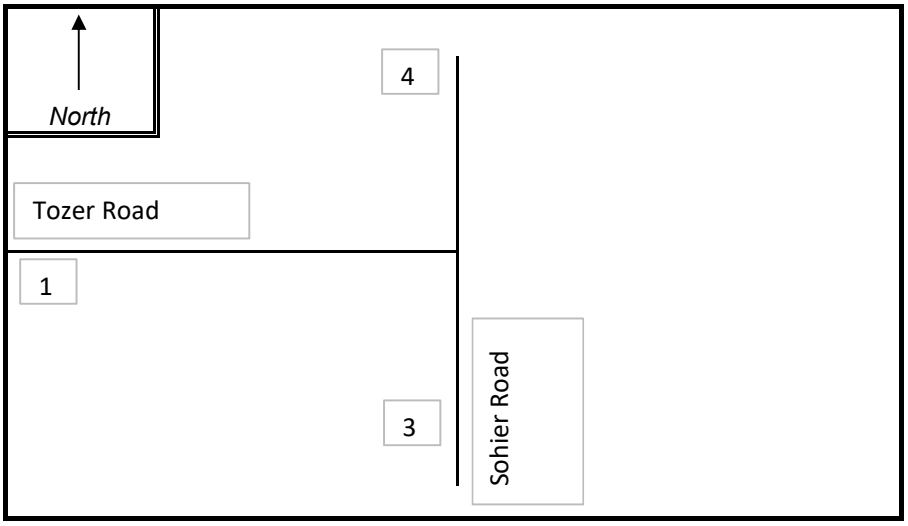
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : SOHIER ROAD

MINOR STREET(S) : TOZER ROAD

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	East	West	North	South		
PEAK HOURLY VOLUMES (AM/PM) :	351		560	390		1,301

" K " FACTOR : **0.078** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,679**

TOTAL # OF CRASHES : 17 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **3.40**

CRASH RATE CALCULATION : 0.56

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

Comments : Thursday PM volumes used

Project Title & Date: MAX_2018123 Beverly, MA - Sohier Road Residential Development

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : BEVERLY COUNT DATE : Aug-18

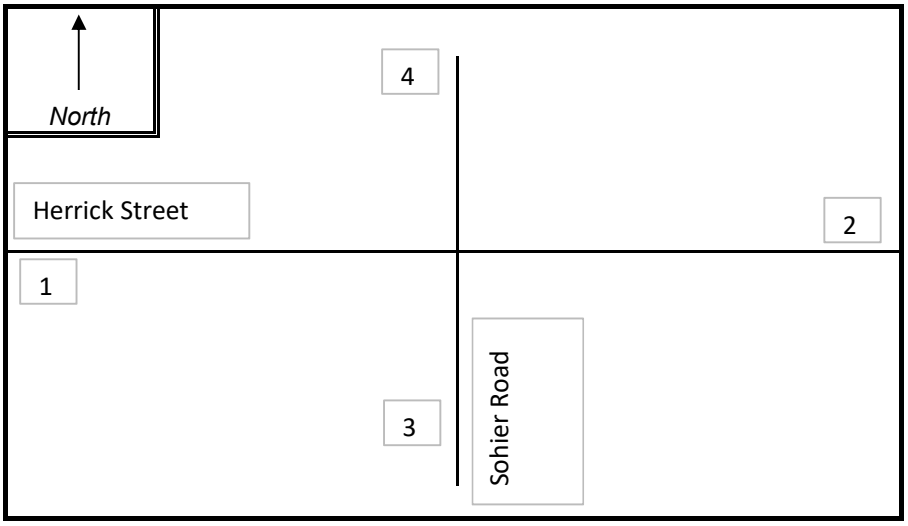
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : SOHIER ROAD

MINOR STREET(S) : HERRICK STREET

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	East	West	North	South		
PEAK HOURLY VOLUMES (AM/PM) :	301	360	351	576		1,588

" K " FACTOR : **0.078** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **20,359**

TOTAL # OF CRASHES : 8 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.60**

CRASH RATE CALCULATION : 0.22

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

Comments : Thursday PM volumes used

Project Title & Date: MAX_2018123 Beverly, MA - Sohier Road Residential Development

MassDOT Crash Data (2012 - 2016)
Sohier Road / Brimbal Avenue

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Landmark	Traffic Device Functioning
3/14/2012	Wednesday	11:00 AM	Non-fatal injury	1	0	2	Angle	V1: Entering traffic lane / V2:Travelling straight ahead	V1:8 / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Daylight	Cloudy / Cloudy		BRIMBAL AVENUE / SOHIER ROAD		Yes, device functioning
5/2/2012	Wednesday	1:00 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Passenger car)	D1:(Followed too closely),(Inattention) D2:(No improper driving)			No hit and run	Dry	Daylight	Cloudy / Cloudy		RAMP-RT 128 NB TO BRIMBAL AVE		Yes, device functioning
5/15/2012	Tuesday	5:00 PM	Property damage only (none injured)	0	0	2	Angle	V1: Entering traffic lane / V2:Travelling straight ahead	V1:E / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Daylight	Rain/Rain	133	BRIMBAL AVE		Not reported
8/1/2012	Wednesday	8:40 AM	Property damage only (none injured)	0	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:N / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Disregarded traffic signs, signals, road markings),(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Daylight	Cloudy / Cloudy		BRIMBAL AVENUE / RAMP-RT 128 NB TO BRIMBAL AVE		Yes, device functioning
9/28/2012	Friday	11:30 AM	Property damage only (none injured)	0	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:N / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Single-unit truck (2-axle, 6-tire)) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Daylight	Rain / Cloudy		RAMP-RT 128 NB TO BRIMBAL AVE / BRIMBAL AVENUE		Yes, device functioning
11/19/2012	Monday	8:15 AM	Property damage only (none injured)	0	0	2	Head-on	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Emotional) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		RAMP-RT 128 NB TO BRIMBAL AVE / BRIMBAL AVENUE		Not reported
12/11/2012	Tuesday	5:00 PM	Non-fatal injury	3	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dark - roadway not lighted	Clear/Clear	150	SOHIER RD		Yes, device functioning
2/22/2013	Friday	12:46 PM	Property damage only (none injured)	0	0	3	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic / V3:Slowing or stopped in traffic	V1:N / V2:N / V3:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic) V3:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Passenger car) V3:(Passenger car)	D1:(Followed too closely),(Distracted) D2:(No improper driving) D3:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	143	BRIMBAL AVENUE Rte 128 N	143 BRIMBAL AVE	Not reported
4/11/2013	Thursday	6:30 AM	Property damage only (none injured)	0	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:E / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Dawn	Cloudy / Rain	133	BRIMBAL AVE		Not reported
7/16/2013	Tuesday	6:07 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Making U-turn / V2:Travelling straight ahead	V1:W / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER ROAD / RAMP TO BRIMBAL AVENUE		Not reported
11/6/2013	Wednesday	1:35 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Followed too closely) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	143	BRIMBAL AVE		Not reported
2/16/2014	Sunday	10:30 PM	Property damage only (none injured)	0	0	2	Angle	V1: Entering traffic lane / V2:Travelling straight ahead	V1:N / V2:8	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Dark - lighted roadway	Clear/Clear		BRIMBAL AVENUE / SOHIER ROAD		Yes, device functioning
6/20/2014	Friday	9:15 AM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Entering traffic lane	V1:S / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Daylight	Clear/Clear		BRIMBAL AVENUE / RAMP-RT 128 NB TO BRIMBAL AVE		Yes, device functioning
9/17/2014	Wednesday	7:23 AM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Other improper action)			No hit and run	Dry	Daylight	Clear/Clear	0	BRIMBAL AVE		Not reported
3/19/2015	Thursday	9:15 PM	Property damage only (none injured)	0	0	2	Sideswipe, opposite direction	V1: Travelling straight ahead / V2:Turning left	V1:W / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dark - lighted roadway	Clear/Clear		SOHIER ROAD / RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE		Not reported
9/26/2015	Saturday	11:24 PM	Non-fatal injury	1	0	1	Single vehicle crash	V1: Leaving traffic lane	V1:N	V1:(Collision with parked motor vehicle),(Collision with work zone maintenance equipment)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Physical impairment),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)			No hit and run	Dry	Dark - roadway not lighted	Clear / Cloudy		BRIMBAL AVENUE		Not reported
12/16/2015	Wednesday	3:35 PM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Turning right	V1:W / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Daylight	Clear/Clear	0	BRIMBAL AVE		Not reported
2/10/2016	Wednesday	10:29 AM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:E / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Followed too closely) D2:(No improper driving),(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	143	BRIMBAL AV		Not reported
2/12/2016	Friday	3:30 PM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:E / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Disregarded traffic signs, signals, road markings),(Wrong side or wrong way) D2:(No improper driving)			No hit and run	Sand, mud, dirt, oil, gravel	Daylight	Clear/Clear	143	BRIMBAL AV		Yes, device functioning

MassDOT Crash Data (2012 - 2016)
Sohier Road / Brimbal Avenue

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Landmark	Traffic Device Functioning
7/7/2016	Thursday	4:35 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:8 / V2:8	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	0	BRIMBAL AV		No, device not functioning
8/13/2016	Saturday	3:45 AM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Entering traffic lane	V1:N / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dark - lighted roadway	Clear/Clear		BRIMBAL AVENUE / SOHIER ROAD	BRIMBAL AVE TRAFFIC CIRCLE	Yes, device functioning
11/7/2016	Monday	7:05 AM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Entering traffic lane	V1:W / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dawn	Clear/Clear		BRIMBAL AVENUE / SOHIER ROAD	BRIMBAL AVE TRAFFIC CIRCLE	Yes, device functioning

MassDOT Crash Data (2012 - 2016)
Sohier Road / Route 128 EB Ramps

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Traffic Device Functioning
6/26/2012	Tuesday	6:07 PM	Non-fatal injury	1	0	2	Angle	V1: Making U-turn / V2:Travelling straight ahead	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Made an improper turn) D2:(No improper driving)			No hit and run	Wet	Daylight	Clear/Clear		SOHIER ROAD / RAMP-RT 128 NB TO BRIMBAL AVE	Not reported
10/10/2012	Wednesday	3:13 PM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Wet	Dusk	Rain		RAMP-RT 128 NB TO BRIMBAL AV/SOHIER RD / SOHIER ROAD	No, device not functioning
12/22/2012	Saturday	7:05 PM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dark - roadway not lighted	Clear/Clear		SOHIER ROAD / RAMP-RT 128 NB TO BRIMBAL AV/SOHIER RD	Not reported
1/14/2013	Monday	6:00 PM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Wet	Dark - lighted roadway	Cloudy / Cloudy		SOHIER ROAD / RAMP-BRIMBAL AV/SOHIER RD TO RT 128 NB	Not reported
5/31/2013	Friday	10:30 PM	Non-fatal injury	1	0	2	Head-on	V1: Turning left / V2:Travelling straight ahead	V1:E / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Made an improper turn) D2:(No improper driving)			No hit and run	Dry	Dark - lighted roadway	Clear		RAMP-RT 128 NB TO BRIMBAL AV/SOHIER RD / SOHIER ROAD	Yes, device functioning
12/13/2013	Friday	11:25 AM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Inattention) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	0	SOHIER ROAD / RAMP-RT 128 NB TO BRIMBAL AV/SOHIER RD / RAMP-RT 128 NB TO BRIMBAL AVE /	Yes, device functioning
3/7/2014	Friday	6:50 PM	Property damage only (none injured)	0	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:E / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Dark - roadway not lighted	Clear		SOHIER ROAD / RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE / RAMP-RT 128 NB TO SOHIER RD/BRIMBAL AV	Not reported
3/8/2014	Saturday	9:30 PM	Non-fatal injury	5	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:E / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Dark - roadway not lighted	Clear		SOHIER ROAD / RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE	Not reported
12/7/2014	Sunday	4:10 PM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:W / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Dark - roadway not lighted	Clear/Clear		SOHIER ROAD / RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE / RAMP-RT 128 NB TO SOHIER RD/BRIMBAL AV	Not reported
3/12/2015	Thursday	9:20 AM	Property damage only (none injured)	0	0	2	Rear-end	V1: Backing / V2:Travelling straight ahead	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Passenger car)	D1:(Wrong side or wrong way) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE	Not reported
5/14/2015	Thursday	5:06 PM	Property damage only (none injured)	0	0	2	Angle	V1: Travelling straight ahead / V2:Turning left	V1:N / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:()			No hit and run	Dry	Daylight	Clear/Clear		SOHIER ROAD / RAMP-RT 128 NB/SOHIER RD TO BRIMBAL AVE	Not reported

MassDOT Crash Data (2012 - 2016)
Sohier Road / Hilltop Drive North

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Traffic Device Functioning
7/23/2012	Monday	1:30 PM	Property damage only (none injured)	0	0	2	Angle	V1: Parked / V2:Backing	V1:8 / V2:8	V1:(Collision with motor vehicle in traffic) V2:(Collision with parked motor vehicle)	V1:(Passenger car) V2:()	D1:() D2:()			Yes, hit and run	Dry	Daylight	Clear/Clear	112	SOHIER RD	Reported but invalid
2/16/2016	Tuesday	7:09 AM	Non-fatal injury	1	0	2	Head-on	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:() D2:()			No hit and run	Ice	Daylight	Cloudy / Cloudy	112	SOHIER RD	Not reported

MassDOT Crash Data (2012 - 2016)
Sohier Road / Tozer Road

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Traffic Device Functioning
6/5/2012	Tuesday	9:00 AM	Property damage only (none injured)	0	0	2	Angle	V1: Not reported / V2:Travelling straight ahead	V1:U / V2:U	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Daylight	Cloudy / Cloudy	100	SOHIER RD	Not reported
5/5/2013	Sunday	1:14 PM	Fatal injury	0	1	1	Single vehicle crash	V1: Overtaking/passing	V1:8	V1:(Collision with curb),(Collision with light pole or other post/support)	V1:(Motorcycle)	D1:(Exceeded authorized speed limit),(Failure to keep in proper lane or running off road)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Not reported
1/18/2014	Saturday	2:42 PM	Non-fatal injury	1	0	3	Angle	V1: Slowing or stopped in traffic / V2:Travelling straight ahead / V3:Travelling straight ahead	V1:E / V2:S / V3:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic) V3:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car) V3:(Passenger car)	D1:(No improper driving) D2:(No improper driving) D3:(No improper driving)			No hit and run	Snow	Daylight	Snow/Sleet, hail (freezing rain or drizzle)		SOHIER RD / TOZER RD	Not reported
4/1/2014	Tuesday	12:30 PM	Non-fatal injury	1	0	1	Single vehicle crash	V1: Travelling straight ahead	V1:W	V1:(Collision with light pole or other post/support)	V1:(Passenger car)	D1:(Inattention),(Failure to keep in proper lane or running off road)			No hit and run	Dry	Daylight	Clear/Clear	100	SOHIER RD	Yes, device functioning
6/22/2014	Sunday	11:27 AM	Non-fatal injury	1	0	2	Sideswipe, same direction	V1: Travelling straight ahead / V2:Entering traffic lane	V1:S / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Motorcycle) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Yes, device functioning
9/19/2014	Friday	6:00 PM	Non-fatal injury	1	0	2	Single vehicle crash	V1: Travelling straight ahead / V2:Turning left	V1:S / V2:E	V1:(Collision with ditch) V2:(Other non-collision)	V1:(Motorcycle) V2:(Passenger car)	D1:(No improper driving) D2:()			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Yes, device functioning
1/13/2015	Tuesday	4:45 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:E / V2:E	V1:(Collision with motor vehicle in traffic),(Collision with curb),(Collision with fence) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Disregarded traffic signs, signals, road markings),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Yes, device functioning
6/11/2015	Thursday	3:15 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Turning right / V2:Overtaking/passing	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Followed too closely)			No hit and run	Dry	Daylight	Clear/Clear	100	SOHIER RD	Not reported
8/10/2015	Monday	1:30 AM	Non-fatal injury	1	0	1	Single vehicle crash	V1: Travelling straight ahead	V1:N	V1:(Collision with light pole or other post/support)	V1:(Passenger car)	D1:(Inattention)			No hit and run	Dry	Dark - lighted roadway	Clear/Clear	100	SOHIER RD	Yes, device functioning
1/4/2016	Monday	4:07 PM	Property damage only (none injured)	0	0	3	Angle	V1: Turning left / V2:Travelling straight ahead / V3:Slowing or stopped in traffic	V1:N / V2:S / V3:E	V1:(Collision with motor vehicle in traffic),(Collision with parked motor vehicle) V2:(Collision with motor vehicle in traffic) V3:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car) V3:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Failed to yield right of way),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner) D2:(No improper driving) D3:(No improper driving)			Yes, hit and run	Dry	Dusk	Clear/Cloudy		SOHIER RD / TOZER RD	Yes, device functioning
1/7/2016	Thursday	8:10 AM	Property damage only (none injured)	0	0	2	Sideswipe, opposite direction	V1: Travelling straight ahead / V2:Turning left	V1:S / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Bus (seats for more than 15 people, including driver))	D1:(No improper driving) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear	100	SOHIER ROAD	Yes, device functioning
1/21/2016	Thursday	3:30 PM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:8 / V2:8	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Distracted),(Inattention) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Yes, device functioning
3/12/2016	Saturday	3:32 PM	Non-fatal injury	1	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear/Clear		SOHIER RD / TOZER RD	Not reported
3/15/2016	Tuesday	2:40 PM	Non-fatal injury	3	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Wet	Daylight	Cloudy/Rain		SOHIER RD / TOZER RD	Not reported
3/28/2016	Monday	8:16 AM	Property damage only (none injured)	0	0	1	Single vehicle crash	V1: Travelling straight ahead	V1:N	V1:(Collision with curb)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(Over-correcting/over-steering)			No hit and run	Dry	Daylight	Cloudy / Cloudy	100	SOHIER RD	Not reported
5/9/2016	Monday	3:42 PM	Non-fatal injury	2	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:W / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way) D2:(No improper driving)			No hit and run	Dry	Daylight	Clear / Cloudy		SOHIER RD / TOZER RD	Not reported
10/1/2016	Saturday	7:33 AM	Property damage only (none injured)	0	0	2	Angle	V1: Turning left / V2:Travelling straight ahead	V1:N / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Unknown heavy truck, cannot classify)	D1:(Failed to yield right of way),(Made an improper turn) D2:(No improper driving)			No hit and run	Wet	Daylight	Rain/Rain	100	SOHIER ROAD	Not reported

MassDOT Crash Data (2012 - 2016)
Sohier Road / Herrick Street

Crash Date	Day of Week	Crash Time	Crash Severity	Number of NonFatal Injuries	Number of Fatal Injuries	Number of Vehicles	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Vehicle Sequence of Events	Vehicle Configuration	Driver Contributing Codes	Non Motorist Type	Non Motorist Action	Hit & Run	Road Surface	Ambient Light	Weather Condition	Street Number	Roadway	Traffic Device Functioning
12/27/2012	Thursday	10:00 AM	Property damage only (none injured)	0	0	2	Sideswipe, same direction	V1: Travelling straight ahead / V2:Parked	V1:N / V2:E	V1:(Collision with motor vehicle in traffic),(Collision with curb),(Collision with fence) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(Failed to yield right of way),(Driving too fast for conditions) D2:(No improper driving)			No hit and run	Wet	Dark - lighted roadway	Snow/Snow		HERRICK ST / SOHIER RD	Yes, device functioning
2/2/2014	Sunday	3:00 PM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:E / V2:S	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:() D2:()			No hit and run	Wet	Daylight	Rain/Rain		HERRICK ST / SOHIER RD	Yes, device functioning
2/16/2014	Sunday	9:06 AM	Property damage only (none injured)	0	0	2	Sideswipe, opposite direction	V1: Travelling straight ahead / V2:Turning left	V1:8 / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Wet	Daylight	Clear/Clear		HERRICK ST / SOHIER RD	Yes, device functioning
10/22/2014	Wednesday	9:40 AM	Property damage only (none injured)	0	0	2	Rear-end	V1: Travelling straight ahead / V2:Slowing or stopped in traffic	V1:S / V2:S	V1:(Collision with motor vehicle in traffic),(Separation of units) V2:(Collision with motor vehicle in traffic),(Separation of units)	V1:(Passenger car) V2:(Passenger car)	D1:(Followed too closely),(Driving too fast for conditions) D2:(No improper driving),(No improper driving)			No hit and run	Wet	Daylight	Rain/Cloudy		HERRICK ST / SOHIER RD	Yes, device functioning
1/31/2015	Saturday	11:30 AM	Non-fatal injury	1	0	2	Angle	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:S / V2:E	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Failed to yield right of way)			No hit and run	Wet	Daylight	Clear/Clear		HERRICK STREET / SOHIER ROAD	Yes, device functioning
4/28/2016	Thursday	11:05 AM	Property damage only (none injured)	0	0	2	Rear-end	V1: Slowing or stopped in traffic / V2:Slowing or stopped in traffic	V1:N / V2:N	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Passenger car) V2:(Passenger car)	D1:(No improper driving) D2:(Followed too closely)			No hit and run	Dry	Daylight	Clear/Clear		HERRICK ST / SOHIER RD	Yes, device functioning
7/13/2016	Wednesday	9:28 PM	Property damage only (none injured)	0	0	1	Unknown	V1: Travelling straight ahead	V1:N	V1:(Collision with pedestrian)	V1:(Passenger car)	D1:(Failed to yield right of way)			No hit and run	Dry	Dark - lighted roadway	Clear/Clear		HERRICK ST / SOHIER RD	Yes, device functioning
8/15/2016	Monday	12:05 PM	Property damage only (none injured)	0	0	2	Head-on	V1: Travelling straight ahead / V2:Travelling straight ahead	V1:E / V2:W	V1:(Collision with motor vehicle in traffic) V2:(Collision with motor vehicle in traffic)	V1:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires) V2:(Light truck(van, mini-van, panel, pickup, sport utility) with only four tires)	D1:(No improper driving) D2:(Failure to keep in proper lane or running off road)			No hit and run	Dry	Dark - lighted roadway	Clear/Clear	0	HERRICK ST	Yes, device functioning

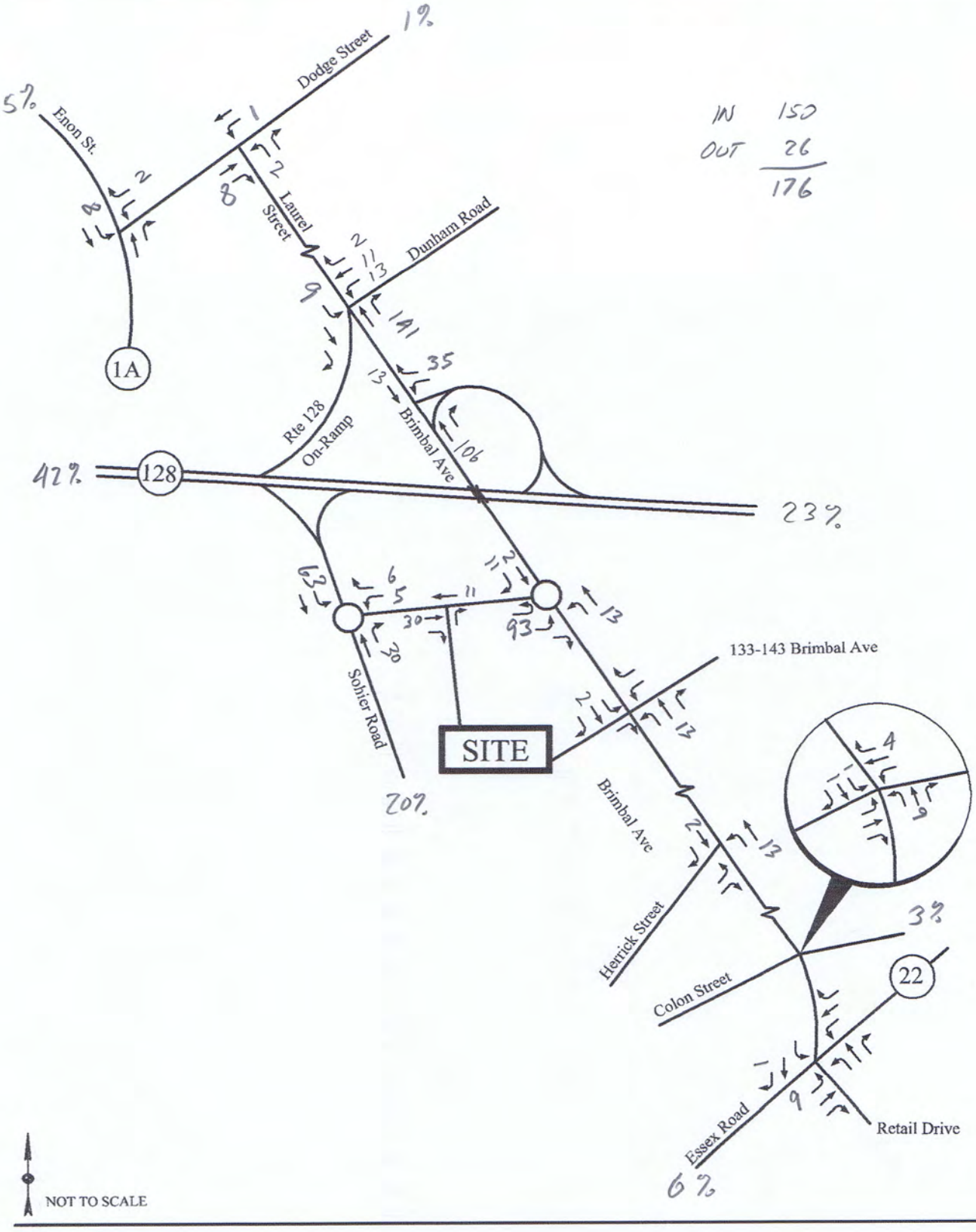
BACKGROUND DEVELOPMENT DATA

Ron Müller & Associates

Traffic Engineering and Consulting Services

52 Dunham Rd.
Weekday AM

Peak Hour Traffic Volumes



Ron Müller & Associates

Traffic Engineering and Consulting Services

52 Dunham Rd.
Weekday PM

Peak Hour Traffic Volumes

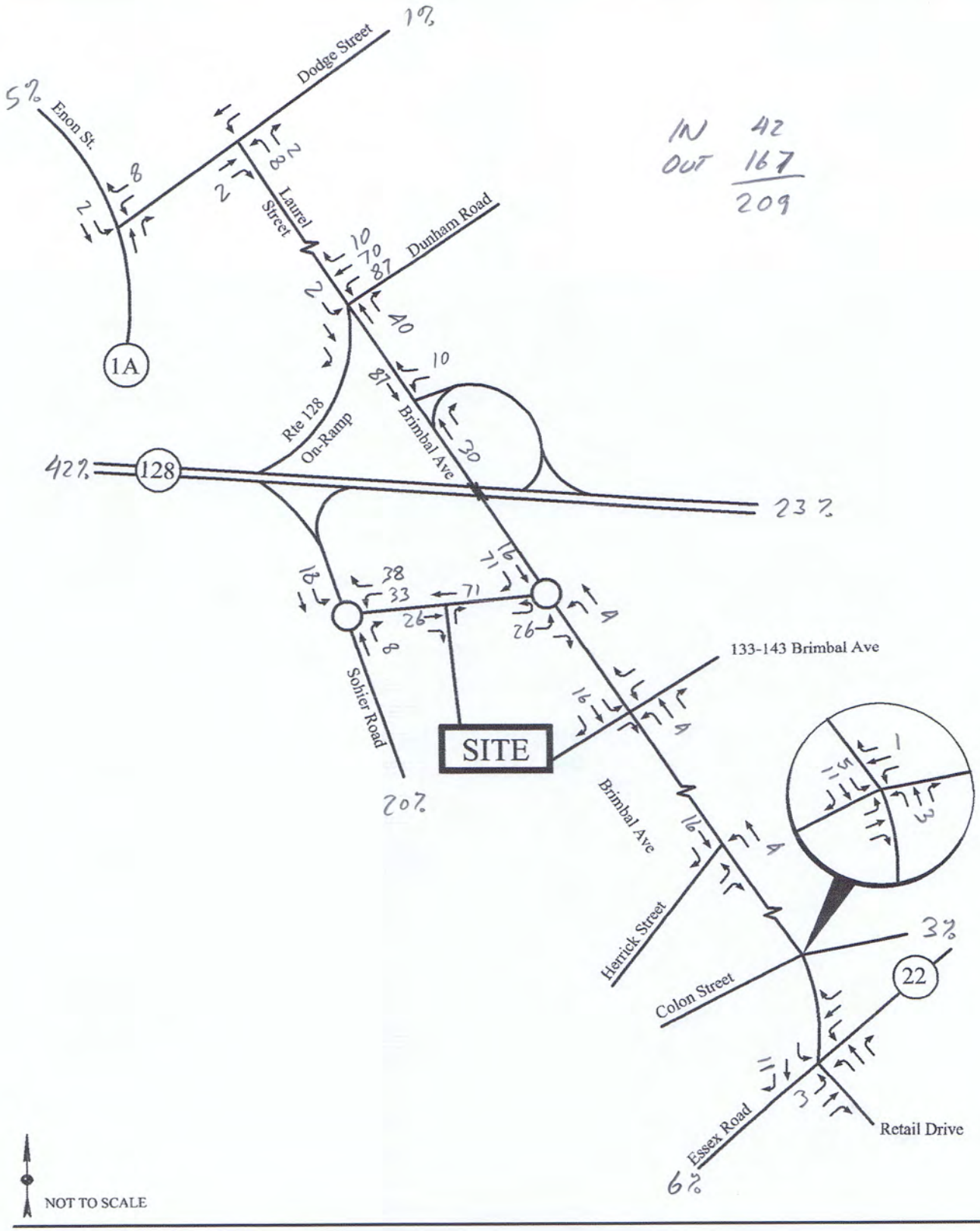
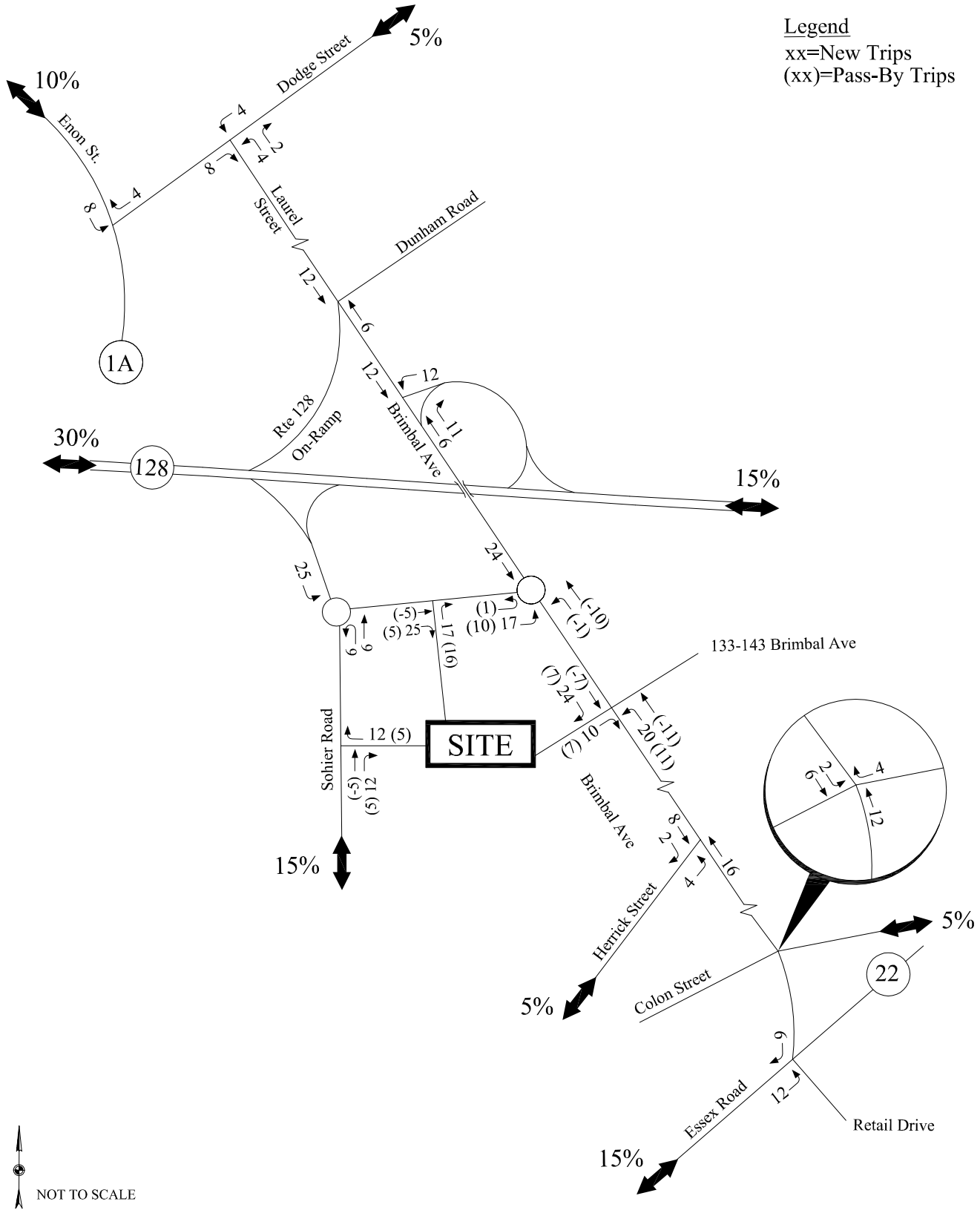


Figure 9R
Site Generated Weekday AM
Peak Hour Traffic Volumes

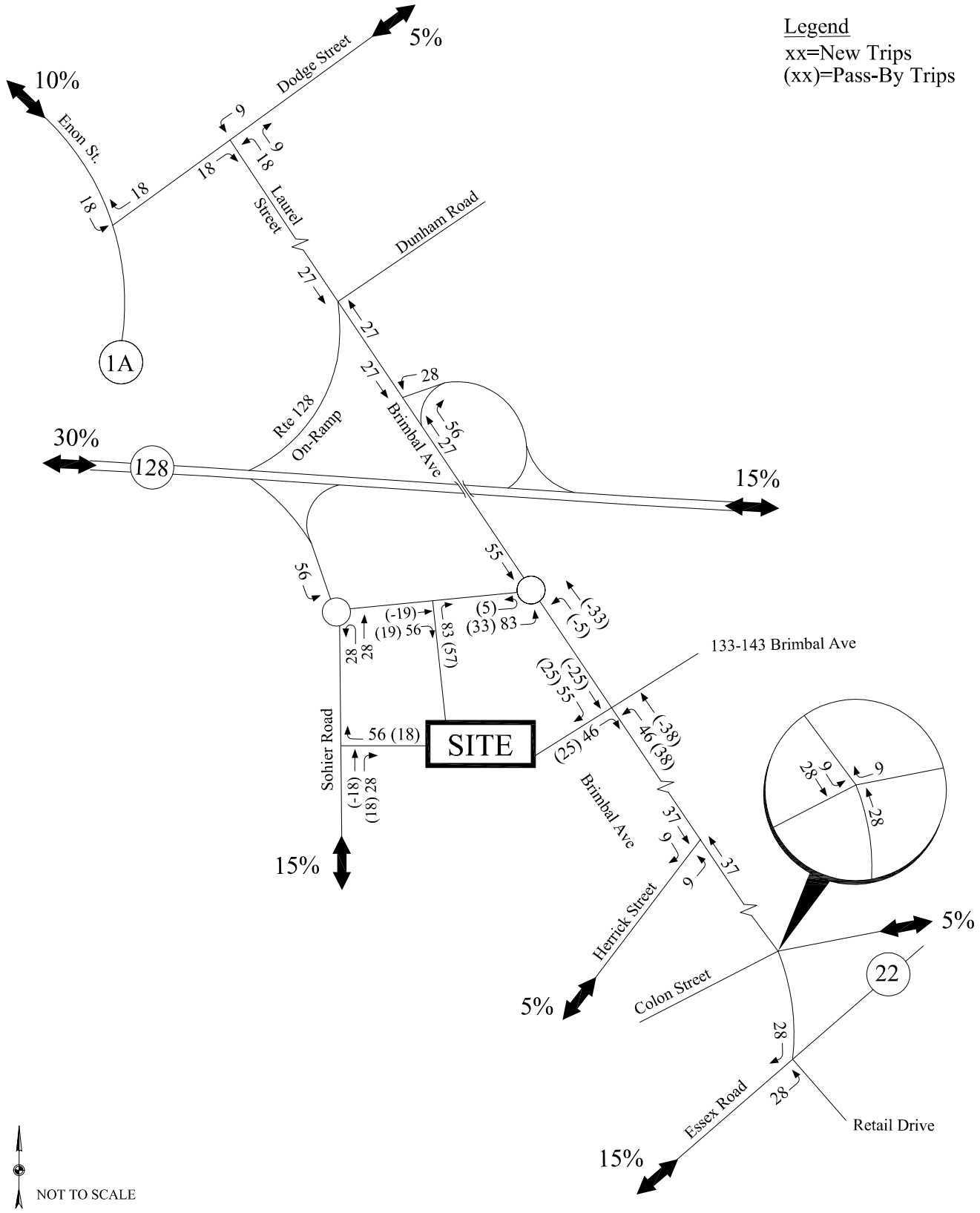


Ron Müller & Associates

Traffic Engineering and Consulting Services

Figure 10R

Site Generated Weekday PM Peak Hour Traffic Volumes



TRIP-GENERATION CALCULATIONS

Journey to Work - City of Beverly (Census 2009-2013)

					Entering							Exiting						
					From South	From North	From West	From East	From West	From North	From South	From South	From North	From West	From East	From West	From North	From South
Residence - Minor Civil Division Name	**Place of Work - Minor Civil Division Name**	**Count**			Sohier Road	Route 128 NB	Tozer Road	Herrick Street	Herrick Street	Brimbal Avenue	Brimbal Avenue	Sohier Road	Route 128 NB	Tozer Road	Herrick Street	Herrick Street	Brimbal Avenue	Brimbal Avenue
Beverly city	Beverly city	7,313	35.31%	40.23%	40%		10%		15%	25%	10%	40%	10%	10%		15%	15%	10%
Beverly city	Boston city	2,227	10.75%	12.25%		100%											100%	
Beverly city	Danvers town	1,619	7.82%	8.91%		50%	25%		25%					25%		25%	50%	
Beverly city	Salem city	1,454	7.02%	8.00%	80%	20%						80%					20%	
Beverly city	Peabody city	918	4.43%	5.05%	50%	50%						50%					50%	
Beverly city	Gloucester city	608	2.94%	3.34%						100%			100%					
Beverly city	Lynn city	536	2.59%	2.95%	50%	50%						50%					50%	
Beverly city	Woburn city	318	1.54%	1.75%		100%											100%	
Beverly city	Andover town	235	1.13%	1.29%		100%											100%	
Beverly city	Ipswich town	230	1.11%	1.27%						100%			33%	67%				
Beverly city	Saugus town	229	1.11%	1.26%		100%											100%	
Beverly city	North Andover town	212	1.02%	1.17%		100%											100%	
Beverly city	Burlington town	201	0.97%	1.11%		100%											100%	
Beverly city	Cambridge city	200	0.97%	1.10%		100%											100%	
Beverly city	Wakefield town	183	0.88%	1.01%		100%											100%	
Beverly city	Wenham town	161	0.78%	0.89%			50%			50%				50%			50%	
Beverly city	Hamilton town	157	0.76%	0.86%			75%			25%				75%			25%	
Beverly city	Essex town	147	0.71%	0.81%						100%			100%					
Beverly city	Newburyport city	147	0.71%	0.81%		100%								25%			75%	
Beverly city	Haverhill city	142	0.69%	0.78%		50%	50%							50%			50%	
Beverly city	Middleton town	134	0.65%	0.74%		75%	25%										100%	
Beverly city	Reading town	128	0.62%	0.70%		100%											100%	
Beverly city	Stoneham town	127	0.61%	0.70%		100%											100%	
Beverly city	Manchester-by-the-Sea town	126	0.61%	0.69%				33%		67%			67%		33%			
Beverly city	Swampscott town	118	0.57%	0.65%	67%	33%						67%					33%	
Beverly city	Marblehead town	117	0.56%	0.64%	100%							100%						
Beverly city	Topsfield town	96	0.46%	0.53%		67%	33%							67%			33%	
Beverly city	Wilmington town	95	0.46%	0.52%		100%											100%	
		20,711	87.77%															
																		SAY:

	Entering							Exiting						
	From South	From North	From West	From East	From West	From North	From South	From South	From North	From West	From East	From West	From North	From South
Residence - Minor Civil Division Name	Sohier Road	Route 128 NB	Tozer Road	Herrick Street	Herrick Street	Brimbal Avenue	Brimbal Avenue	Sohier Road	Route 128 NB	Tozer Road	Herrick Street	Herrick Street	Brimbal Avenue	Brimbal Avenue
Beverly city	2925.2	0.0	731.3	0.0	1097.0	1828.3	731.3	2925.2	731.3	731.3	0.0	1097.0	1097.0	731.3
Beverly city	0.0	2227.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2227.0	0.0
Beverly city	0.0	809.5	404.8	0.0	404.8	0.0	0.0	0.0	0.0	404.8	0.0	404.8	809.5	0.0
Beverly city	1163.2	290.8	0.0	0.0	0.0	0.0	0.0	1163.2	0.0	0.0	0.0	0.0	290.8	0.0
Beverly city	459.0	459.0	0.0	0.0	0.0	0.0	0.0	459.0	0.0	0.0	0.0	0.0	459.0	0.0
Beverly city	0.0	0.0	0.0	0.0	0.0	608.0	0.0	0.0	608.0	0.0	0.0	0.0	0.0	0.0
Beverly city	268.0	268.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	268.0	0.0
Beverly city	0.0	318.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	318.0	0.0
Beverly city	0.0	235.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	235.0	0.0
Beverly city	0.0	0.0	0.0	0.0	0.0	230.0	0.0	0.0	75.9	154.1	0.0	0.0	0.0	0.0
Beverly city	0.0	229.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	229.0	0.0
Beverly city	0.0	212.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	212.0	0.0
Beverly city	0.0	201.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.0	0.0
Beverly city	0.0	200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	0.0
Beverly city	0.0	183.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	183.0	0.0
Beverly city	0.0	0.0	80.5	0.0	0.0	80.5	0.0	0.0	0.0	80.5	0.0	0.0	80.5	0.0
Beverly city	0.0	0.0	117.8	0.0	0.0	39.3	0.0	0.0	0.0	117.8	0.0	0.0	39.3	0.0
Beverly city	0.0	0.0	0.0	0.0	0.0	147.0	0.0	0.0	147.0	0.0	0.0	0.0	0.0	0.0
Beverly city	0.0	147.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	0.0	110.3	0.0
Beverly city	0.0	71.0	71.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	0.0	0.0	71.0	0.0
Beverly city	0.0	100.5	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	134.0	0.0
Beverly city	0.0	128.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.0	0.0
Beverly city	0.0	127.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127.0	0.0
Beverly city	0.0	0.0	0.0	41.6	0.0	84.4	0.0	0.0	84.4	0.0	41.6	0.0	0.0	0.0
Beverly city	79.1	38.9	0.0	0.0	0.0	0.0	0.0	79.1	0.0	0.0	0.0	0.0	38.9	0.0
Beverly city	117.0	0.0	0.0	0.0	0.0	0.0	0.0	117.0	0.0	0.0	0.0	0.0	0.0	0.0
Beverly city	0.0	64.3	31.7	0.0	0.0	0.0	0.0	0.0	0.0	64.3	0.0	0.0	31.7	0.0
Beverly city	0.0	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0
	5011.5	6404.1	1470.5	41.6	1501.7	3017.4	731.3	5011.5	1646.6	1660.5	41.6	1501.7	7584.9	731.3
SAY:	**25%**	**35%**	**10%**	**0%**	**10%**	**15%**	**5%**	**25%**	**10%**	**10%**	**0%**	**10%**	**40%**	**5%**

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 220 - Multifamily Housing (Low-Rise)

General Urban/Suburban

Average Vehicle Trips Ends vs: Dwelling Units

Independent Variable (X): 75

AVERAGE WEEKDAY DAILY

T = 7.56 * (X) - 40.86

T = 7.56 * 75 - 40.86

T = 526.14

T = 526 vehicle trips

with 50% (263 vpd) entering and 50% (263 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.95 Ln (X) - 0.51

Ln T = 0.95 Ln(75) - 0.51

Ln T = 3.59

T = 36.29

T = 36 vehicle trips

with 23% (8 vph) entering and 77% (28 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln T = 0.89 Ln (X) - 0.02

Ln T = 0.89 Ln(75) - 0.02

Ln T = 3.82

T = 45.72

T = 46 vehicle trips

with 63% (29 vph) entering and 37% (17 vph) exiting.

SATURDAY DAILY

T = 8.14* (X)

T = 8.14 * 75

T = 610.50

T = 610 vehicle trips

with 50% (305 vpd) entering and 50% (305 vpd) exiting.

SATURDAY PEAK HOUR OF GENERATOR

T = 0.70* (X)

T = 0.70 * 75

T = 52.50

T = 53 vehicle trips

*with 54% (29 vph) entering and 46% (24 vph) exiting.

** Distribution not given for Sat Midday Peak Hour, used Distribution from LUC 220 - Occupied Dwelling Units*

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 710 - General Office Building

General Urban/Suburban

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area

Independent Variable (X): 5.000

AVERAGE WEEKDAY DAILY

Ln(T) = 0.97 Ln (X) + 2.50

Ln(T) = 0.97 Ln (5.000) + 2.50

Ln(T) = 4.06

T = 58.04

T = 58 vehicle trips

with 50% (29 vpd) entering and 50% (29 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 1.16 * (X)

T = 1.16 * 5.000

T = 5.80

T = 6 vehicle trips

with 86% (5 vph) entering and 14% (1 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

Ln(T) = 0.95 Ln (X) + 0.36

Ln(T) = 0.95 Ln (5.000) + 0.36

Ln(T) = 1.89

T = 6.61

T = 7 vehicle trips

with 16% (1 vph) entering and 84% (6 vph) exiting.

SATURDAY DAILY

T = 2.21 * (X)

T = 2.21 * 5.000

T = 11.05

T = 12 vehicle trips

with 50% (6 vph) entering and 50% (6 vph) exiting.

SATURDAY PEAK HOUR OF GENERATOR

T = 0.53 * (X)

T = 0.53 * 5.000

T = 2.65

T = 3 vehicle trips

with 54% (2 vph) entering and 46% (1 vph) exiting.

CAPACITY ANALYSIS METHODOLOGY

CAPACITY ANALYSIS METHODOLOGY

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).[10] 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

[10] *Highway Capacity Manual 2000*, Transportation Research Board; Washington, D.C.; 2000. *Highway Capacity Manual 2010*, Transportation Research Board; Washington, D.C.; 2010.

(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 Tables A-1 and A-2 based on HCM 2000 and HCM 2010, respectively.

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 geometrics on average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Tables A-1 and A-2 summarize the relationship between level of service and average control delay based on HCM 2000 and HCM 2010, respectively.

Table A-1
LEVEL-OF-SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	**Unsignalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)	**Signalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Source: *Highway Capacity Manual 2000*, Transportation Research Board; Washington, D.C.; 2000. Pages 10-16 and 17-2.

Table A-2
LEVEL-OF-SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	**Unsignalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)	**Signalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50 or v/c >1.0	>80 or v/c >1.0

Source: *Highway Capacity Manual 2010*, Transportation Research Board; Washington, D.C.; 2010. Pages 18-6 and 19-2.

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.

CAPACITY AND QUEUE ANALYSIS WORKSHEETS

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	6	372	3	3	713
Future Volume (vph)	5	6	372	3	3	713
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.927		0.999			
Flt Protected	0.977					
Satd. Flow (prot)	1893	0	1765	0	0	1783
Flt Permitted	0.977					
Satd. Flow (perm)	1893	0	1765	0	0	1783
Link Speed (mph)	25		30			30
Link Distance (ft)	511		254			504
Travel Time (s)	13.9		5.8			11.5
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	372	3	3	713
Future Vol, veh/h	5	6	372	3	3	713
Conflicting Peds, #/hr	12	12	0	12	12	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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	6	7	448	4	4	859

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1340	474	0	0	464	0
Stage 1	462	-	-	-	-	-
Stage 2	878	-	-	-	-	-
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	170	595	-	-	1108	-
Stage 1	638	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	165	580	-	-	1096	-
Mov Cap-2 Maneuver	165	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	403	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	271	1096	-
HCM Lane V/C Ratio	-	-	0.049	0.003	-
HCM Control Delay (s)	-	-	19	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	2	373	7	1	717
Future Volume (vph)	8	2	373	7	1	717
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.977		0.997			
Flt Protected	0.960					
Satd. Flow (prot)	1960	0	1746	0	0	1783
Flt Permitted	0.960					
Satd. Flow (perm)	1960	0	1746	0	0	1783
Link Speed (mph)	25		30			30
Link Distance (ft)	562		322			254
Travel Time (s)	15.3		7.3			5.8
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	2	373	7	1	717
Future Vol, veh/h	8	2	373	7	1	717
Conflicting Peds, #/hr	20	20	0	20	20	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	5	0	0	3
Mvmt Flow	10	2	455	9	1	874

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1376	499	0	0	483	0
Stage 1	479	-	-	-	-	-
Stage 2	897	-	-	-	-	-
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	162	576	-	-	1090	-
Stage 1	627	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	155	552	-	-	1071	-
Mov Cap-2 Maneuver	155	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	181	1071	-
HCM Lane V/C Ratio	-	-	0.067	0.001	-
HCM Control Delay (s)	-	-	26.3	8.4	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	51	230	188	329	608	117
Future Volume (vph)	51	230	188	329	608	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890				0.978	
Flt Protected	0.991			0.982		
Satd. Flow (prot)	1631	0	0	1740	1744	0
Flt Permitted	0.991			0.982		
Satd. Flow (perm)	1631	0	0	1740	1744	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	47.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	230	188	329	608	117
Future Vol, veh/h	51	230	188	329	608	117
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	87	87	87	87	87	87
Heavy Vehicles, %	6	2	3	4	3	3
Mvmt Flow	59	264	216	378	699	134

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1576	766	833	0	-	0
Stage 1	766	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	118	403	796	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	77	403	796	-	-	-
Mov Cap-2 Maneuver	77	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	283	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	251.8	4.1	0
HCM LOS	F		

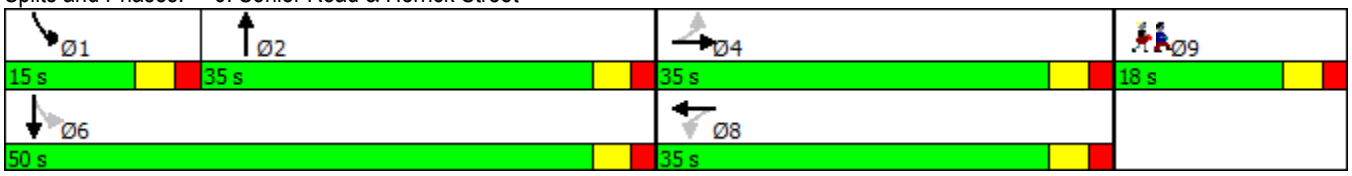
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	796	-	228	-	-
HCM Lane V/C Ratio	0.271	-	1.417	-	-
HCM Control Delay (s)	11.2	0	251.8	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1.1	-	18.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	160	50	65	159	167	0	399	104	221	291	210
Future Volume (vph)	74	160	50	65	159	167	0	399	104	221	291	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			1.00			0.99	
Frt		0.976			0.942			0.972			0.937	
Flt Protected		0.987			0.992					0.950		
Satd. Flow (prot)	0	1911	0	0	1651	0	0	1841	0	1711	1669	0
Flt Permitted		0.651			0.832					0.114		
Satd. Flow (perm)	0	1261	0	0	1385	0	0	1841	0	205	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			37			13			45	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 88.6
Natural Cycle: 130
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	15

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	374	471	541	280	634
v/c Ratio	0.86	0.95	0.85	1.02	0.73
Control Delay	48.1	58.7	42.1	82.8	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	58.7	42.1	82.8	22.9
Queue Length 50th (ft)	175	222	254	101	222
Queue Length 95th (ft)	#325	#468	#571	#273	399
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	437	495	635	275	874
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	0.86	0.95	0.85	1.02	0.73

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	160	50	65	159	167	0	399	104	221	291	210
Future Volume (vph)	74	160	50	65	159	167	0	399	104	221	291	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99			1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.98			0.94			0.97		1.00	0.94	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1912			1652			1841		1711	1669	
Flt Permitted		0.65			0.83			1.00		0.11	1.00	
Satd. Flow (perm)		1262			1386			1841		205	1669	
Peak-hour factor, PHF	0.76	0.76	0.76	0.83	0.83	0.83	0.93	0.93	0.93	0.79	0.79	0.79
Adj. Flow (vph)	97	211	66	78	192	201	0	429	112	280	368	266
RTOR Reduction (vph)	0	7	0	0	25	0	0	9	0	0	23	0
Lane Group Flow (vph)	0	367	0	0	446	0	0	532	0	280	611	0
Confl. Bikes (#/hr)			1			3			1			3
Heavy Vehicles (%)	3%	3%	14%	2%	1%	5%	0%	3%	4%	2%	3%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.2			30.2			30.2		45.3	45.3	
Effective Green, g (s)		30.2			30.2			30.2		45.3	45.3	
Actuated g/C Ratio		0.33			0.33			0.33		0.49	0.49	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		411			451			599		264	815	
v/s Ratio Prot								0.29		c0.12	0.37	
v/s Ratio Perm		0.29			c0.32					c0.40		
v/c Ratio		0.89			0.99			0.89		1.06	0.75	
Uniform Delay, d1		29.7			31.1			29.7		24.6	19.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		20.8			39.1			14.9		72.3	3.8	
Delay (s)		50.5			70.2			44.6		96.9	22.9	
Level of Service		D			E			D		F	C	
Approach Delay (s)		50.5			70.2			44.6			45.6	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	2	383	5	1	383
Future Volume (vph)	3	2	383	5	1	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946		0.998			
Flt Protected	0.971					
Satd. Flow (prot)	1920	0	1798	0	0	1801
Flt Permitted	0.971					
Satd. Flow (perm)	1920	0	1798	0	0	1801
Link Speed (mph)	25		30			30
Link Distance (ft)	511		254			504
Travel Time (s)	13.9		5.8			11.5
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	383	5	1	383
Future Vol, veh/h	3	2	383	5	1	383
Conflicting Peds, #/hr	1	1	0	1	1	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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	3	2	426	6	1	426

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	858	430	0	0	432	0
Stage 1	429	-	-	-	-	-
Stage 2	429	-	-	-	-	-
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	330	629	-	-	1138	-
Stage 1	661	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	329	628	-	-	1137	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	660	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1137	-
HCM Lane V/C Ratio	-	-	0.014	0.001	-
HCM Control Delay (s)	-	-	14	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	3	385	6	2	384
Future Volume (vph)	6	3	385	6	2	384
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.959		0.998			
Flt Protected	0.966					
Satd. Flow (prot)	1936	0	1798	0	0	1801
Flt Permitted	0.966					
Satd. Flow (perm)	1936	0	1798	0	0	1801
Link Speed (mph)	25		30			30
Link Distance (ft)	562		322			254
Travel Time (s)	15.3		7.3			5.8
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	3	385	6	2	384
Future Vol, veh/h	6	3	385	6	2	384
Conflicting Peds, #/hr	1	1	0	1	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	7	3	433	7	2	431

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	874	438	0	0	440	0
Stage 1	437	-	-	-	-	-
Stage 2	437	-	-	-	-	-
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	323	623	-	-	1131	-
Stage 1	655	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	322	622	-	-	1130	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	384	1130	-
HCM Lane V/C Ratio	-	-	0.026	0.002	-
HCM Control Delay (s)	-	-	14.6	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	266	254	306	335	55
Future Volume (vph)	85	266	254	306	335	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898				0.981	
Flt Protected	0.988			0.978		
Satd. Flow (prot)	1641	0	0	1778	1759	0
Flt Permitted	0.988			0.978		
Satd. Flow (perm)	1641	0	0	1778	1759	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	46.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	266	254	306	335	55
Future Vol, veh/h	85	266	254	306	335	55
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	90	90	90	90	90	90
Heavy Vehicles, %	5	2	1	1	1	11
Mvmt Flow	94	296	282	340	372	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1307	403	433	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Critical Hdwy	6.45	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	174	647	1132	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	647	1132	-	-	-
Mov Cap-2 Maneuver	121	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	270	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	166.1	4.2	0
HCM LOS	F		

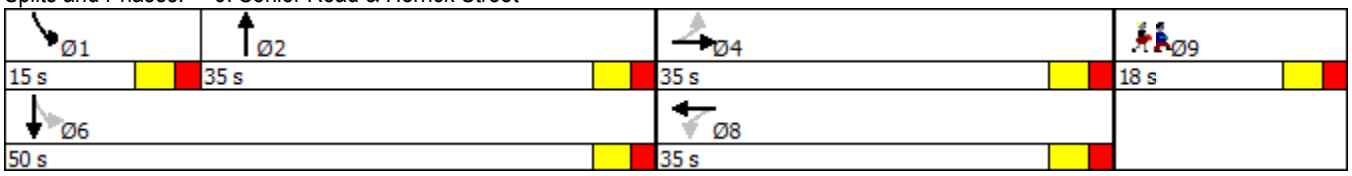
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1132	-	315	-	-
HCM Lane V/C Ratio	0.249	-	1.238	-	-
HCM Control Delay (s)	9.2	0	166.1	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	1	-	17.7	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	155	27	86	149	125	0	288	51	151	320	105
Future Volume (vph)	119	155	27	86	149	125	0	288	51	151	320	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00				
Frt		0.988			0.953			0.980			0.963	
Flt Protected		0.981			0.988					0.950		
Satd. Flow (prot)	0	2003	0	0	1700	0	0	1880	0	1728	1751	0
Flt Permitted		0.620			0.817					0.197		
Satd. Flow (perm)	0	1266	0	0	1406	0	0	1880	0	358	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			26			9			20	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 77.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	346	444	365	161	452
v/c Ratio	0.69	0.77	0.76	0.51	0.58
Control Delay	31.4	33.5	37.8	20.1	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	33.5	37.8	20.1	19.8
Queue Length 50th (ft)	122	158	149	42	137
Queue Length 95th (ft)	#374	#419	307	109	312
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	505	573	751	337	1050
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	0.69	0.77	0.49	0.48	0.43

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	155	27	86	149	125	0	288	51	151	320	105
Future Volume (vph)	119	155	27	86	149	125	0	288	51	151	320	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.99			0.95			0.98		1.00	0.96	
Flt Protected		0.98			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		2002			1701			1879		1728	1751	
Flt Permitted		0.62			0.82			1.00		0.20	1.00	
Satd. Flow (perm)		1267			1407			1879		358	1751	
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	137	178	31	106	184	154	0	310	55	161	340	112
RTOR Reduction (vph)	0	3	0	0	16	0	0	7	0	0	12	0
Lane Group Flow (vph)	0	343	0	0	428	0	0	358	0	161	440	0
Confl. Bikes (#/hr)			2						2			
Heavy Vehicles (%)	1%	1%	0%	4%	1%	1%	0%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.8			30.8			19.7		33.8	33.8	
Effective Green, g (s)		30.8			30.8			19.7		33.8	33.8	
Actuated g/C Ratio		0.38			0.38			0.24		0.41	0.41	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		478			531			453		301	725	
v/s Ratio Prot								c0.19		0.06	c0.25	
v/s Ratio Perm		0.27			c0.30					0.16		
v/c Ratio		0.72			0.81			0.79		0.53	0.61	
Uniform Delay, d1		21.7			22.7			29.0		17.3	18.7	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		5.1			8.7			9.1		1.8	1.4	
Delay (s)		26.8			31.4			38.1		19.1	20.2	
Level of Service		C			C			D		B	C	
Approach Delay (s)		26.8			31.4			38.1			19.9	
Approach LOS		C			C			D			B	

Intersection Summary

HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	6	442	3	3	776
Future Volume (vph)	5	6	442	3	3	776
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.927		0.999			
Flt Protected	0.977					
Satd. Flow (prot)	1893	0	1765	0	0	1783
Flt Permitted	0.977					
Satd. Flow (perm)	1893	0	1765	0	0	1783
Link Speed (mph)	25		30			30
Link Distance (ft)	511		254			504
Travel Time (s)	13.9		5.8			11.5
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	442	3	3	776
Future Vol, veh/h	5	6	442	3	3	776
Conflicting Peds, #/hr	12	12	0	12	12	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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	6	7	533	4	4	935

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1500	558	0	0	548	0
Stage 1	546	-	-	-	-	-
Stage 2	954	-	-	-	-	-
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	136	533	-	-	1032	-
Stage 1	584	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	520	-	-	1021	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	370	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	223	1021	-
HCM Lane V/C Ratio	-	-	0.059	0.004	-
HCM Control Delay (s)	-	-	22.2	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	2	443	7	1	780
Future Volume (vph)	8	2	443	7	1	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.977		0.998			
Flt Protected	0.960					
Satd. Flow (prot)	1960	0	1747	0	0	1783
Flt Permitted	0.960					
Satd. Flow (perm)	1960	0	1747	0	0	1783
Link Speed (mph)	25		30			30
Link Distance (ft)	562		322			254
Travel Time (s)	15.3		7.3			5.8
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	2	443	7	1	780
Future Vol, veh/h	8	2	443	7	1	780
Conflicting Peds, #/hr	20	20	0	20	20	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	5	0	0	3
Mvmt Flow	10	2	540	9	1	951

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1539	585	0	0	569	0
Stage 1	565	-	-	-	-	-
Stage 2	974	-	-	-	-	-
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	129	515	-	-	1013	-
Stage 1	573	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	123	494	-	-	995	-
Mov Cap-2 Maneuver	123	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	362	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	145	995	-
HCM Lane V/C Ratio	-	-	0.084	0.001	-
HCM Control Delay (s)	-	-	32.1	8.6	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	247	202	395	663	125
Future Volume (vph)	55	247	202	395	663	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890				0.979	
Flt Protected	0.991			0.983		
Satd. Flow (prot)	1631	0	0	1742	1746	0
Flt Permitted	0.991			0.983		
Satd. Flow (perm)	1631	0	0	1742	1746	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	88.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	247	202	395	663	125
Future Vol, veh/h	55	247	202	395	663	125
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	87	87	87	87	87	87
Heavy Vehicles, %	6	2	3	4	3	3
Mvmt Flow	63	284	232	454	762	144

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1752	834	906	0	-	0
Stage 1	834	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	92	368	747	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 54	368	747	-	-	-
Mov Cap-2 Maneuver	~ 54	-	-	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	224	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 485.9	4.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	747	-	179	-	-
HCM Lane V/C Ratio	0.311	-	1.939	-	-
HCM Control Delay (s)	12	0	$ 485.9	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1.3	-	26	-	-

Notes

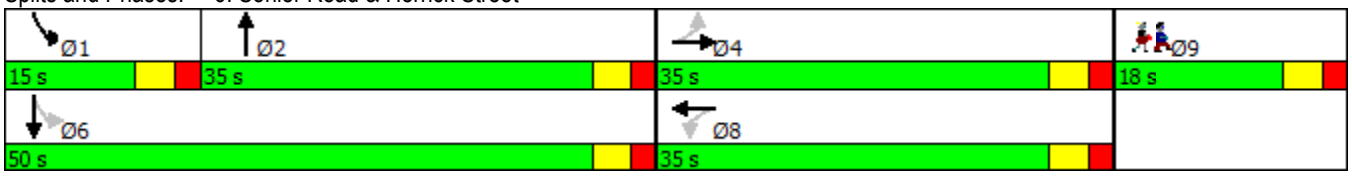
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	172	54	70	170	179	0	468	112	237	320	228
Future Volume (vph)	81	172	54	70	170	179	0	468	112	237	320	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			1.00			0.99	
Frt		0.976			0.942			0.974			0.938	
Flt Protected		0.987			0.992					0.950		
Satd. Flow (prot)	0	1911	0	0	1651	0	0	1846	0	1711	1670	0
Flt Permitted		0.615			0.815					0.114		
Satd. Flow (perm)	0	1191	0	0	1357	0	0	1846	0	205	1670	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			37			12			44	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 88.6
Natural Cycle: 150
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	15

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	404	505	623	300	694
v/c Ratio	0.98	1.04	0.98	1.09	0.79
Control Delay	70.5	80.6	61.5	104.4	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	80.6	61.5	104.4	26.3
Queue Length 50th (ft)	202	~253	313	~128	260
Queue Length 95th (ft)	#379	#523	#696	#301	461
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	412	486	636	275	874
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	0.98	1.04	0.98	1.09	0.79

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	172	54	70	170	179	0	468	112	237	320	228
Future Volume (vph)	81	172	54	70	170	179	0	468	112	237	320	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99			1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.98			0.94			0.97		1.00	0.94	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1912			1652			1846		1711	1670	
Flt Permitted		0.62			0.81			1.00		0.11	1.00	
Satd. Flow (perm)		1192			1357			1846		205	1670	
Peak-hour factor, PHF	0.76	0.76	0.76	0.83	0.83	0.83	0.93	0.93	0.93	0.79	0.79	0.79
Adj. Flow (vph)	107	226	71	84	205	216	0	503	120	300	405	289
RTOR Reduction (vph)	0	7	0	0	25	0	0	8	0	0	22	0
Lane Group Flow (vph)	0	397	0	0	480	0	0	615	0	300	672	0
Confl. Bikes (#/hr)			1			3			1			3
Heavy Vehicles (%)	3%	3%	14%	2%	1%	5%	0%	3%	4%	2%	3%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.2			30.2			30.2		45.3	45.3	
Effective Green, g (s)		30.2			30.2			30.2		45.3	45.3	
Actuated g/C Ratio		0.33			0.33			0.33		0.49	0.49	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		388			442			601		264	816	
v/s Ratio Prot								0.33		c0.12	0.40	
v/s Ratio Perm		0.33			c0.35					c0.43		
v/c Ratio		1.02			1.09			1.02		1.14	0.82	
Uniform Delay, d1		31.2			31.2			31.2		25.3	20.3	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		51.4			68.0			42.7		97.2	6.7	
Delay (s)		82.7			99.3			74.0		122.5	27.0	
Level of Service		F			F			E		F	C	
Approach Delay (s)		82.7			99.3			74.0			55.8	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	73.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	2	447	5	1	472
Future Volume (vph)	3	2	447	5	1	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946		0.998			
Flt Protected	0.971					
Satd. Flow (prot)	1920	0	1797	0	0	1801
Flt Permitted	0.971					
Satd. Flow (perm)	1920	0	1797	0	0	1801
Link Speed (mph)	25		30			30
Link Distance (ft)	511		254			504
Travel Time (s)	13.9		5.8			11.5
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	447	5	1	472
Future Vol, veh/h	3	2	447	5	1	472
Conflicting Peds, #/hr	1	1	0	1	1	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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	3	2	497	6	1	524

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1028	501	0	0	503	0
Stage 1	500	-	-	-	-	-
Stage 2	528	-	-	-	-	-
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	262	574	-	-	1072	-
Stage 1	613	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	261	573	-	-	1071	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	334	1071	-
HCM Lane V/C Ratio	-	-	0.017	0.001	-
HCM Control Delay (s)	-	-	16	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	3	449	6	2	473
Future Volume (vph)	6	3	449	6	2	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.959		0.998			
Flt Protected	0.966					
Satd. Flow (prot)	1936	0	1798	0	0	1801
Flt Permitted	0.966					
Satd. Flow (perm)	1936	0	1798	0	0	1801
Link Speed (mph)	25		30			30
Link Distance (ft)	562		322			254
Travel Time (s)	15.3		7.3			5.8
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	3	449	6	2	473
Future Vol, veh/h	6	3	449	6	2	473
Conflicting Peds, #/hr	1	1	0	1	1	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	89	89	89	89	89	89
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	7	3	504	7	2	531

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1046	510	0	0	512	0
Stage 1	509	-	-	-	-	-
Stage 2	537	-	-	-	-	-
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	255	567	-	-	1064	-
Stage 1	608	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	254	566	-	-	1063	-
Mov Cap-2 Maneuver	254	-	-	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	1063	-
HCM Lane V/C Ratio	-	-	0.033	0.002	-
HCM Control Delay (s)	-	-	17	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	91	285	272	364	420	59
Future Volume (vph)	91	285	272	364	420	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898				0.983	
Flt Protected	0.988			0.979		
Satd. Flow (prot)	1641	0	0	1780	1766	0
Flt Permitted	0.988			0.979		
Satd. Flow (perm)	1641	0	0	1780	1766	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	104.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	91	285	272	364	420	59
Future Vol, veh/h	91	285	272	364	420	59
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	90	90	90	90	90	90
Heavy Vehicles, %	5	2	1	1	1	11
Mvmt Flow	101	317	302	404	467	66

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1508	499	532	0	-	0
Stage 1	499	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Critical Hdwy	6.45	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	131	572	1041	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 82	572	1041	-	-	-
Mov Cap-2 Maneuver	~ 82	-	-	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	218	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 405.9	4.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1041	-	234	-	-
HCM Lane V/C Ratio	0.29	-	1.785	-	-
HCM Control Delay (s)	9.9	0	$ 405.9	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	1.2	-	28.5	-	-

Notes

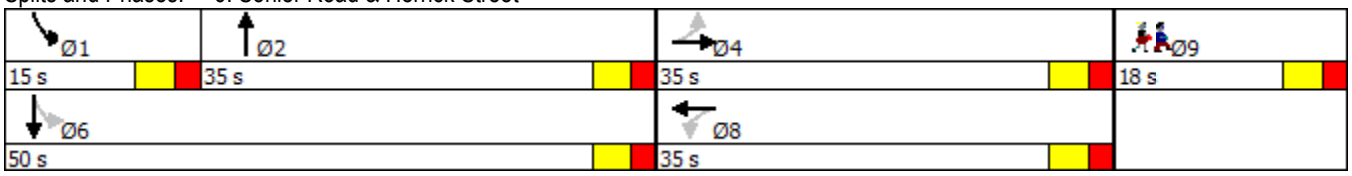
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	166	29	92	160	134	0	337	55	162	397	120
Future Volume (vph)	136	166	29	92	160	134	0	337	55	162	397	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00				
Frt		0.988			0.953			0.981			0.965	
Flt Protected		0.980			0.988					0.950		
Satd. Flow (prot)	0	2001	0	0	1700	0	0	1882	0	1728	1755	0
Flt Permitted		0.579			0.798					0.161		
Satd. Flow (perm)	0	1182	0	0	1373	0	0	1882	0	293	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			26			8			19	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 80.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	380	477	421	172	550
v/c Ratio	0.84	0.88	0.80	0.58	0.68
Control Delay	43.7	44.9	39.7	22.3	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	44.9	39.7	22.3	22.3
Queue Length 50th (ft)	157	195	180	45	182
Queue Length 95th (ft)	#445	#471	#370	#118	408
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	454	540	723	316	1013
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	0.84	0.88	0.58	0.54	0.54

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	166	29	92	160	134	0	337	55	162	397	120
Future Volume (vph)	136	166	29	92	160	134	0	337	55	162	397	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.99			0.95			0.98		1.00	0.97	
Flt Protected		0.98			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		2002			1701			1882		1728	1755	
Flt Permitted		0.58			0.80			1.00		0.16	1.00	
Satd. Flow (perm)		1184			1374			1882		292	1755	
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	156	191	33	114	198	165	0	362	59	172	422	128
RTOR Reduction (vph)	0	3	0	0	17	0	0	6	0	0	11	0
Lane Group Flow (vph)	0	377	0	0	460	0	0	415	0	172	539	0
Confl. Bikes (#/hr)			2						2			
Heavy Vehicles (%)	1%	1%	0%	4%	1%	1%	0%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.6			30.6			22.4		36.6	36.6	
Effective Green, g (s)		30.6			30.6			22.4		36.6	36.6	
Actuated g/C Ratio		0.36			0.36			0.27		0.43	0.43	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		430			499			500		283	762	
v/s Ratio Prot								c0.22		0.07	c0.31	
v/s Ratio Perm		0.32			c0.34					0.20		
v/c Ratio		0.88			0.92			0.83		0.61	0.71	
Uniform Delay, d1		25.0			25.7			29.1		17.5	19.4	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		17.8			22.7			11.2		3.7	3.0	
Delay (s)		42.8			48.4			40.3		21.2	22.5	
Level of Service		D			D			D		C	C	
Approach Delay (s)		42.8			48.4			40.3			22.2	
Approach LOS		D			D			D			C	

Intersection Summary

HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	3	5	0	6	1	446	3	3	778	0
Future Volume (vph)	12	0	3	5	0	6	1	446	3	3	778	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	15	15	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.975			0.921			0.999				
Flt Protected		0.961			0.980							
Satd. Flow (prot)	0	1745	0	0	1886	0	0	1765	0	0	1783	0
Flt Permitted		0.961			0.980							
Satd. Flow (perm)	0	1745	0	0	1886	0	0	1765	0	0	1783	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		269			511			254			504	
Travel Time (s)		7.3			13.9			5.8			11.5	
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	3	5	0	6	1	446	3	3	778	0
Future Vol, veh/h	12	0	3	5	0	6	1	446	3	3	778	0
Conflicting Peds, #/hr	0	0	0	12	0	12	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	4	0	0	3	2
Mvmt Flow	13	0	3	5	0	7	1	485	3	3	846	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1356	1354	858	1367	1353	510	846	0	0	500	0	0
Stage 1	852	852	-	501	501	-	-	-	-	-	-	-
Stage 2	504	502	-	866	852	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	126	150	357	125	150	567	791	-	-	1075	-	-
Stage 1	354	376	-	556	543	-	-	-	-	-	-	-
Stage 2	550	542	-	351	376	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	147	353	120	147	553	783	-	-	1064	-	-
Mov Cap-2 Maneuver	123	147	-	120	147	-	-	-	-	-	-	-
Stage 1	353	374	-	547	534	-	-	-	-	-	-	-
Stage 2	537	533	-	342	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.8	23.3	0	0
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	783	-	-	141	209	1064	-	-
HCM Lane V/C Ratio	0.001	-	-	0.116	0.057	0.003	-	-
HCM Control Delay (s)	9.6	0	-	33.8	23.3	8.4	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	10	8	0	2	4	444	7	1	783	2
Future Volume (vph)	4	0	10	8	0	2	4	444	7	1	783	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	15	15	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.901			0.975			0.998				
Flt Protected		0.987			0.961							
Satd. Flow (prot)	0	1657	0	0	1958	0	0	1747	0	0	1783	0
Flt Permitted		0.987			0.961							
Satd. Flow (perm)	0	1657	0	0	1958	0	0	1747	0	0	1783	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		255			562			322			254	
Travel Time (s)		7.0			15.3			7.3			5.8	
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	10	8	0	2	4	444	7	1	783	2
Future Vol, veh/h	4	0	10	8	0	2	4	444	7	1	783	2
Conflicting Peds, #/hr	0	0	0	20	0	20	0	0	20	20	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	5	0	0	3	2
Mvmt Flow	4	0	11	9	0	2	4	483	8	1	851	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1370	1373	872	1395	1370	526	853	0	0	510	0	0
Stage 1	854	854	-	515	515	-	-	-	-	-	-	-
Stage 2	516	519	-	880	855	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	146	350	120	146	556	786	-	-	1065	-	-
Stage 1	353	375	-	546	535	-	-	-	-	-	-	-
Stage 2	542	533	-	345	375	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	121	141	344	111	141	533	772	-	-	1046	-	-
Mov Cap-2 Maneuver	121	141	-	111	141	-	-	-	-	-	-	-
Stage 1	351	374	-	529	519	-	-	-	-	-	-	-
Stage 2	527	517	-	328	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.2	34.7	0.1	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	772	-	-	225	132	1046	-	-
HCM Lane V/C Ratio	0.006	-	-	0.068	0.082	0.001	-	-
HCM Control Delay (s)	9.7	0	-	22.2	34.7	8.4	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	247	202	399	673	128
Future Volume (vph)	56	247	202	399	673	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890				0.978	
Flt Protected	0.991			0.983		
Satd. Flow (prot)	1631	0	0	1742	1744	0
Flt Permitted	0.991			0.983		
Satd. Flow (perm)	1631	0	0	1742	1744	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	96.8					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	247	202	399	673	128
Future Vol, veh/h	56	247	202	399	673	128
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	87	87	87	87	87	87
Heavy Vehicles, %	6	2	3	4	3	3
Mvmt Flow	64	284	232	459	774	147

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1770	847	921	0	-	0
Stage 1	847	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	89	362	737	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 51	362	737	-	-	-
Mov Cap-2 Maneuver	~ 51	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	220	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 536.4	4.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	737	-	170	-	-
HCM Lane V/C Ratio	0.315	-	2.049	-	-
HCM Control Delay (s)	12.1	0	$ 536.4	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	1.4	-	27.1	-	-

Notes

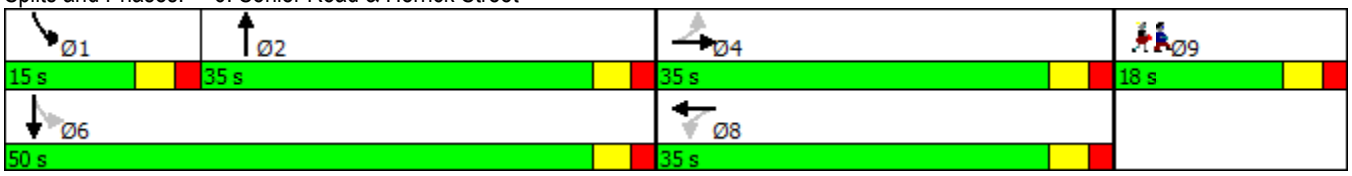
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	172	54	70	170	179	0	471	112	237	327	231
Future Volume (vph)	82	172	54	70	170	179	0	471	112	237	327	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99			1.00			0.99	
Frt		0.976			0.942			0.974			0.938	
Flt Protected		0.987			0.992					0.950		
Satd. Flow (prot)	0	1912	0	0	1651	0	0	1846	0	1711	1670	0
Flt Permitted		0.612			0.815					0.114		
Satd. Flow (perm)	0	1185	0	0	1357	0	0	1846	0	205	1670	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			37			12			44	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 88.6
Natural Cycle: 150
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	15

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	405	505	626	300	706
v/c Ratio	0.99	1.04	0.98	1.09	0.81
Control Delay	73.0	80.6	62.6	104.4	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	80.6	62.6	104.4	27.1
Queue Length 50th (ft)	204	~253	315	~128	268
Queue Length 95th (ft)	#384	#523	#701	#301	#484
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	410	486	636	275	874
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	0.99	1.04	0.98	1.09	0.81

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	172	54	70	170	179	0	471	112	237	327	231
Future Volume (vph)	82	172	54	70	170	179	0	471	112	237	327	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99			1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.98			0.94			0.97		1.00	0.94	
Flt Protected		0.99			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1912			1652			1846		1711	1671	
Flt Permitted		0.61			0.82			1.00		0.11	1.00	
Satd. Flow (perm)		1187			1357			1846		205	1671	
Peak-hour factor, PHF	0.76	0.76	0.76	0.83	0.83	0.83	0.93	0.93	0.93	0.79	0.79	0.79
Adj. Flow (vph)	108	226	71	84	205	216	0	506	120	300	414	292
RTOR Reduction (vph)	0	7	0	0	25	0	0	8	0	0	22	0
Lane Group Flow (vph)	0	398	0	0	480	0	0	618	0	300	684	0
Confl. Bikes (#/hr)			1			3			1			3
Heavy Vehicles (%)	3%	3%	14%	2%	1%	5%	0%	3%	4%	2%	3%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.2			30.2			30.2		45.3	45.3	
Effective Green, g (s)		30.2			30.2			30.2		45.3	45.3	
Actuated g/C Ratio		0.33			0.33			0.33		0.49	0.49	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		386			442			601		264	816	
v/s Ratio Prot								0.33		c0.12	0.41	
v/s Ratio Perm		0.34			c0.35					c0.43		
v/c Ratio		1.03			1.09			1.03		1.14	0.84	
Uniform Delay, d1		31.2			31.2			31.2		25.3	20.5	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		54.2			68.0			44.1		97.2	7.5	
Delay (s)		85.5			99.3			75.3		122.5	28.0	
Level of Service		F			F			E		F	C	
Approach Delay (s)		85.5			99.3			75.3			56.2	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

3: Sohier Road & Site Drive North/Hilltop Drive North

Timing Plan: Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	2	3	0	2	3	450	5	1	476	12
Future Volume (vph)	10	0	2	3	0	2	3	450	5	1	476	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	15	15	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979			0.946			0.999			0.997	
Flt Protected		0.959			0.971							
Satd. Flow (prot)	0	1749	0	0	1920	0	0	1799	0	0	1795	0
Flt Permitted		0.959			0.971							
Satd. Flow (perm)	0	1749	0	0	1920	0	0	1799	0	0	1795	0
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		269			511			254			504	
Travel Time (s)		6.1			13.9			5.8			11.5	
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	2	3	0	2	3	450	5	1	476	12
Future Vol, veh/h	10	0	2	3	0	2	3	450	5	1	476	12
Conflicting Peds, #/hr	0	0	0	1	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	2	0	0	2	2
Mvmt Flow	11	0	2	3	0	2	3	489	5	1	517	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1026	1028	525	1027	1032	494	530	0	0	496	0	0
Stage 1	526	526	-	499	499	-	-	-	-	-	-	-
Stage 2	500	502	-	528	533	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	213	234	552	215	233	579	1037	-	-	1078	-	-
Stage 1	535	529	-	557	544	-	-	-	-	-	-	-
Stage 2	553	542	-	538	525	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	211	233	552	213	232	578	1036	-	-	1077	-	-
Mov Cap-2 Maneuver	211	233	-	213	232	-	-	-	-	-	-	-
Stage 1	533	528	-	554	541	-	-	-	-	-	-	-
Stage 2	548	539	-	535	524	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.2	17.9	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1036	-	-	235	285	1077	-	-
HCM Lane V/C Ratio	0.003	-	-	0.056	0.019	0.001	-	-
HCM Control Delay (s)	8.5	0	-	21.2	17.9	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	8	6	0	3	11	452	6	2	475	4
Future Volume (vph)	3	0	8	6	0	3	11	452	6	2	475	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	15	15	11	11	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.899			0.959			0.998			0.999	
Flt Protected		0.988			0.966			0.999				
Satd. Flow (prot)	0	1655	0	0	1936	0	0	1796	0	0	1799	0
Flt Permitted		0.988			0.966			0.999				
Satd. Flow (perm)	0	1655	0	0	1936	0	0	1796	0	0	1799	0
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		255			562			322			254	
Travel Time (s)		5.8			15.3			7.3			5.8	
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	8	6	0	3	11	452	6	2	475	4
Future Vol, veh/h	3	0	8	6	0	3	11	452	6	2	475	4
Conflicting Peds, #/hr	0	0	0	1	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	2	0	0	2	2
Mvmt Flow	3	0	9	7	0	3	12	491	7	2	516	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1044	1046	519	1047	1044	497	521	0	0	499	0	0
Stage 1	523	523	-	519	519	-	-	-	-	-	-	-
Stage 2	521	523	-	528	525	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	207	228	557	208	229	577	1045	-	-	1075	-	-
Stage 1	537	530	-	544	533	-	-	-	-	-	-	-
Stage 2	539	530	-	538	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	223	557	201	224	576	1044	-	-	1074	-	-
Mov Cap-2 Maneuver	203	223	-	201	224	-	-	-	-	-	-	-
Stage 1	528	528	-	535	524	-	-	-	-	-	-	-
Stage 2	527	521	-	528	527	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	19.6	0.2	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1044	-	-	377	257	1074	-	-
HCM Lane V/C Ratio	0.011	-	-	0.032	0.038	0.002	-	-
HCM Control Delay (s)	8.5	0	-	14.9	19.6	8.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	285	272	375	428	61
Future Volume (vph)	94	285	272	375	428	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898				0.983	
Flt Protected	0.988			0.979		
Satd. Flow (prot)	1641	0	0	1780	1766	0
Flt Permitted	0.988			0.979		
Satd. Flow (perm)	1641	0	0	1780	1766	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	114.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	285	272	375	428	61
Future Vol, veh/h	94	285	272	375	428	61
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	90	90	90	90	90	90
Heavy Vehicles, %	5	2	1	1	1	11
Mvmt Flow	104	317	302	417	476	68

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1530	509	543	0	-	0
Stage 1	509	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Critical Hdwy	6.45	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	127	564	1031	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 79	564	1031	-	-	-
Mov Cap-2 Maneuver	~ 79	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	212	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 448.8	4.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1031	-	224	-	-
HCM Lane V/C Ratio	0.293	-	1.88	-	-
HCM Control Delay (s)	9.9	0	$ 448.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	1.2	-	29.9	-	-

Notes

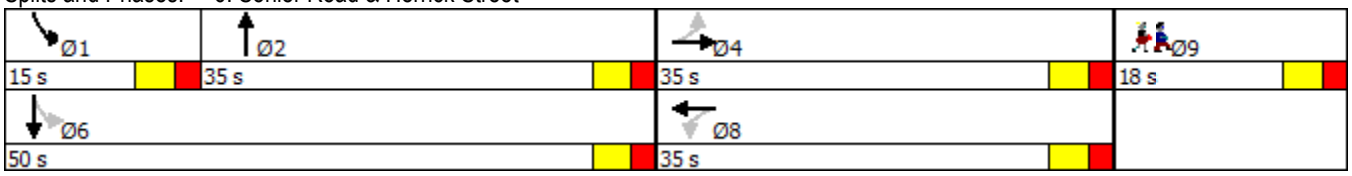
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	166	29	92	160	134	0	345	55	162	403	122
Future Volume (vph)	139	166	29	92	160	134	0	345	55	162	403	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	16	11	11	16	13	13	13	11	11	11
Storage Length (ft)	0		0	0		0	0		0	80		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00				
Frt		0.988			0.953			0.981			0.965	
Flt Protected		0.980			0.988					0.950		
Satd. Flow (prot)	0	2001	0	0	1700	0	0	1882	0	1728	1755	0
Flt Permitted		0.575			0.798					0.155		
Satd. Flow (perm)	0	1174	0	0	1373	0	0	1882	0	282	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			26			8			19	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		670			379			607			1359	
Travel Time (s)		15.2			10.3			13.8			30.9	
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8			2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Total Split (s)	35.0	35.0		35.0	35.0			35.0		15.0	50.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%			34.0%		14.6%	48.5%	
Maximum Green (s)	30.0	30.0		30.0	30.0			30.0		10.0	45.0	
Yellow Time (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	None		None	None			Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
Cycle Length: 103
Actuated Cycle Length: 80.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sohier Road & Herrick Street



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	17%
Maximum Green (s)	13.0
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	6

Intersection Summary

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	384	477	430	172	559
v/c Ratio	0.86	0.89	0.80	0.59	0.69
Control Delay	46.3	45.9	39.8	22.7	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	45.9	39.8	22.7	22.4
Queue Length 50th (ft)	163	199	186	45	186
Queue Length 95th (ft)	#452	#471	#398	#122	418
Internal Link Dist (ft)	590	299	527		1279
Turn Bay Length (ft)				80	
Base Capacity (vph)	448	537	718	312	1007
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	0.86	0.89	0.60	0.55	0.56

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	166	29	92	160	134	0	345	55	162	403	122
Future Volume (vph)	139	166	29	92	160	134	0	345	55	162	403	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	16	11	11	16	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	
Frt		0.99			0.95			0.98		1.00	0.97	
Flt Protected		0.98			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		2001			1701			1883		1728	1755	
Flt Permitted		0.57			0.80			1.00		0.15	1.00	
Satd. Flow (perm)		1174			1373			1883		282	1755	
Peak-hour factor, PHF	0.87	0.87	0.87	0.81	0.81	0.81	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	160	191	33	114	198	165	0	371	59	172	429	130
RTOR Reduction (vph)	0	3	0	0	17	0	0	6	0	0	11	0
Lane Group Flow (vph)	0	381	0	0	460	0	0	424	0	172	548	0
Confl. Bikes (#/hr)			2						2			
Heavy Vehicles (%)	1%	1%	0%	4%	1%	1%	0%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		30.6			30.6			22.8		37.0	37.0	
Effective Green, g (s)		30.6			30.6			22.8		37.0	37.0	
Actuated g/C Ratio		0.36			0.36			0.27		0.44	0.44	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		424			496			507		280	767	
v/s Ratio Prot								c0.23		0.07	c0.31	
v/s Ratio Perm		0.32			c0.34					0.20		
v/c Ratio		0.90			0.93			0.84		0.61	0.71	
Uniform Delay, d1		25.5			25.9			29.1		17.6	19.5	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		21.1			23.6			11.5		4.0	3.2	
Delay (s)		46.6			49.6			40.6		21.6	22.7	
Level of Service		D			D			D		C	C	
Approach Delay (s)		46.6			49.6			40.6			22.4	
Approach LOS		D			D			D			C	

Intersection Summary

HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	56	247	202	399	673	128
Future Volume (vph)	56	247	202	399	673	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11
Storage Length (ft)	0	0	50			50
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890					0.850
Flt Protected	0.991		0.950			
Satd. Flow (prot)	1522	0	1636	1766	1783	1516
Flt Permitted	0.991		0.950			
Satd. Flow (perm)	1522	0	1636	1766	1783	1516
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	60.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	247	202	399	673	128
Future Vol, veh/h	56	247	202	399	673	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	2	3	4	3	3
Mvmt Flow	64	284	232	459	774	147

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1697	774	774	0	-	0
Stage 1	774	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	99	398	837	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	398	837	-	-	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	275	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 332.4	3.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	837	-	217	-	-
HCM Lane V/C Ratio	0.277	-	1.605	-	-
HCM Control Delay (s)	10.9	-	$ 332.4	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1.1	-	22.3	-	-

Notes

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

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	285	272	375	428	61
Future Volume (vph)	94	285	272	375	428	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11
Storage Length (ft)	0	0	50			50
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898					0.850
Flt Protected	0.988		0.950			
Satd. Flow (prot)	1531	0	1668	1818	1818	1406
Flt Permitted	0.988		0.950			
Satd. Flow (perm)	1531	0	1668	1818	1818	1406
Link Speed (mph)	25			30	30	
Link Distance (ft)	622			1359	322	
Travel Time (s)	17.0			30.9	7.3	
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	85

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	285	272	375	428	61
Future Vol, veh/h	94	285	272	375	428	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	2	1	1	1	11
Mvmt Flow	104	317	302	417	476	68

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1497	476	476	0	-	0
Stage 1	476	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Critical Hdwy	6.45	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	133	589	1091	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 96	589	1091	-	-	-
Mov Cap-2 Maneuver	~ 96	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	248	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 332.9	4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1091	-	259	-	-
HCM Lane V/C Ratio	0.277	-	1.626	-	-
HCM Control Delay (s)	9.6	-	$ 332.9	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	1.1	-	26.3	-	-

Notes

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

MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	6	20.0	0.195	7.4	LOS A	0.7	17.7	0.49	0.46	28.6
3	L2	129	4.0	0.195	7.4	LOS A	0.7	17.7	0.49	0.46	28.4
8	T1	698	2.0	0.980	53.0	LOS F	20.1	510.1	1.00	1.63	18.7
Approach		833	2.4	0.980	45.6	LOS E	20.1	510.1	0.92	1.44	19.8
North: Brimbal Avenue											
7u	U	2	0.0	0.948	38.9	LOS E	23.9	610.9	1.00	1.03	17.8
4	T1	396	3.0	0.948	38.9	LOS E	23.9	610.9	1.00	1.03	17.5
14	R2	495	3.0	0.948	38.9	LOS E	23.9	610.9	1.00	1.03	17.2
Approach		894	3.0	0.948	38.9	LOS E	23.9	610.9	1.00	1.03	17.3
West: Sohier Road											
5u	U	8	14.0	0.586	15.0	LOS B	3.5	90.2	0.67	0.75	21.3
5	L2	405	5.0	0.586	15.0	LOS B	3.5	90.2	0.67	0.75	21.0
12	R2	413	3.0	0.574	14.4	LOS B	3.4	87.7	0.67	0.75	21.1
Approach		827	4.1	0.586	14.7	LOS B	3.5	90.2	0.67	0.75	21.0
All Vehicles		2553	3.2	0.980	33.2	LOS D	23.9	610.9	0.87	1.07	19.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
8	T1	123	6.0	0.202	8.4	LOS A	0.7	18.1	0.54	0.54	27.2
18	R2	320	5.0	0.522	14.7	LOS B	2.6	68.4	0.68	0.75	24.4
Approach		443	5.3	0.522	13.0	LOS B	2.6	68.4	0.64	0.69	25.1
East: Sohier Road											
1u	U	14	0.0	0.533	10.6	LOS B	3.2	81.2	0.42	0.28	22.8
1	L2	500	3.0	0.533	10.6	LOS B	3.2	81.2	0.42	0.28	22.3
16	R2	144	4.0	0.151	5.2	LOS A	0.6	14.4	0.26	0.16	23.6
Approach		658	3.2	0.533	9.4	LOS A	3.2	81.2	0.39	0.25	22.6
North: Route 128 NB Ramps											
7	L2	528	4.0	0.824	30.6	LOS D	7.8	201.6	0.89	1.19	18.7
4	T1	638	3.0	0.973	53.8	LOS F	17.5	446.9	1.00	1.82	16.0
Approach		1166	3.5	0.973	43.3	LOS E	17.5	446.9	0.95	1.54	17.1
All Vehicles		2267	3.7	0.973	27.5	LOS D	17.5	446.9	0.73	1.00	19.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	2	0.0	0.133	6.2	LOS A	0.5	11.8	0.45	0.39	29.3
3	L2	97	2.0	0.133	6.2	LOS A	0.5	11.8	0.45	0.39	28.9
8	T1	668	1.0	0.888	34.5	LOS D	12.6	316.4	1.00	1.29	22.1
Approach		767	1.1	0.888	30.8	LOS D	12.6	316.4	0.93	1.18	22.8
North: Brimbal Avenue											
7u	U	4	0.0	0.454	8.9	LOS A	2.5	62.9	0.34	0.20	23.4
4	T1	236	3.0	0.454	8.9	LOS A	2.5	62.9	0.34	0.20	22.9
14	R2	212	2.0	0.454	8.9	LOS A	2.5	62.9	0.34	0.20	22.5
Approach		452	2.5	0.454	8.9	LOS A	2.5	62.9	0.34	0.20	22.7
West: Sohier Road											
5u	U	1	0.0	0.443	9.6	LOS A	2.2	55.4	0.50	0.41	22.4
5	L2	384	1.0	0.443	9.6	LOS A	2.2	55.4	0.50	0.41	22.1
12	R2	354	1.0	0.407	9.0	LOS A	1.9	48.8	0.48	0.39	22.3
Approach		739	1.0	0.443	9.3	LOS A	2.2	55.4	0.49	0.40	22.2
All Vehicles		1958	1.4	0.888	17.6	LOS C	12.6	316.4	0.63	0.66	22.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
8	T1	208	2.0	0.311	9.3	LOS A	1.2	30.7	0.57	0.57	26.9
18	R2	242	2.0	0.362	10.2	LOS B	1.5	38.3	0.59	0.60	25.7
Approach		449	2.0	0.362	9.8	LOS A	1.5	38.3	0.58	0.59	26.3
East: Sohier Road											
1u	U	2	0.0	0.168	5.7	LOS A	0.6	16.0	0.35	0.25	24.0
1	L2	148	2.0	0.168	5.7	LOS A	0.6	16.0	0.35	0.25	23.4
16	R2	159	3.0	0.179	5.8	LOS A	0.7	17.2	0.35	0.25	23.4
Approach		310	2.5	0.179	5.8	LOS A	0.7	17.2	0.35	0.25	23.4
North: Route 128 NB Ramps											
7	L2	503	0.0	0.519	10.3	LOS B	3.1	78.1	0.46	0.32	22.4
4	T1	257	3.0	0.273	6.6	LOS A	1.1	29.3	0.33	0.21	24.0
Approach		760	1.0	0.519	9.0	LOS A	3.1	78.1	0.41	0.29	22.9
All Vehicles		1519	1.6	0.519	8.6	LOS A	3.1	78.1	0.45	0.37	23.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	6	20.0	0.248	9.5	LOS A	0.9	22.5	0.58	0.58	27.9
3	L2	137	4.0	0.248	9.5	LOS A	0.9	22.5	0.58	0.58	27.7
8	T1	752	2.0	1.269	155.9	LOS F	62.2	1579.4	1.00	3.69	10.1
Approach		895	2.4	1.269	132.5	LOS F	62.2	1579.4	0.93	3.20	11.2
North: Brimbal Avenue											
7u	U	2	0.0	1.077	72.7	LOS F	55.7	1425.2	1.00	1.94	14.0
4	T1	457	3.0	1.077	72.7	LOS F	55.7	1425.2	1.00	1.94	13.8
14	R2	545	3.0	1.077	72.7	LOS F	55.7	1425.2	1.00	1.94	13.7
Approach		1004	3.0	1.077	72.7	LOS F	55.7	1425.2	1.00	1.94	13.7
West: Sohier Road											
5u	U	11	14.0	0.859	32.9	LOS D	9.6	249.1	0.91	1.26	18.2
5	L2	578	5.0	0.859	32.9	LOS D	9.6	249.1	0.91	1.26	18.0
12	R2	443	3.0	0.633	16.8	LOS C	4.2	106.6	0.72	0.83	20.6
Approach		1033	4.2	0.859	26.0	LOS D	9.6	249.1	0.83	1.08	19.0
All Vehicles		2931	3.3	1.269	74.5	LOS F	62.2	1579.4	0.92	2.02	14.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
3u	U	8	0.0	0.262	10.0	LOS B	0.9	23.8	0.59	0.59	29.9
8	T1	139	6.0	0.262	10.0	LOS B	0.9	23.8	0.59	0.59	26.8
18	R2	381	5.0	0.676	22.1	LOS C	4.2	108.2	0.78	0.93	22.6
Approach		528	5.2	0.676	18.7	LOS C	4.2	108.2	0.72	0.83	23.7
East: Sohier Road											
1u	U	15	0.0	0.592	12.2	LOS B	3.8	96.9	0.50	0.36	22.5
1	L2	542	3.0	0.592	12.2	LOS B	3.8	96.9	0.50	0.36	22.0
16	R2	162	4.0	0.173	5.5	LOS A	0.6	16.7	0.29	0.18	23.5
Approach		719	3.2	0.592	10.7	LOS B	3.8	96.9	0.45	0.32	22.3
North: Route 128 NB Ramps											
7	L2	677	4.0	1.114	96.8	LOS F	35.9	926.9	1.00	3.09	12.2
4	T1	684	3.0	1.097	90.3	LOS F	34.0	869.3	1.00	2.91	12.7
Approach		1361	3.5	1.114	93.5	LOS F	35.9	926.9	1.00	3.00	12.5
All Vehicles		2608	3.7	1.114	55.5	LOS F	35.9	926.9	0.79	1.82	15.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	2	0.0	0.163	7.7	LOS A	0.6	14.3	0.54	0.54	28.8
3	L2	99	2.0	0.163	7.7	LOS A	0.6	14.3	0.54	0.54	28.3
8	T1	686	1.0	1.095	89.4	LOS F	33.8	852.6	1.00	2.43	14.3
Approach		787	1.1	1.095	78.9	LOS F	33.8	852.6	0.94	2.19	15.3
North: Brimbal Avenue											
7u	U	4	0.0	0.641	13.1	LOS B	4.7	121.1	0.48	0.30	22.4
4	T1	327	3.0	0.641	13.1	LOS B	4.7	121.1	0.48	0.30	21.9
14	R2	301	2.0	0.641	13.1	LOS B	4.7	121.1	0.48	0.30	21.5
Approach		633	2.5	0.641	13.1	LOS B	4.7	121.1	0.48	0.30	21.7
West: Sohier Road											
5u	U	6	0.0	0.717	18.8	LOS C	6.3	157.6	0.78	0.89	20.6
5	L2	561	1.0	0.717	18.8	LOS C	6.3	157.6	0.78	0.89	20.3
12	R2	379	1.0	0.479	11.1	LOS B	2.5	63.6	0.58	0.57	21.8
Approach		946	1.0	0.717	15.7	LOS C	6.3	157.6	0.70	0.76	20.8
All Vehicles		2366	1.4	1.095	36.0	LOS E	33.8	852.6	0.72	1.11	18.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
3u	U	30	0.0	0.474	13.7	LOS B	2.3	57.6	0.67	0.73	28.6
8	T1	253	2.0	0.474	13.7	LOS B	2.3	57.6	0.67	0.73	25.7
18	R2	268	2.0	0.450	13.2	LOS B	2.1	52.8	0.66	0.71	24.9
Approach		551	1.9	0.474	13.5	LOS B	2.3	57.6	0.67	0.72	25.4
East: Sohier Road											
1u	U	2	0.0	0.237	6.9	LOS A	0.9	23.6	0.43	0.35	23.7
1	L2	195	2.0	0.237	6.9	LOS A	0.9	23.6	0.43	0.35	23.1
16	R2	212	3.0	0.250	6.9	LOS A	1.0	25.3	0.41	0.33	23.2
Approach		409	2.5	0.250	6.9	LOS A	1.0	25.3	0.42	0.34	23.2
North: Route 128 NB Ramps											
7	L2	619	0.0	0.690	15.9	LOS C	6.2	154.4	0.70	0.65	21.2
4	T1	275	3.0	0.315	7.6	LOS A	1.3	34.4	0.42	0.32	23.8
Approach		895	0.9	0.690	13.3	LOS B	6.2	154.4	0.61	0.55	21.9
All Vehicles		1854	1.6	0.690	12.0	LOS B	6.2	154.4	0.59	0.56	23.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	6	20.0	0.254	9.7	LOS A	0.9	23.0	0.59	0.59	27.8
3	L2	139	4.0	0.254	9.7	LOS A	0.9	23.0	0.59	0.59	27.6
8	T1	752	2.0	1.288	164.1	LOS F	64.7	1643.2	1.00	3.81	9.7
Approach		896	2.4	1.288	139.2	LOS F	64.7	1643.2	0.93	3.29	10.9
North: Brimbal Avenue											
7u	U	2	0.0	1.081	74.0	LOS F	56.5	1446.9	1.00	1.99	13.9
4	T1	457	3.0	1.081	74.0	LOS F	56.5	1446.9	1.00	1.99	13.7
14	R2	547	3.0	1.081	74.0	LOS F	56.5	1446.9	1.00	1.99	13.5
Approach		1006	3.0	1.081	74.0	LOS F	56.5	1446.9	1.00	1.99	13.6
West: Sohier Road											
5u	U	11	14.0	0.879	35.4	LOS E	10.5	274.3	0.94	1.33	17.9
5	L2	593	5.0	0.879	35.4	LOS E	10.5	274.3	0.94	1.33	17.6
12	R2	445	3.0	0.634	16.8	LOS C	4.2	107.0	0.72	0.83	20.6
Approach		1048	4.2	0.879	27.5	LOS D	10.5	274.3	0.85	1.12	18.8
All Vehicles		2951	3.3	1.288	77.3	LOS F	64.7	1643.2	0.92	2.07	13.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
3u	U	8	0.0	0.269	10.1	LOS B	0.9	24.5	0.59	0.59	29.9
8	T1	143	6.0	0.269	10.1	LOS B	0.9	24.5	0.59	0.59	26.7
18	R2	397	5.0	0.704	23.6	LOS C	4.6	118.5	0.79	0.96	22.2
Approach		548	5.2	0.704	19.9	LOS C	4.6	118.5	0.74	0.86	23.4
East: Sohier Road											
1u	U	15	0.0	0.599	12.4	LOS B	3.9	98.6	0.51	0.37	22.4
1	L2	546	3.0	0.599	12.4	LOS B	3.9	98.6	0.51	0.37	21.9
16	R2	162	4.0	0.174	5.5	LOS A	0.6	16.8	0.29	0.18	23.5
Approach		723	3.2	0.599	10.9	LOS B	3.9	98.6	0.46	0.33	22.3
North: Route 128 NB Ramps											
7	L2	677	4.0	1.118	98.5	LOS F	36.5	942.1	1.00	3.14	12.1
4	T1	690	3.0	1.111	95.3	LOS F	36.3	928.5	1.00	3.06	12.4
Approach		1367	3.5	1.118	96.8	LOS F	36.5	942.1	1.00	3.10	12.2
All Vehicles		2638	3.8	1.118	57.3	LOS F	36.5	942.1	0.80	1.87	15.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Brimbal Avenue
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Brimbal Avenue											
3u	U	2	0.0	0.164	7.8	LOS A	0.6	14.4	0.54	0.54	28.8
3	L2	99	2.0	0.164	7.8	LOS A	0.6	14.4	0.54	0.54	28.3
8	T1	686	1.0	1.105	93.2	LOS F	35.3	888.4	1.00	2.51	14.0
Approach		787	1.1	1.105	82.3	LOS F	35.3	888.4	0.94	2.26	15.0
North: Brimbal Avenue											
7u	U	4	0.0	0.646	13.3	LOS B	4.8	123.4	0.48	0.31	22.4
4	T1	327	3.0	0.646	13.3	LOS B	4.8	123.4	0.48	0.31	21.9
14	R2	306	2.0	0.646	13.3	LOS B	4.8	123.4	0.48	0.31	21.5
Approach		638	2.5	0.646	13.3	LOS B	4.8	123.4	0.48	0.31	21.7
West: Sohier Road											
5u	U	6	0.0	0.729	19.4	LOS C	6.6	165.1	0.79	0.91	20.4
5	L2	571	1.0	0.729	19.4	LOS C	6.6	165.1	0.79	0.91	20.1
12	R2	381	1.0	0.482	11.1	LOS B	2.6	64.3	0.58	0.57	21.8
Approach		958	1.0	0.729	16.1	LOS C	6.6	165.1	0.71	0.78	20.8
All Vehicles		2383	1.4	1.105	37.2	LOS E	35.3	888.4	0.72	1.14	18.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Sohier Road, Beverly

Sohier Road / Route 128 NB Ramps
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Sohier Road											
3u	U	30	0.0	0.478	13.8	LOS B	2.3	58.4	0.68	0.74	28.6
8	T1	255	2.0	0.478	13.8	LOS B	2.3	58.4	0.68	0.74	25.7
18	R2	280	2.0	0.470	13.6	LOS B	2.2	56.7	0.67	0.73	24.7
Approach		565	1.9	0.478	13.7	LOS B	2.3	58.4	0.67	0.73	25.3
East: Sohier Road											
1u	U	2	0.0	0.244	7.0	LOS A	1.0	24.4	0.43	0.36	23.7
1	L2	200	2.0	0.244	7.0	LOS A	1.0	24.4	0.43	0.36	23.1
16	R2	212	3.0	0.250	6.9	LOS A	1.0	25.3	0.41	0.33	23.2
Approach		414	2.5	0.250	6.9	LOS A	1.0	25.3	0.42	0.34	23.1
North: Route 128 NB Ramps											
7	L2	619	0.0	0.694	16.1	LOS C	6.3	156.5	0.71	0.67	21.2
4	T1	287	3.0	0.331	7.8	LOS A	1.4	36.5	0.43	0.34	23.7
Approach		906	1.0	0.694	13.5	LOS B	6.3	156.5	0.62	0.57	21.9
All Vehicles		1885	1.6	0.694	12.1	LOS B	6.3	156.5	0.59	0.57	23.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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PARKING ANALYSIS WORKSHEETS

Parking Demand Assessment - Based on ITE Parking Generation

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

ITE Land Use Code (LUC) 221 - Low/Mid-Rise Apartment

Land Use: Low/Mid-Rise Apartmer
LUC: 221
Size 75 Units

Average Peak Period Parking Demand

Weekday:	1.94	vehicles per unit	X	75 Units =	**146**	**vehicles**
Saturday:	1.37	vehicles per unit	X	75 Units =	**103**	**vehicles**

Parking Demand - Time of Day Distribution

Time	Weekday		Saturday	
	Percent of Peak	Demand	Percent of Peak**	Demand
12:00 - 4:00 AM	100%	146	95%	98
5:00 AM	96%	140	100%	103
6:00 AM	92%	134	98%	101
7:00 AM	74%	108	94%	97
8:00 AM	64%	93	89%	92
9:00 AM	34%	50	59%	61
10:00 AM	32%	47	71%	73
11:00 AM	31%	45	67%	69
12:00 PM	30%	44	66%	68
1:00 PM	31%	45	64%	66
2:00 PM	33%	48	64%	66
3:00 PM	37%	54	69%	71
4:00 PM	44%	64	73%	75
5:00 PM	59%	86	78%	80
6:00 PM	69%	101	80%	82
7:00 PM	66%	96	83%	85
8:00 PM	75%	110	84%	87
9:00 PM	77%	112	87%	90
10:00 PM	92%	134	89%	92
11:00 PM	94%	137	95%	98

Note:
*Parking Demand based off 85th percentile peak period parking demand in suburban areas.

**No data provided in ITE Parking Generation; percentages based on LUC 230 (Residential Condominium/Townhouse).

Parking Demand Assessment - Based on ITE Parking Generation

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

ITE Land Use Code (LUC) 701 - Office Building

Land Use: Office Building
LUC: 701
Size 5,000 SF

Average Peak Period Parking Demand

Weekday:	3.45	vehicles per 1,000 SF	X	5,000	SF =	**17**	**vehicles**
Saturday:	1.58	vehicles per 1,000 SF	X	5,000	SF =	**8**	**vehicles**

Parking Demand - Time of Day Distribution

Time	Weekday		Saturday	
	Percent of Peak	Demand	Percent of Peak**	Demand
12:00 - 4:00 AM		0		0
5:00 AM		0		0
6:00 AM	32%	5	32%	3
7:00 AM	59%	10	59%	5
8:00 AM	79%	13	79%	6
9:00 AM	95%	16	95%	8
10:00 AM	100%	17	100%	8
11:00 AM	98%	17	98%	8
12:00 PM	90%	15	90%	7
1:00 PM	77%	13	77%	6
2:00 PM	84%	14	84%	7
3:00 PM	81%	14	81%	6
4:00 PM	72%	12	72%	6
5:00 PM	46%	8	46%	4
6:00 PM	25%	4	25%	2
7:00 PM		0		0
8:00 PM		0		0
9:00 PM		0		0
10:00 PM		0		0
11:00 PM		0		0

Note:
*Parking Demand based off 85th percentile peak period parking demand in suburban areas.
No data provided in ITE Parking Generation for Saturday; percentages based on Weekday.
**No data provided in ITE Parking Generation; percentages based on interpolation.

Parking Demand Assessment - Based on ITE Parking Generation

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

	Weekday Parking Demand			Saturday Parking Demand		
Time	Residential	Office	**Total**	Residential	Office	**Total**
12:00 - 4:00 AM	146	0	**146**	98	0	**98**
5:00 AM	140	0	**140**	103	0	**103**
6:00 AM	134	5	**139**	101	3	**104**
7:00 AM	108	10	**118**	97	5	**102**
8:00 AM	93	13	**106**	92	6	**98**
9:00 AM	50	16	**66**	61	8	**69**
10:00 AM	47	17	**64**	73	8	**81**
11:00 AM	45	17	**62**	69	8	**77**
12:00 PM	44	15	**59**	68	7	**75**
1:00 PM	45	13	**58**	66	6	**72**
2:00 PM	48	14	**62**	66	7	**73**
3:00 PM	54	14	**68**	71	6	**77**
4:00 PM	64	12	**76**	75	6	**81**
5:00 PM	86	8	**94**	80	4	**84**
6:00 PM	101	4	**105**	82	2	**84**
7:00 PM	96	0	**96**	85	0	**85**
8:00 PM	110	0	**110**	87	0	**87**
9:00 PM	112	0	**112**	90	0	**90**
10:00 PM	134	0	**134**	92	0	**92**
11:00 PM	137	0	**137**	98	0	**98**

Peak Weekday Parking Demand:	**146**
Peak Saturday Parking Demand:	**104**

Parking Demand Assessment - Based on Beverly Zoning Regulations

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

ITE Land Use Code (LUC) 221 - Low/Mid-Rise Apartment

Land Use: Low/Mid-Rise Apartmer
LUC: 221
Size 75 Units

Average Peak Period Parking Demand

Weekday:	2.00	vehicles per unit	X	75 Units =	**150**	**vehicles**
Saturday:	1.41	vehicles per unit	X	75 Units =	**106**	**vehicles**

Parking Demand - Time of Day Distribution

Time	Weekday		Saturday	
	Percent of Peak	Demand	Percent of Peak**	Demand
12:00 - 4:00 AM	100%	150	95%	101
5:00 AM	96%	144	100%	106
6:00 AM	92%	138	98%	104
7:00 AM	74%	111	94%	100
8:00 AM	64%	96	89%	94
9:00 AM	34%	51	59%	63
10:00 AM	32%	48	71%	75
11:00 AM	31%	47	67%	71
12:00 PM	30%	45	66%	70
1:00 PM	31%	47	64%	68
2:00 PM	33%	50	64%	68
3:00 PM	37%	56	69%	73
4:00 PM	44%	66	73%	77
5:00 PM	59%	89	78%	83
6:00 PM	69%	104	80%	85
7:00 PM	66%	99	83%	88
8:00 PM	75%	113	84%	89
9:00 PM	77%	116	87%	92
10:00 PM	92%	138	89%	94
11:00 PM	94%	141	95%	101

Note:
*Parking Demand based off 85th percentile peak period parking demand in suburban areas.

**No data provided in ITE Parking Generation; percentages based on LUC 230 (Residential Condominium/Townhouse).

Parking Demand Assessment - Based on Beverly Zoning Regulations

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

ITE Land Use Code (LUC) 701 - Office Building

Land Use: Office Building
LUC: 701
Size 5,000 SF

Average Peak Period Parking Demand

Weekday:	4.00	vehicles per 1,000 SF	X	5,000	SF =	**20**	**vehicles**
Saturday:	1.83	vehicles per 1,000 SF	X	5,000	SF =	**9**	**vehicles**

Parking Demand - Time of Day Distribution

Time	Weekday		Saturday	
	Percent of Peak	Demand	Percent of Peak**	Demand
12:00 - 4:00 AM		0		0
5:00 AM		0		0
6:00 AM	32%	6	32%	3
7:00 AM	59%	12	59%	5
8:00 AM	79%	16	79%	7
9:00 AM	95%	19	95%	9
10:00 AM	100%	20	100%	9
11:00 AM	98%	20	98%	9
12:00 PM	90%	18	90%	8
1:00 PM	77%	15	77%	7
2:00 PM	84%	17	84%	8
3:00 PM	81%	16	81%	7
4:00 PM	72%	14	72%	6
5:00 PM	46%	9	46%	4
6:00 PM	25%	5	25%	2
7:00 PM		0		0
8:00 PM		0		0
9:00 PM		0		0
10:00 PM		0		0
11:00 PM		0		0

Note:
*Parking Demand based off 85th percentile peak period parking demand in suburban areas.

No data provided in ITE Parking Generation for Saturday; percentages based on Weekday.

**No data provided in ITE Parking Generation; percentages based on interpolation.

Parking Demand Assessment - Based on Beverly Zoning Regulations

Project: Anchor Point Residential Development
Date: 9/5/18
Analyst: GPI/RLB
Source: Institute of Transportation Engineers - Parking Generation - 4th Ed.

	Weekday Parking Demand			Saturday Parking Demand		
Time	Residential	Office	**Total**	Residential	Office	**Total**
12:00 - 4:00 AM	150	0	**150**	101	0	**101**
5:00 AM	144	0	**144**	106	0	**106**
6:00 AM	138	6	**144**	104	3	**107**
7:00 AM	111	12	**123**	100	5	**105**
8:00 AM	96	16	**112**	94	7	**101**
9:00 AM	51	19	**70**	63	9	**72**
10:00 AM	48	20	**68**	75	9	**84**
11:00 AM	47	20	**67**	71	9	**80**
12:00 PM	45	18	**63**	70	8	**78**
1:00 PM	47	15	**62**	68	7	**75**
2:00 PM	50	17	**67**	68	8	**76**
3:00 PM	56	16	**72**	73	7	**80**
4:00 PM	66	14	**80**	77	6	**83**
5:00 PM	89	9	**98**	83	4	**87**
6:00 PM	104	5	**109**	85	2	**87**
7:00 PM	99	0	**99**	88	0	**88**
8:00 PM	113	0	**113**	89	0	**89**
9:00 PM	116	0	**116**	92	0	**92**
10:00 PM	138	0	**138**	94	0	**94**
11:00 PM	141	0	**141**	101	0	**101**

Peak Weekday Parking Demand:	**150**
Peak Saturday Parking Demand:	**107**